Chapter 3.4

CULTURAL RESOURCES

3.4 Cultural Resources

3.4.1 Introduction

This section presents the regulatory setting, environmental setting, and potential impacts of the Proposed Project related to cultural resources.

Cultural resources are the remains and sites associated with past human activities and include prehistoric and ethnographic Native American archaeological sites, historic archaeological sites, historic buildings, and elements or areas of the natural landscape which have traditional cultural significance. A paleontological resource is defined as fossilized remains of vertebrate and invertebrate organisms, fossilized tracks, and plant fossils.

Study Area

The study area for the cultural resources evaluation is a 1-mile radius from Proposed Project channels, canals, access roads, and other features under the maintenance authority of the SCVWD under the current SMP. The study area was used to help determine general areas of sensitivity which are discussed in Section 3.4.3, *Environmental Setting*.

Area of Potential Effects

The Area of Potential Effects (APE) includes channels, canals, access roads, and other features maintained by the SCVWD under the current SMP. A 100-foot buffer from the top of bank was included in the APE to account for access and staging areas. The purpose of the APE was to determine site sensitivity in relation to specific watercourses and facilities under the Proposed Project. If present, a large number of previously-identified cultural resources located within the APE would indicate an elevated level of sensitivity, suggesting increased likelihood that Proposed Project activities could cause adverse impacts to historic properties.

3.4.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

National Historic Preservation Act/Section 106
The National Historic Preservation Act (NHPA) of 1966, as amended, requires federal agencies to consider the preservation of historic and prehistoric resources. The NHPA authorizes the Secretary of the Interior to expand and maintain a National Record of Historic Places (NRHP), and it has established an Advisory Council on Historic Preservation (ACHP) as an independent federal entity. Section 106 of the Act requires federal agencies to take into account the effects of their undertakings on historic properties and afford the ACHP a reasonable opportunity to comment on the undertaking before licensing or approving the expenditure of funds on any undertaking that may affect properties listed, or eligible for listing, in the NRHP.

Federal review of projects is normally referred to as the Section 106 process. The Section 106 review normally involves a four-step procedure described in detail in the implementing regulations (36 CFR Part 800):

- identify and evaluate historic properties in consultation with the State Historic Preservation Officer (SHPO) and interested parties;
- assess the effects of the undertaking on properties that are eligible for inclusion in the NRHP;
- consult with the SHPO, other agencies, and interested parties to develop an agreement that addresses the treatment of historic properties and notify the ACHP; and
- proceed with the project according to the conditions of the agreement.

National Environmental Policy Act

The National Environmental Policy Act of 1969 requires federal agencies to foster environmental quality and preservation. Section 101(b)(4) declares that one objective of the national environmental policy is to "preserve important historic, cultural, and natural aspects of our national heritage... ." For any major federal actions significantly affecting environmental quality, federal agencies must prepare, and make available for public comment, an Environmental Impact Statement.

Advisory Council on Historic Preservation Regulations, Protection of Historic Properties

The Advisory Council Regulations, Protection of Historic Properties (36 CFR 800) establish procedures for compliance with Section 106 of the NHPA of 1966. These regulations define the Criteria of Adverse Effect, define the role of the SHPO in the Section 106 review process, set forth documentation requirements, and describe procedures to be followed if significant historic properties are discovered during implementation of an undertaking. Prehistoric and historic resources deemed significant (i.e., eligible for listing in the NRHP, per 36 CFR 60.4) must be considered in project planning and construction. The responsible federal agency must submit any proposed undertaking that may affect NRHP-eligible properties to the SHPO for review and comment before the project's approval.

National Park Service Regulations, National Register of Historic Places

The National Park Service Regulations' NRHP (36 CFR 60) set forth procedures for nominating properties to the NRHP and present the criteria to be applied in evaluating the eligibility of historic and prehistoric resources for listing in the NRHP.

Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines

Archaeology and Historic Preservation; Secretary of the Interior's Standards and Guidelines (FR 190:44716–44742) offer non-regulatory technical advice about the identification, evaluation, documentation, study, and other treatment of cultural resources. Notable in these guidelines are the "Standards for Archaeological Documentation" (p. 44734) and "Professional Qualifications Standards for Archaeology" (pp. 44740–44741).

Section 106 of the NHPA prescribes (at 36 CFR Section 800.5) specific criteria for determining whether a project would have an adverse effect on a historic property, if any such properties exist in the APE as defined by the agency. An impact is considered adverse when prehistoric or historic archaeological sites, structures, districts, or objects listed in or eligible for listing in the NRHP are subjected to the following effects:

- physical destruction of or damage to all or part of the property;
- alteration of a property;
- removal of the property from its historic location;
- change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
- neglect of a property that causes its deterioration; and
- transfer, lease, or sale of the property.

Because SCVWD would need to obtain a permit from USACE under Section 404 of the Clean Water Act, the Proposed Project constitutes a federal undertaking that would require compliance with Section 106 of the NHPA, and federal significance criteria apply. For federally permitted or funded projects, cultural resource significance is evaluated in terms of eligibility for listing in the NRHP. NRHP criteria for eligibility are defined as follows:

> The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling and association, and that:
>
> - are associated with events that have made a contribution to the broad pattern of our history;
> - are associated with the lives of people significant in our past;
> - embody the distinct characteristics of a type, period, or method of construction, that represent the work of a master, that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
> - have yielded, or are likely to yield, information important in prehistory or history.

American Indian Religious Freedom Act

The American Indian Religious Freedom Act of 1978 allows access to sites of religious importance to Native Americans.

State Plans, Policies, Regulations, and Laws

California implements the NHPA through its statewide comprehensive cultural resource surveys and preservation programs. The California Office of Historic Preservation (OHP), an office of the California Department of Parks and Recreation, implements the policies of the NHPA on a statewide level. The OHP also maintains the California Historic Resources Inventory. The SHPO is an appointed official who implements historic preservation programs within the state's jurisdictions as well as serving as a consulting party in the federal process described above.

California Register of Historic Resources

The California Register of Historic Resources (CRHR) is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (California Public Resources Code [PRC] Section 5024.1[a]). The eligibility criteria for inclusion on the CRHR are based on NRHP criteria (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the California CRHR, including California properties formally determined eligible for, or listed in, the NRHP.

To be eligible for the CRHR, a prehistoric or historical-period property must be significant at the local, state, and/or federal level under one or more of the following criteria:

- it is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- it is associated with the lives of persons important in our past;
- it 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,
- it has yielded, or may be likely to yield, information important in prehistory or history.

For a resource to be eligible for the CRHR, it must also retain enough of its character or appearance (integrity) to be recognizable as a historical resource and to convey the reason for its significance. A historic resource that does not retain sufficient integrity to meet the NRHP criteria may still be eligible for listing in the CRHR.

The CRHR consists of resources that are listed automatically as well as those that must be nominated through an application and public hearing process. The CRHR automatically includes the following:

- California properties listed on the NRHP and those formally determined to be eligible for the NRHP;

- California Historical Landmarks from No. 770 onward; and
- California Points of Historical Interest that have been evaluated by the OHP and have been recommended to the State Historical Resources Commission for inclusion on the CRHR.

Other resources that may be nominated to the CRHR include:

- Historical resources with a significance rating of Category 3 through 5 (i.e., properties identified as eligible for listing in the NRHP, the CRHR, and/or a register maintained by a local jurisdiction);
- Individual historical resources;
- Historical resources contributing to historic districts; or
- Historical resources designated or listed as local landmarks, or designated under any local ordinance, such as a historic preservation overlay zone.

California Environmental Quality Act

CEQA, as codified at PRC Sections 21000 et seq., requires lead agencies to determine if a proposed project would have a significant effect on archaeological resources. As defined in PRC Section 21083.2, a "unique" archaeological resource is an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

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

In addition, the State CEQA Guidelines define historical resources as: (1) a resource in the CRHR; (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); or (3) any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

If a lead agency determines that an archaeological site is a historical resource, the provisions of PRC Section 21084.1 and State CEQA Guidelines Section 15064.5 would apply. If an archaeological site does not meet the State CEQA Guidelines criteria for a historical resource, then the site is to be treated in accordance with the provisions of PRC Section 21083 regarding unique archaeological resources. The State CEQA Guidelines note that if a resource is neither a unique archaeological resource nor a historical resource, the effects of

a project on that resource shall not be considered a significant effect on the environment (State CEQA Guidelines Section 15064[c][4]).

Per CEQA, the Proposed Project would be considered to have a significant impact on the environment if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

California Public Resources and Administrative Codes

Human remains, including those buried outside of formal cemeteries, are protected under several state laws, including PRC Section 5097.98 and Health and Safety Code Section 7050.5. Impacts include intentional disturbance, mutilation, or removal of interred human remains.

Regional and Local Plans, Policies, Regulations, and Ordinances

Applicable regional and local plans, policies, regulations, or ordinances related to cultural resources are presented in Appendix D.

3.4.3 Environmental Setting

This environmental setting discussion is divided into three parts. The first summarizes the cultural history of the Santa Clara Valley region. Because archaeological and historic regions can encompass large geographic areas and display some cultural homogeneity throughout, a discussion of the prehistoric, ethnographic, and historic contexts is useful to evaluate the impacts to cultural resources in the APE. The second part addresses the geologic formations in the Project Area and their potential to contain paleontological resources. The third part discusses previous cultural resources surveys and assessments conducted from 2002 through 2011 in the Project Area.

Cultural History

Prehistoric Context

An analytic framework for the interpretation of South San Francisco Bay and Central Coast Ranges prehistory is provided by Milliken et al. (2007:99–123) and Hylkema (2007). Hylkema observes three broad periods of human history in South San Francisco Bay: Early Holocene (10,000 to 6650 Before Present [B.P.]), the Middle Holocene (6650 to 3350 B.P.), and the Late Holocene (3350 to present). Milliken et al. (2007) observe six temporal periods

that build from the temporal sequence originally outlined by Frederickson (1994:25–48) and synthesize subsequent dating schemes with new *Olivella* bead data:

- The Early Holocene, or Lower Archaic (9950 to 5450 B.P.)
- Early Period, or Middle Archaic (5450 to 2450 cal B.P.)
- Lower Middle Period, or Initial Upper Archaic (2450 to 1520 B.P.)
- Upper Middle Period, or Late Upper Archaic (1520 to 900 B.P.)
- Initial Late Period, or Lower Emergent (900 to 400 B.P.)
- Terminal Late Period (400 to 174 B.P.)

The post-Pleistocene era (post-10,000 B.P.) is generally characterized as a period of dramatic environmental change. Very little is known about the human history of Central California and the San Francisco Bay region before approximately 9950 B.P., but hunter-gatherers presumably inhabited the region as evidenced by Pleistocene faunal remains and other isolated finds, including fluted projectile points (Erlandson et al. 2007:161–174; Parkman 2006; Rosenthal et al. 2007:151). Warming trends in the global environment after 10,000 B.P. contributed to rising sea levels and the gradual inundation of the verdant plain—and possibly the earliest record of human occupation in the area—now submerged beneath present-day San Francisco Bay. The rising sea level eventually slowed approximately 6000 B.P. During this time, lush tidal marsh habitats formed around the margins of the Bay, creating a diverse regional ecosystem that, in turn, attracted fish species, waterfowl, sea mammals, terrestrial game, and humans.

Hylkema (2007) outlines general trends in South Bay prehistory. Early mobile forager land use gave way to semi-sedentary collector land use—and shell mound construction—near the close of the Early Holocene. Stone mortars and pestles appear in greater frequency within Middle Period archaeological deposits in the Santa Clara Valley, which suggests a milling economy with emphasis on vegetal foods, especially acorns and small seeds (Hylkema 2007:27; Moratto 1984). This contrasts with areas to the southeast of South San Francisco Bay where a greater frequency of chert projectile points and knives in the archaeological record indicate emphasis on hunting terrestrial game. The Late Period is generally considered a period of cultural and environmental florescence. At this time, growing hunter-gatherer populations in the Santa Clara Valley, southern Santa Clara Valley, and broader San Francisco Bay region contributed to intensified collection of animal and plant resources from diverse coastal, intertidal, and interior habitats. They further developed social innovations to efficiently procure animal, plant, and mineral resources, including co-harvesting subsistence strategies, storage practices, and exchange systems (Hylkema 2002:252–253; 2007:29).

Discrete temporal periods within the San Francisco Bay region are further developed by Milliken et al. (2007), who integrate accelerator mass spectrometry radiocarbon data collected from 103 well-provenienced *Olivella* beads. Within the chronological sequence outlined above, Milliken et al. (2007:105) further distinguish multiple bead horizons to refine "significant variation in time and space" in Bay Area prehistory. These bead horizons include: the Early Period/Middle Period Transition (EMT); M1, M2, M3, and M4 horizons in the Middle Period; the Middle Period/Late Period Transition; and L1 and L2 horizons in the Late Period.

Early Period archaeological deposits and hunter-gatherer sedentism are signaled by groundstone technology—typically stone mortars and pestles—and the first cut shell beads. Early millingstone technology is represented best at sites in the Santa Clara Valley, such as CA-SCL-65 and CA-SCL-178 (Hylkema 2002:233), and discrete terrace sites in the western foothills of the southern Santa Clara Valley, or San Felipe Sink (Hildebrandt and Mikkelsen 1993:191). Shell beads from this time period are often in mortuary contexts, such as the 5,900-year-old Sunnyvale Red Burial (CA-SCL-832), which contained red ocher and double-perforated Haliotis rectangle beads (Milliken et al. 2007:115). The EMT Bead Horizon marks the end of the Early Period and is indicated by split-beveled and tiny saucer *Olivella* beads. EMT funerary contexts contain few associated goods, except for some with spire-lopped *Olivella* beads. Osteological data collected from EMT/M1 sites also reveal evidence of interpersonal violence, including healed bone fractures and puncture wounds; evidence of violent death; postmortem skeletal modifications; and haphazard disposal of human skeletal remains (Milliken 2007:113). Well-documented evidence of violence is seen at the Skyport Plaza site (CA-SCL-478), where archaeologists uncovered evidence of trophy taking, mass burials, and warfare (Milliken et al. 2007:113). The Three Wolves site, CA-SCL-732, represents another Middle Period special use cemetery where archaeologists recovered the remains of 107 individuals some with evidence of traumatic injury (Cambra et al. 1996).

During the lower and upper Middle Periods (2450 to 1250 B.P.), an intensified tidal marsh economy was present and contributed to the formation of large shell mounds along the San Francisco Bay shore. This subsistence strategy persisted into the Middle Period, though use of local resources intensified. Bead Horizon M1 (2150 to 1520 B.P.) developed out of the EMT and is signaled by the common occurrence of *Olivella* saucer beads, as well as by new bone tool forms and bone ornaments such as barbless fish spears, elk femur spatulae, bone tubes, and bone whistles (Milliken et al. 2007:115). The trade of *Olivella* saucer-beads collapsed at about 1520 B.P., or the beginning of the M2 Bead Horizon in the upper Middle Period (1520 to 900 B.P.).

The South Bay during the Middle Period also played host to the spread of the Meganos culture, which possibly arrived from the Sacramento-San Joaquin River Delta area. The Meganos culture is represented archaeologically by a dorsal extended burial mortuary pattern with few grave-associated artifacts (Bennyhoff 1994:15–24), and it also is signaled by the production of *Olivella* saddle beads. Meganos would eventually spread to the Santa Clara Valley, as seen at sites like Wade Ranch (CA-SCL-302). By the emergence of Bead Horizons M2 and M3—the "climax of upper Middle Period stylistic refinement" (Milliken et al. 2007:116)—obsidian blades, fishtail charmstones, new *Haliotis* ornament forms, and mica ornaments accompany *Olivella* saucer beads in some Bay Area archaeological contexts. Bead Horizon M4 may be a period of "post-climax culture" with a variety of wide and tall *Olivella* saddle bead forms.

Olivella bead production during the initial Late Period (900 to 400 B.P.) and L1 Bead Horizon is marked by technological sophistication and accompanied by the production of finely-crafted wealth objects. New shell bead types include *Olivella* sequin and cup beads and an array of multi-perforated and bar-scored *Haliotis* ornaments, such as those appearing at Tamien Station, CA-SCL-690 (Hylkema 2007). A shift from collection of terrestrial mammals (canid, elk, and deer) to sea otter and deer is believed to represent

economic intensification from the Middle through Late Periods, in addition to the development of co-harvesting strategies, drawing increasingly from estuarine and terrestrial habitats.

In the San Felipe Sink, a highly mobile Early Period foraging system—which utilized resources from Elkhorn Slough and inland areas—transitioned during the Middle Period to greater dependence on acorn and local lacustrine resources (Hildebrandt and Mikkelsen 1993:183, 191; Hildebrandt et al. 1991:5-7). By the Late Period, hunter-gatherer use of coastal resources appears to have switched to collecting lacustrine plants and animals; a pattern that mirrors historical observations. Arrow-sized obsidian projectile points first appear in the Bay Area during this time, and include small finely-crafted Stockton serrated points (Hylkema 2002:247). However, in the South Bay debitage and most flaked stone tools continued to be produced from local Franciscan chert, potentially indicating restricted access to North Bay obsidian sources because of social prohibitions on the exchange of obsidian and other prestige items around San Francisco Bay (Jackson and Ericson 1994:385–415). High-status burials and partial cremations, often associated with grave offerings like *Haliotis* "banjo" effigy ornaments, offer additional evidence of social stratification during the initial Late Period.

During the Late Period, many Middle Period traits gave way to social and economic forms consistent with those evident during ethnographic times. Almost abruptly at 400 B.P., archaeological evidence of *Olivella* sequin and cup beads drops off in the North Bay, replaced by the production and widespread distribution of clamshell disk beads, markers of the L2 Bead Horizon. Lipped and spire-lopped *Olivella* beads continued to be produced and exchanged in the South Bay between 400 B.P. and 300 B.P. Desert side-notched points also have been recovered from some South Bay archaeological sites dating to the Late Period (Jackson 1986).

In general, the following archaeological resources could potentially be encountered during ground-disturbing activities near bodies of water within Santa Clara Valley: remnants of large shell mounds; shallow or broadly dispersed midden sites; lithic scatters; multi-component villages; and cemeteries. Over 400 shell mounds once ringed the San Francisco Bay shoreline, and several are recorded within Santa Clara County. Some mound sites reached heights of between 5 to 60 feet, and many contain multiple depositional episodes spanning several hundred to several thousands of years. Used in prehistory and in historic times, the Yñigo Mound (CA-SCL-12/H) was once part of a cluster of 13 mounds along the southern edge of San Francisco Bay and it rose approximately 5 feet. This mound—like many around the Bay Area—has been impacted by commercial development, although intact deposits are buried beneath Moffett Field Naval Air Station (Bryne and Byrd 2009:82–88).

Other midden sites are shallow (between 1 to 4 feet deep) and are sometimes dispersed over several hundred meters. As with shell mounds, middens are composed of densely packed deposits of shell, earth, rock, ash, botanical and faunal (mammal, bird, fish, shellfish, and reptile) remains, artifacts (groundstone, flaked stone, fire-affected rock, shell tools and ornaments, and modified bone), and features such as hearths, house floors, and human burials accumulated over longer or shorter periods of time. Some archaeological sites also contain evidence of residence during colonial and historic times, including glass beads,

worked glass tools, ceramics, and metal artifacts. Middens also can be found along the San Francisco Bay, where shellfish remains are more prevalent, or they also can be found inland along rivers, creeks, sloughs, and lakes. Several large and small midden sites containing artifacts and human burials are recorded throughout the Santa Clara Valley (Hildebrandt and Mikkelsen 1993; Hylkema 2007). Lithic scatters also are evidenced by sparse or densely scattered lithic debitage from the production/use of stone tools and other processing activities. For example, one site (CA-SCL-308/H) located along a seasonal creek overlooking the Pajaro River alluvial plain in southern Santa Clara Valley contains groundstone implements, flaked stone tools and debris, fire-affected rock, as well as faunal remains and modified bone (Hildebrandt and Mikkelsen 1993).

Archaeological resources in the Santa Clara Valley also include multi-component village sites. These sites generally exhibit a suite of daily and ceremonial practices as evidenced by the presence of midden soils, which contain botanical and faunal remains, bone and stone tools, living surfaces and house floors, and human burials. One village site (CA-SCL-119/CA-SBN-24/H) is located on the shore of San Felipe Lake. It was once near four major habitat zones—oak savanna, open prairie, riparian habitat, and tule marsh—and consists of five spatially discrete loci with house floors, hearths, human burials, plant and animal remains, bone and stone tools, and shell beads. Research in the southern Santa Clara Valley continues to explore the extent to which the broad Pajaro River alluvial plain was inhabited prehistorically, or not at all. As Hildebrandt et al. (1991:5–7) summarize, some believe the plain was once a year-round wetland that prevented human settlement in areas other than at the mouths of adjacent canyons. Others believe that the plain was dry for most of the year, and prehistoric residences may be found along any of the present-day sloughs and creeks that cross the plain. It is now generally believed that human occupation along riparian and lacustrine habitats intensified after approximately 450 B.P. (Hildebrandt et al. 1991:5–7).

The Late Period shift towards intensively collecting wetland resources was observed historically and is evidenced by at least one contact period cemetery (CA-SCL-714/H) north of Pajaro Gap in the Pajaro River drainage. Cemeteries also are described by Cambra et al. (1996; CA-SCL-732) and Hylkema (2007; CA-SCL-690). A formal, planned cemetery, CA-SCL-690, where approximately 124 human burials were discovered, is located 1,000 feet east of the Guadalupe River in downtown San Jose. The river and Los Gatos Creek are major contributors of sediment to the Santa Clara Valley, which increase the likelihood of encountering buried archaeological resources along water courses. At the time of European contact, Native Americans buried and cremated their dead. Grave goods—including shell beads, stone and bone implements—are associated with some burials.

Ethnographic Context/Ohlone

The Project Area is located within the ethnographic territory of the Muwekma Costanoan/Ohlone Indians. For the Costanoan/Ohlones, areas around streams were frequently settled and/or heavily used and, as described above, are generally locations of high sensitivity for archeological deposits. In general, protohistoric and colonial archaeological resources could potentially be encountered during ground-disturbing activities near bodies of water within Santa Clara Valley. This would include Native American village sites and processing areas as a continuation of settlement patterns

associated with the Late Period (see above); artifacts and features deposited by European settlers; as well as, material evidence of cultural intermingling, perhaps similar to that recovered from mission and mercantile colonies in the Bay Area (Lightfoot 2005) and from subsequent Mexican ranchos and American settlements.

The ethnographic territory of the Muwekma Costanoan/Ohlone includes all of present-day Santa Clara County, and originally included (1) the San Francisco Peninsula south to Big Sur (in Monterey County) and (2) inland from Carquinez Strait to Soledad (Levy 1978:485). In the aboriginal Tamien and Chochenyo (or Lisyan) languages spoken in Costanoan/Ohlone territory, "Muwekma" means "People" (Levy 1978). As Field et al. (2007:62) further clarify, Muwekma accurately reflects how Costanoan/Ohlones identified themselves in the Santa Clara Valley region and Ohlone is used to define Costanoan/Ohlone in their entire territory. The Costanoan language belongs to the Penutian stock (Golla 2007:71–82), and is divided between eight separate languages (not dialects): Karkin; Chochenyo (East Bay Costanoan); Tamien (Santa Clara Costanoan); Ramaytush (San Francisco Costanoan); Awaswas (Santa Cruz Costanoan); Mutsun; and Rumsen.

The primary sociopolitical unit was the village community, or tribelet. Ohlone tribelets consisted of a principal village, at which the chief resided, surrounded by several secondary settlements (Kroeber 1962:81–120). The Ohlone were further grouped into clans—with either deer or bear moieties—and each village community averaged between 100 to 2,000 people with households averaging between 10-15 persons (Levy 1978:487). Tribelet boundaries were typically defined by physiographic features, and are generally believed to provide enough habitat diversity to "buffer the vagaries of environmental perturbations during most years, but small enough to remain manageable from a few village locations that may have been moved once or twice a year" (Lightfoot and Parrish 2009:80). Chiefs may have been either men or women, and they were usually in charge of: resolving disputes; organizing events, including dances and hunting expeditions; and advising the broader community, with assistance from a council of elders (Levy 1978:487).

An array of seasonally available plant and animal species typically were collected for dietary, medicinal, and other requirements. A steady harvest was ensured by careful management of the land, such as through the practice of controlled burning of extensive areas to curb the spread of unwanted species and to promote the growth of seed-bearing plants and grazing area for game animals (Levy 1978; Lightfoot and Parrish 2009). Gathered in the fall, acorns were an important food source, especially acorns from Coast live oak (*Quercus agrifolia*), valley oak (*Q. lobata*), tanbark oak (*Lithocarpus densiflora*), and California black oak (*Q. kelloggii*). Berries, bulbs, greens, and the seeds from a number of plants also were consumed. Ohlone diet also included migratory waterfowl; terrestrial birds; large and small game, especially deer, elk, rabbit, and woodrat; sea mammals; fish, including steelhead, salmon, and sturgeon; reptiles; and insects. Many plant and animal species could be incorporated into other areas of Ohlone daily life; some were used for clothing, medicine, tools, cordage, and structures.

Ohlone material culture includes finely woven twined and coiled basketry, tule balsas, shell beads and ornaments, bone tools, and stone tools—created from Franciscan chert, obsidian, steatite, and other rocks or minerals (Levy 1978). Red ocher (cinnabar) could be procured from hills at present-day New Almaden. Houses were made from available materials, but in

most places in the San Francisco Bay Area they were hemispheric frames of bent willow poles covered with a thatch of tule, rush, or grass. Additional structures include sweathouses, dance enclosures, and large earth-covered assembly houses.

By the mid-1800s, Spanish missionization, diseases, raids by Mexican slave traders, and dense immigrant settlement had disrupted Ohlone culture, dramatically reducing the population, and displacing the native people from their villages and land-based resources. Reduction of Ohlone villages, conversion to Catholicism, and exposure to Spanish language, culture and material practices commenced with the establishment of Mission Santa Clara in early 1777 and the settlement of San Jose in the same year (Milliken 1995). The majority of Ohlones who joined Mission Santa Clara during the mid-1790s resided at seven main villages in the Santa Clara Valley, four of which probably contained more than 100 inhabitants (Milliken 2007:51–52). Milliken estimates by 1800 most native residents of the Santa Clara Valley had experienced severe psychological depression from the spread of epidemic diseases and witnessed environmental deterioration resulting from introduced grazing and farming practices. Spanish missions further eroded native cultural, social, and economic institutions, resulting in the elimination of perhaps 80 percent of native residents in the Bay Area.

At places like Alisal rancheria, near Pleasanton, Ohlone cultural practices endured as they regrouped and remade themselves, following the closure of Spanish missions and during subsequent periods of Mexican and American settlement. Although the Ohlone lost their original land base because of Spanish missionizing efforts, rancho allotments, and legal obstacles preventing favorable rulings in U.S. courts, their tribal status as the Verona Band was formally recognized by the U.S. Bureau of Indian Affairs as early as 1906. However, this status was short-lived and the Ohlone were "lost in a bureaucratic paper shuffle in Washington D.C." (Field et al. 2007:65). Assuming the Ohlone had ceded their lands and *rancherias*, they lost their federal status and are currently an unrecognized Native American tribe. Field et al. (2007) details the on-going Ohlone revitalization movement—and attempts to regain federal recognition—from the twentieth century up to the present day.

Historic-Period Background

The first mention of the Ohlone in historical records comes from the 1542 account of Juan Rodriquez Cabrillo, who sailed into Monterey Bay and observed some of California's native residents. Over 200 years later, an expeditionary force under the direction of Captain Gaspar de Portola traversed Ohlone lands on their way to the East Bay. After 1770, when the presidio of Monterey and Mission San Carlos Boromeo were founded, additional expeditions reached the South San Francisco Bay area. For example, a 1776 expedition headed by Juan Bautista de Anza reached the Guadalupe River and possibly crossed near Tamien Station in search of suitable locations for additional Spanish settlements (Hylkema 2007:34). At this time, Anza observed "the plains surrounding the Guadalupe River maintained large numbers of villages with a thriving Native American population" (Hylkema 2007:35). For this reason, Mission Santa Clara was established in 1777 and named *Santa Clara de Thamien*. The pueblo of *San Jose de Guadalupe* (San Jose Pueblo) was established later that year on the east side of the Guadalupe River. Flooding of the Guadalupe River in 1779 resulted in the relocation of the mission and it was renamed

Misión Santa Clara de Asís. After 1803, the area around Mission Santa Clara was designated as a rancho and used as pasture for livestock (Hylkema 2007:38).

With the establishment of the independent government of Mexico in 1821, Spanish missions were eventually secularized and former mission lands typically were allotted to wealthy Mexican citizens. Fifty grants of land were made in what is now Santa Clara County (Kyle 1990:404–411), including *Rancho San Ysidro* (Old Gilroy); *Rancho Los Tularcitos* (Milpitas); *Rancho Milpitas* (Milpitas); *Rancho Ulistac* (Agnew); R*ancho Patoría de las Borregas* (Mountain View and Sunnyvale); *Rancho Rincón de San Francisquito* (Palo Alto); *Rancho Rinconada del Arroyo de San Francisquito* (Palo Alto); *Rancho San Francisquito* (Stanford University); *Rancho San Antonio* (Los Altos); *Rancho Purísima Concepción* (Los Altos Hills); *Rancho Quito* (Saratoga); *Rancho Rinconada de los Gatos* (Los Gatos); *Rancho Santa Teresa* (San Jose); *Rancho El Potrero de Santa Clara* (San Jose); *Rancho Los Coches* (San Jose); *Rancho Las Animas* (Southern Santa Clara County); *Rancho Ojo de Agua de la Coche* (Morgan Hill); and *Rancho Cañada de Pala* (eastern Santa Clara County). The Peralta Adobe, constructed in 1777 and the oldest building in San Jose, was located in *Rancho San Antonio*. One rancho—*Rancho Polsomi*—contains several prehistoric shell mounds and was granted to an Ohlone Indian, Lope Ínigo, who chose to be buried in one mound after his death in 1864. Under Mexican law, settlement by non-Mexican citizens was permissible and soon immigrants from the U.S. settled in the Bay Area, although they often illegally squatted on rancho lands. Following the end of the Mexican-American War in 1848, California was admitted to the Union (1850), becoming the 31st state. For Mexican landowners, most of their property was subsequently lost to American settlers. Several present-day towns in Santa Clara County emerged from disbursed Mexican lands: Gilroy, Los Gatos, Milpitas, San Jose, and Santa Clara (Gudde 1969).

As the American Period began, an influx of new economies resulted in an increase in settlement and the development of farming, ranching, industry, and businesses in Santa Clara County. Santa Clara Valley's agricultural productivity was accelerated by 1) immigrants—especially of Italian origin—who arrived en masse to Santa Clara County around 1870 and became involved in one of the most productive fruit growing and distribution regions in the U.S. (Hylkema 2007:42), and 2) by technological innovations for irrigating crops and orchards. Significant alterations to watercourses within Santa Clara Valley during the historic period are potentially seen archaeologically (artifacts, features, and structural foundations) as a growing Bay Area population settled by and increasingly drew from available freshwater sources. By 1919, at least ten fruit and vegetable canning plants were operating in Santa Clara County, and the region's fruit packing industry peaked in the 1930s with 30 packing plants operating in the county. The Town of Campbell, founded in 1885, was at one time the center of the fruit-growing and canning industry in Santa Clara County (Kyle 1990). After the booming agricultural economy of the 1930s, Santa Clara County focused on technology with the founding of Hewlett Packard and Fairchild Semiconductor. The area is now synonymous with the term "Silicon Valley," and is the location of several of the world's leading computer, microprocessor, and Internet companies.

Santa Clara County Water History

In the 1920s, persistent flooding, growing communities, and agricultural productivity in Santa Clara County led farmers and community leaders to petition for the creation of a water conservation committee for controlling and managing the valley's water resources. At that time, the Santa Clara Valley Water Conservation Committee was formed, and it subsequently spearheaded the establishment of the Santa Clara Valley Water Conservation District in 1929. Since that time, reservoirs have been constructed to alleviate problems associated with periodic droughts and slow rapidly dropping groundwater levels. In 1952, the County Board of Supervisors formed the Santa Clara County Flood Control and Water Conservation District. In the 1970s, the Santa Clara County Flood Control District changed its name to the Santa Clara Valley Water District, with responsibilities for providing water supply and flood management (SCVWD 2010).

Paleontological Resources

The Santa Clara Valley contains a diverse record of geologic and biologic history, spanning more than 150 million years, and dates from the Jurassic Period to the present. The processes of multiple tectonic influences (faulting, uplift, sedimentary deposition, sea level fluctuations) have combined to create a significant record of both marine and terrestrial fossils in the Project Area. (Santa Clara County Parks and Recreation Department 2006)

Much of the paleontological interest in the region is caused by discoveries of fossilized Pleistocene vertebrates from Quaternary deposits in the South San Francisco Bay Area. Descriptions of these fossil vertebrates have provided scientists with one of the most complete records of Pleistocene fauna in California. (Santa Clara County Parks and Recreation Department 2006)

Fossil mammal assemblages have been collected from Quaternary sediments bordering South San Francisco Bay: the Lawrence Expressway Site, the Cupertino–Calabasas Site, and a site near the Anderson Dam–Morgan Hill vicinity. All of these sites have produced fossil elephant, camel, and bison specimens. Stratigraphic occurrences of sandstone, clay, and silt lithologies that are exceptional for preserving vertebrate and microvertebrate taxa have been assigned to the Pleistocene Quaternary alluvium units. Such Quaternary alluvium and Quaternary undifferentiated deposits occur locally within the Project Area and can occur in stream, terrace, fluvial, alluvial fan, floodplain, slope debris, and ravine fill deposits. However, urban development certainly has obscured or removed portions of many of these deposits. (Santa Clara County Parks and Recreation Department 2006)

Sediments of Holocene age that form thin surficial cover are considered to be of little paleontological interest and are, therefore, considered to possess low sensitivity for fossil specimens. (Santa Clara County Parks and Recreation Department 2006)

Specific to the Proposed Project channels, in 2005, a fossil of a young Columbian mammoth (*Mammuthus columbi*) was found on a floodplain/overflow area east of the Guadalupe River downstream of Trimble Road in San Jose, just north of Mineta San Jose International Airport. The fossil dates from the late Pleistocene epoch and included portions of skull,

tusks, molar teeth, femur, toes, ribs, and other bone fragments. (Children's Discovery Museum of San Jose 2011; University of California Museum of Paleontology 2005)

Previous Surveys

Pre-construction surveys and assessments of areas surrounding proposed maintenance activity areas were conducted in 2002–2011 by State Parks Archaeologist Mark Hylkema, in accordance with the 2002 SMP EIR. In Archaeological Survey Reports (ASRs) presented annually to SCVWD from 2002 onward, Hylkema has discussed specific project locales, described proposed ground-disturbing activities within each, and evaluated the likelihood of encountering cultural resources within each proposed activity work site. These evaluations were based on the results of record and archival searches conducted at the Northwest Information Center of the California Historical Resources Information System (CHRIS) at Sonoma State University and augmented by data retained by Hylkema. Areas in which the removal of sediment within existing stream profiles was proposed and/or areas near known cultural resources were deemed potentially sensitive, and Hylkema consequently has recommended cultural resource monitoring by a qualified archaeologist in those locations.

For the current SMP, a monitoring program was implemented by Albion Environmental, Inc. in 2002–2003, and by Pacific Legacy, Inc. in 2004–2010, for those locations deemed potentially sensitive in ASR reports provided by Mark Hylkema. Ground-disturbing activities for which cultural resource monitors were required included vegetation removal, silt or sediment removal, the removal of previously installed stream maintenance features (such as concrete rip-rap or tailings), the installation of bank protection features (such as rock weirs or retaining walls), and stream channel widening or rerouting. Historic or temporally indeterminate debris was noted at many of the locations monitored between 2002 and 2010; however, most of these items were observed in transposed secondary contexts and few yielded in situ cultural materials. Exceptions included a historic debris scatter discovered along Permanente Creek, an isolated prehistoric boulder mortar found along Alamitos Creek at Bubblingwell Place, and in situ human remains recovered from Adobe Creek at O'Keefe Lane. All in situ discoveries were recorded on DPR Form 523 and fully documented. Only one inadvertent discovery was recorded under the current SMP: the historic barge found in the Alviso Slough in 2010. It was fully documented according to the standards of the Historic American Engineering Record and monitored during ground-disturbing activities. A summary of the findings of the monitoring program is provided in Table 3.4-1.

Table 3.4-1. Cultural Resource Monitoring for the SCVWD SMP, 2002-2010

Contractor and Year Work Performed	Monitoring Locations	Results
Albion Environmental, Inc. (2002)	Thompson Creek near Aborn Road	Negative
	Guadalupe River near W. Alma	Negative
	San Thomas Aquinas Creek near Avon	Negative
	Adobe Creek at Moos Family Property	Negative
	Adobe Creek at Ward Family Property	Negative
Albion Environmental, Inc. (2003)	Thompson Creek at Quimby Road	Negative
	Thompson Creek at Pettigrew Drive	Negative
	Thompson Creek at Quimby Creek	Negative
	Thompson Creek near Aborn Road	Negative
	Wildcat Creek at Montpere Way and Quito Road	Negative
	Hale Creek at Gronwall Lane	Negative
	Prospect Creek at Blue Hills Drive	Negative
	Matadero Creek at Page Mill Road	Negative
Pacific Legacy, Inc. (2004)	Saratoga Creek at Walnut Avenue	Negative
	Alamitos Creek near Graystone Lane	Negative
	Berryessa Creek at Piedmont Avenue	Negative
	Canoas Creek near Cottle Road	Negative
	Saratoga Creek near Civic Center	Negative
	Golf Creek	Negative
Pacific Legacy, Inc. (2005)	Canoas Creek Upstream from Hillsdale Avenue	Negative
	Guadalupe River Upstream from Trimble Road	Negative
	Adobe Creek Upstream from El Camino Real	Negative
	Guadalupe River Upstream from Coleman Avenue	Negative
	Guadalupe River Upstream from Highway 101	Negative
	Saratoga Creek Downstream from Warburton Ave.	Negative
	Permanente Creek near Deer Meadow Trail	Negative
Pacific Legacy, Inc. (2006)	Adobe Creek downstream from Foothill Expressway	Negative
	Permanente Creek, Rancho San Antonio Preserve	Permanente Historic Trash Scatter
	Hale Creek Upstream from Foothill Expressway	Negative
Pacific Legacy, Inc. (2007)	Greystone Creek at Olive Branch Lane	Negative
	Alamitos Creek at Bubblingwell Place	PL- SCVWD-ABO -ISO01
	Adobe Creek at O'Keefe Lane	PL- SCVWD-ACO -ISO01
	Alamitos Creek at Greystone Creek Confluence	Negative
	Alamitos Creek at McKean Road	Negative
Pacific Legacy, Inc. (2008)	Adobe Creek at O'Keefe Lane, Los Altos	Negative
	Berryessa Creek near Cropley Avenue	Negative
	Guadalupe River at West Alma Avenue	Negative
	Alamitos Creek at Greystone Creek	Negative
	Alamitos Creek near Brett Hart Road	Negative
	Alamitos Creek at Greystone Lane	Negative
	Alamitos Creek near Almaden Expressway	Negative

Contractor and Year Work Performed	Monitoring Locations	Results
Pacific Legacy, Inc. (2009)	Saratoga Creek near Warburton Bridge	Negative
	Guadalupe River near Ross Creek Confluence	Negative
	Thompson Creek near Everdale Drive	Negative
	Alamitos Creek near Alamaden Expressway	Negative
	Alamitos Creek near Fieldwood Court	Negative
	Thompson Creek near Farnsworth Road	Negative
	Alamitos Creek at Randol Creek	Negative
Pacific Legacy, Inc. (2010)	Santa Teresa at San Vincente Avenue	Negative
	Calabazas Creek near Padero Court	Negative
	South Bay Advanced Recycled Water Treatment Facility Project Excavations	Negative
	Alviso Slough	Historic Alviso Barge

Source: Albion Environmental, Inc. 2002, 2003; Pacific Legacy, Inc. 2004–2010

3.4.4 Impact Analysis

Methodology

CEQA requires assessment of a project's potential effects on historical resources, as defined in Section 15064.5 of the State CEQA Guidelines (see below). In general, historical resources are those listed or eligible for inclusion on the CRHR or in a local register, or identified based on a survey that meets the requirements of Sections 5020.1 (k) and 5024.1(g) of the California Public Resources Code. The identification of historical resources involves several steps, including: identifying cultural resources within a project's boundaries; evaluating the resources to determine if they qualify as historical resources; and determining the direct or indirect effects of the project on significant historical resources. Resources found not to be "historical resources" or otherwise "historically significant" need no further management. In general, effects on significant CEQA resources can be reduced to less-than-significant levels by applying the proper treatment or management measures, such as avoidance, further documentation, evaluation for eligibility to be included on the CRHR, or data recovery.

As discussed above under 3.4.3, *Environmental Setting,* the potential for the occurrence of prehistoric and historic cultural resources generally is high along existing waterways. Furthermore, because of alluvial flooding along waterways, the potential for buried cultural deposits is high. Several components of the Proposed Project would require ground-disturbing activities that could disturb previously documented or unknown and potentially important prehistoric and historic cultural resources. The Proposed Project would not include any activities that could affect buildings, so an evaluation of buildings was not undertaken as part of this analysis. Although rare, paleontological resources also may be located in areas where ground-disturbing activities would occur under the Proposed Project, and thus it is possible that Proposed Project activities could unearth and damage previously undiscovered paleontological resources.

An analysis of the types of activities to be undertaken and their potential impacts on cultural and paleontological resources is provided below. These or similar activities have been occurring on SCVWD-maintained canals and channels for many years. The 2002 SMP EIR provided a programmatic approach to reducing impacts to cultural resources to less-than-significant levels. Treatment measures proposed for the current SMP included pre-construction surveys and preparation of an Archaeological Survey Report, avoidance, monitoring, evaluation of finds, data recovery, and protocols for inadvertent discoveries.

Potential Effects of SMP Activities

Routine activities undertaken as part of the Proposed Project include bank stabilization, sediment removal, vegetation management, management of animal conflicts, minor maintenance, canal maintenance, and sediment reuse/disposal. These routine activities include varying degrees of ground-disturbing activities which may affect cultural resources. Ground-disturbing and construction activities could adversely affect previously documented or unknown potentially important cultural resources, resources determined to be historic properties, or paleontological resources. Certain activities proposed by the SCVWD do not have the potential to disturb native soils and therefore do not have the potential to impact historic properties. , Proposed Project activities have therefore been divided into two categories: (1) activities that will disturb native soils by excavation, construction, or sediment disposal; and (2) activities that will not disturb native soils.

The first category applies to maintenance activities required for bank stabilization, sediment removal, vegetation management, and minor maintenance which require the disturbance of native soils by excavation and/or construction. These include bank stabilization, culvert replacement, stream channel or canal access, channel or canal clearing, sediment removal, hazardous tree removal, and the reuse of sediments for habitat restoration. Where cultural resources are present in native soils, disturbance of these native soils has the potential to impact such resources.

The second category consists of activities such as those that are accomplished from the top of bank, those conducted in imported fill material, those involving the use of handheld equipment, or those involving other non-ground-disturbing activities (e.g., management of animal conflicts). These activities do not have the potential to disturb native soils and therefore would not impact cultural resources. These activities do not require any additional assessment.

Criteria for Determining Significance

Defining Significant Cultural Resources

A resource is considered a historical resource if it qualifies as eligible for listing in the CRHR, included in a local register of historical resources, determined by the lead agency to be historically significant, or meets the criteria found in PRC 5024.1 (g).

Properties that are eligible for listing in the CRHR must meet one or more of the following criteria:

- Criterion 1: Association with events that have made a significant contribution to the broad patterns of California's history and cultural heritage ;
- Criterion 2: Association with the lives of persons important in our past;
- Criterion 3: Embodying 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
- Criterion 4: Has yielded, or may be likely to yield, information important in prehistory or history.

The CRHR interprets the integrity of a cultural resource as its physical authenticity. An historic cultural resource must retain its historic character or appearance and thus be recognizable as an historic resource. Integrity is evaluated by examining the subject's location, design, setting, materials, workmanship, feeling, and association. If the subject has retained these qualities, it may be said to have integrity. It is possible that a cultural resource may not retain sufficient integrity to be listed in the NRHP yet still be eligible for listing in the CRHR. If a cultural resource retains the potential to convey significant historical/scientific data, it may be said to retain sufficient integrity for potential listing in the CRHR. Most significant Native American prehistoric sites are eligible because of their age, scientific potential, and/or burial remains. A historical resource also may be one that is included in a local register of historical resources, as defined in section 5020.1(k) of the PRC or identified as significant in a historical resource survey meeting the requirements of section 5024.1 (g) of the PRC. Objects, buildings, structures, sites, areas, place, record, or manuscripts can also be considered an historical resource if the lead agency determines that the resource is historically significant. The lead agency is tasked with providing substantial evidence for this determination generally following the criteria for listing on the CRHR

A resource can also be considered a historical resource if it is identified in a historical resource survey and listed on the CRHR if it meets four criteria. These include 1) the survey has been or will be included in the State Historic Resources Inventory; 2) the report and documentation are prepared by accepted standards; 3) the resource is evaluated and determine to have a significance rating of 1 to 5 on the DPR Form 523; and, 4) the survey is updated if more than 5 years old to determine if the present condition of the resource (PRC Section 5024.1[g]).

Thresholds of Significance

For the purposes of this analysis, the Proposed Project would result in a significant impact on cultural resources if it would:

A. cause a substantial adverse change in the significance of a historical or archaeological resource as defined in Section 15064.5;

B. directly or indirectly destroy a unique paleontological resource or site; or

C. disturb any human remains, including those interred outside of formal cemeteries.

Definitions of "historical resource," "archaeological resource," and "substantial adverse change", as used in the State CEQA Guidelines, are summarized below.

Historical Resource

Section 15064.5 of the State CEQA Guidelines defines "Historical resource" as:

- A resource listed in or determined to be eligible by the State Historical Resources Commission for listing in the CRHR (mandatory significance).
- A resource included in a local register of historical resources or identified as significant in an historical resource survey unless the preponderance of evidence suggests it is not significant (presumptive significance).
- In the absence of a federal, state, or local listing, if substantial evidence demonstrates its significance (discretionary significance). This includes any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California. Generally, a resource shall be historically significant if it:
  - — Is associated with events that made a significant contribution to the broad patterns of California's history and cultural heritage.
  - — Is associated with the lives of people important in our past.
  - — Embodies the distinctive characteristics of a type, period, region, or method of construction, represents the work of an important creative individual, or possesses high artistic values.
  - — Has yielded or may be likely to yield information important in prehistory or history.

Substantial Adverse Change

Section 15064.5 of the State CEQA Guidelines 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 would be materially impaired.
- Demolition or material alteration in an adverse manner of those physical characteristics of an historical resource which convey its historical significance and justify its inclusion in or eligibility for inclusion in the CRHR inclusion in a local register, or identification in a historical resources survey.

Environmental Impacts

Impact CR-1: Disturbance to Known and Previously Undiscovered Archaeological or Historic Resources (Significance Criterion A; Less than Significant)

Ground-disturbing maintenance activities conducted under the Proposed Project would have the potential to disturb known or previously undiscovered cultural resources within the Project Area. Archeological Survey Reports and recommendations have been performed for the current SMP since 2002, and they are used as a reference for proposed maintenance activities..

Sediment Removal and Bank Stabilization

Sediment removal and bank stabilization activities would involve ground disturbances of creek channels and banks in the Project Area, for implementation of the activities themselves and the potential construction of temporary access routes. Ground disturbances associated with these activities could adversely impact known or previously undiscovered important archaeological or historic resources. Project sediment removal or bank stabilization activities could result in alteration of the elements of these resources that made them eligible for the CRHR, or could result in a substantial change in the significance of a historical resource. The majority of these activities would be conducted in canals or modified or engineered channels; therefore, any undiscovered resources may have already been altered or destroyed during canal or channel construction or historic maintenance activities. Nevertheless, stream channels are areas that are considered highly sensitive for the presence of cultural resources, and although most work would not extend below as-built conditions, work conducted in native soils below the engineered channel could encounter previously undiscovered deposits.

Other Maintenance Activities

All other categories of maintenance (vegetation management, minor maintenance, management of animal conflicts, and canal maintenance) include ground-disturbing activities that could affect known or previously undiscovered archaeological or historic resources. Specifically, vegetation management activities include discing. Minor maintenance activities include minor sediment removal or grading. Management of animal conflicts could include physical alterations of habitat (ex., reconstruction of levee side slopes or surface compaction of levee faces). Because routine canal maintenance activities would include all general work activities, effects would be the same as described above for other routine maintenance activities. The effects of these other maintenance activities on known or unknown archaeological or historic resources would be similar to those described for sediment removal and bank stabilization activities.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP update to minimize the potential for disturbances to archaeological or historic resources. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-40: Discovery of Cultural Remains or Historic or Paleontological Artifacts
BMP GEN-41: Review of Projects with Native Soil

Conclusion

By implementing these BMPs, known cultural resources would be identified, flagged, and avoided, and procedures would be followed to minimize impacts on previously unknown archaeological or historic resources. This impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact CR-2: Discovery of Human Remains (Significance Criterion C; Less than Significant)

Ground-disturbing maintenance activities conducted under the Proposed Project would have the potential to unearth human remains, including Native American remains.

Sediment Removal/Bank Stabilization

As described above, sediment removal and bank stabilization activities would involve ground-disturbing activities. These activities could affect Native American remains. Native Americans consider the remains of their ancestors and the offerings buried with them to be sacred and wish to prevent the disturbance of interments. Any non-Native American remains would need to be considered as well.

Other Maintenance Activities

Other proposed maintenance activities (vegetation management, minor maintenance, management of animal conflicts, and canal maintenance) would, in some cases, also involve ground-disturbing activities that could potentially affect Native American remains.

Applicable Best Management Practices

The following BMP would be implemented as part of the SMP Update to appropriately respond to the discovery of human remains. A description of this BMP is provided in Chapter 2, *Project Description*.

BMP GEN-40: Discovery of Cultural Remains or Historic or Paleontological Artifacts

Conclusion

By implementing this BMP, any human remains would be dealt with in a respectful and appropriate manner. As a result, this impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact CR-3: Impacts to Sensitive Paleontological Resources as a Result of Maintenance Activities (Significance Criterion B; Less than Significant)

The Proposed Project could affect known or unknown paleontological resources during ground-disturbing or excavation activities.

Sediment Removal/Bank Stabilization

Because the majority of sediment removal and bank stabilization activities would be conducted in channels and canals that have been modified from their natural condition, they would not be expected to contain geologic material with a high likelihood of containing paleontological resources. As such, the discovery of paleontological resources during Proposed Project activities is extremely unlikely. However, activities that would result in excavation of native soils, such as bank stabilization, could uncover previously undiscovered paleontological resources.

Other Maintenance Activities

Other proposed maintenance activities (vegetation management, minor maintenance, management of animal conflicts, and canal maintenance) could involve ground-disturbing activities, including potential excavation of native soils. The potential effects of these activities on known or undiscovered paleontological resources would be similar to that described for sediment removal and bank stabilization activities.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to minimize the potential for impacts to sensitive paleontological resources. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-40: Discovery of Cultural Remains or Historic or Paleontological Artifacts
BMP GEN-41: Review of Projects with Native Soils

Conclusion

These BMPs would include stop-work and treatment measures in the event of a discovery of paleontological resources. As a result, this impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Chapter 3.5

GLOBAL CLIMATE CHANGE

3.5 Global Climate Change

3.5.1 Introduction

This section presents the regulatory setting, environmental setting, and potential impacts of the Proposed Project as related to climate change.

Data sources used in the preparation of this section include state and federal regulations and reference materials from the Bay Area Air Quality Management District (BAAQMD). Concepts and terminology that are in Section 3.2, *Air Quality* also are applicable in this section. This discussion analyzes air quality impacts over the entire duration of the existing SMP and proposed SMP Update.

3.5.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

Climate change and GHG reduction also are a concern at the federal level; however, at this time, no legislation or regulations have been enacted specifically addressing GHG emissions reductions and climate change.

State Plans, Policies, Regulations, and Laws

Assembly Bill 1493

In 2002, Assembly Bill 1493 (AB 1493) launched an innovative and pro-active approach to dealing with greenhouse gas (GHG) emissions and climate change at the state level. AB 1493 requires that the California Air Resources Board (CARB) develop and implement regulations to reduce automobile and light truck GHG emissions; these regulations apply to automobiles and light trucks beginning with the 2009 model year.

Executive Orders S-3-05 and S-20-06/Global Warming Solutions Act—Assembly Bill 32

AB 1493 cited several potential risks that California faces from climate change, including reduction in the state's water supply, increased air pollution created by higher temperatures, harm to agriculture, increase in wildfires, floods, damage to the coastline, and economic losses caused by higher food, water, energy, and insurance prices.

On June 1, 2005, former Governor Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: (1) 2000 levels by 2010; (2) 1990 levels by 2020; and (3) 80 percent below the 1990 levels by 2050. In 2006, this goal was further reinforced with the passage of AB 32, the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals as the Governor's Executive Order, while further mandating that CARB create a plan (including market mechanisms), and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the State's Climate Action

Team. No later than January 1, 2012, CARB must adopt rules and regulations to implement GHG emissions reductions.

Senate Bill 97 and CEQA

In 2007, Senate Bill 97 (SB 97) was adopted to provide greater certainty to lead agencies that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. Pursuant to SB 97, the California Natural Resources Agency adopted amendments to the State CEQA Guidelines to address analysis and mitigation of the potential effects of GHG emissions in CEQA documents and processes. These amendments became effective on March 18, 2010. Topics of the amendments include but are not limited to (California Natural Resources Agency 2010):

- requiring a lead agency to make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate, or estimate the amount of greenhouse gas emissions resulting from a project;

- requiring a lead agency to consider the project's effect on GHG emissions in comparison to the existing setting, an exceedance of a significance threshold by the project, and the extent to which the project complies with adopted regulations or requirements among others, when assessing the significance of impacts from greenhouse gas emissions on the environment;

- identifying types of suitable/applicable mitigation measures for GHG emissions; and

- allowing project-specific environmental documents to tier from and/or incorporate by reference any existing programmatic review of GHG emissions, such as in a general plan, a long range development plan, or a separate plan to reduce GHG emissions.

Actions Taken by California Attorney General's Office

The California Attorney General (AG) has filed comment letters under CEQA about a number of proposed projects. The AG also has filed several complaints and obtained settlement agreements for CEQA documents covering general plans and individual programs that the AG found either failed to analyze GHG emissions or failed to provide adequate GHG mitigation. The AG's office has prepared a report that lists measures that local agencies must consider under CEQA to offset or reduce global warming impacts. Information on the AG's actions can be found on the State of California Department of Justice, Office of the Attorney General's Web site (California Department of Justice 2008).

Regional and Local Plans, Policies, Regulations, and Ordinances

CARB has designated 15 air basins in the state. Thirty-five local air quality management districts are responsible for attainment and permitting in each basin and subbasin area. Santa Clara County is located in the San Francisco Bay Area Air Basin. The BAAQMD oversees planning and permitting in the nine-county Bay Area, including Santa Clara County.

Bay Area 2010 Clean Air Plan

The BAAQMD adopted a new clean air plan, the Bay Area 2010 Clean Air Plan, in September 2010. The purposes of the plan are to: provide a control strategy to reduce greenhouse gases in a single, integrated plan; review progress in improving air quality in recent years; and establish emission control measures to be adopted or implemented in the 2010–2012 timeframe (BAAQMD 2011).

BAAQMD CEQA Air Quality Guidelines/ Significance Thresholds

The BAAQMD published CEQA guidelines to aid assessment of air quality impacts in 2011 (BAAQMD 2011). The guidelines address evaluating air quality impacts and their significance, and developing mitigation measures for significant impacts. The guidelines focus on criteria air pollutant, GHG, toxic air contaminant, and odor emissions generated from plans or projects. Table 3.5-1 provides the guidelines-recommended significance criteria for analysis of project-related GHG impacts. Based on discussions with the BAAQMD, the BAAQMD's operational CEQA significance thresholds are most appropriate for the Proposed Project (Michael, pers. comm., 2010).

Table 3.5-1. Applicable BAAQMD CEQA Thresholds of Significance for Greenhouse Gases

Pollutant	Operational Significance Thresholds
GHGs—projects other than stationary sources	a) Compliance with qualified GHG reduction strategy **OR** b) 1,100 metric tons (MT) of carbon dioxide equivalent (CO_2e) per year **OR** c) 4.6 MT CO_2e/service population (residents and employees) per year

Source: BAAQMD 2011

3.5.3 Environmental Setting

This section discusses greenhouse gases and anticipated climate change conditions in the Project Area.

Greenhouse Gases and Climate Change

Anthropogenic emissions of greenhouse gases are widely accepted in the scientific community as contributing to global warming. According to *Climate Change 2007: The Physical Science Basis: Summary for Policymakers* (Intergovernmental Panel on Climate Change [IPCC] 2007), there is no doubt that the climate system is warming. Global average air and ocean temperatures, as well as global average sea level, are rising. The period from 1995 through 2006 ranked as among the warmest on record since 1850. Although some of the increase is explained by natural occurrences, the 2007 report asserts that the increase in temperature is very likely (greater than 90 percent) caused by human activity, most notably the burning of fossil fuels.

For California, similar effects are described in *Our Changing Climate: Assessing the Risks to California* (California Climate Change Center 2006). Based on projections using state of the art climate modeling, temperatures in California are expected to rise between 3°F and 10.5°F (1.7°C and 5.8°C) by the end of the century, depending on how much California and the rest of the globe are able to reduce their GHG emissions. The report states that these temperature increases will negatively impact public health, water supply, agriculture, plant and animal species, and the coastline.

Climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants (such as ozone precursors) and toxic air contaminants, which are pollutants of regional and local concern. Worldwide, California is the 12th to 16th largest emitter of CO_2 (California Energy Commission 2006), and is responsible for approximately 2 percent of the world's CO_2 emissions (California Energy Commission 2006).

The IPCC was commissioned by the World Meteorological Organization and United Nations Environment Program to assess scientific, technical, and socio-economic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC predicts that substantial increases in temperatures globally may affect the natural environment in California in the following ways:

- rising sea levels along the California coastline, particularly in San Francisco and the San Joaquin Delta caused by ocean expansion;
- extreme-heat conditions, such as heat waves and very high temperatures, which could last longer and become more frequent;
- an increase in heat-related human deaths, infectious diseases, and a higher risk of respiratory problems caused by deteriorating air quality;
- reduced snow pack and stream flow in the Sierra Nevada, affecting winter recreation and water supplies;
- potential increase in the severity of winter storms, affecting peak stream flows and flooding;
- changes in growing season conditions that may affect California agriculture, causing variations in crop quality and yield; and/or
- changes in distribution of plant and wildlife species because of changes in temperature, competition from colonizing species, changes in hydrologic cycles, changes in sea levels, and other climate-related effects.

These changes in California's climate and ecosystems are occurring at a time when California's population is expected to increase from 34 million to 59 million by 2040 (California Energy Commission 2006). Therefore, the number of people potentially affected by climate change as well as the amount of anthropogenic GHG emissions anticipated under a "business as usual" scenario is expected to increase. Similar changes as those noted above for California also are expected occur in other parts of the world, with regional variations in resources affected and vulnerability to adverse effects.

GHG emissions in California are attributable to human activities associated with industrial/manufacturing, utilities, transportation, residential, and agricultural sectors (California Energy Commission 2006) as well as natural processes. Transportation is responsible for 41 percent of the state's GHG emissions, followed by the industrial sector (23 percent), electricity generation (20 percent), agriculture and forestry (8 percent) and other sources (8 percent) (California Energy Commission 2006). Emissions of CO_2 and N_2O are byproducts of fossil fuel combustion, among other sources. Methane, a highly potent GHG, results from off-gassing associated with agricultural practices and landfills, among other sources. Sinks of CO_2 include uptake by vegetation and dissolution into the ocean.

3.5.4 Impact Analysis

Methodology

Although SMP Update activities would be countywide, transitory, and short term, similar to construction activities, they would serve the purpose of maintaining existing features rather than constructing new features. Therefore, as discussed above, the BAAQMD has indicated that emissions resulting from SMP Update activities would be considered to be operational emissions for the purposes of estimating air quality impacts. Air emissions from SMP Update activities were estimated for three sources: off-road vehicles, on-road vehicles, and pesticide use. Off-road vehicle emissions were estimated using equipment data and CARB's OFFROAD 2007 model. On-road vehicle emissions were estimated using vehicle miles traveled (see Section 3.12, *Traffic and Transportation*) and CARB's EMFAC 2007 model. The GHG emissions from pesticide use under the Proposed Project would be extremely small in the context of the overall Proposed Project emissions. Therefore, they were not included in the emissions calculations and are not anticipated to result in any material change in the magnitude of the impact.

The BAAQMD CEQA Guidelines provide the thresholds of significance for GHG emissions based on carbon dioxide equivalents (CO_2e), which consists of emissions of carbon dioxide, methane (CH_4), nitrous oxide (N_2O) and hydrofluorocarbons (HFC). The EMFAC 2007 and OFFROAD 2007 models estimate only carbon dioxide (CO_2) emissions. The U.S. Environmental Protection Agency estimates that, on average, CH_4, N_2O, and HFC constitute 5 percent of GHG emissions from automobiles and CO_2 constitutes the remaining 95 percent (USEPA 2010). Using this assumption, CO_2e emissions were estimated based on modeled CO_2 emissions.

Criteria for Determining Significance

For the purposes of this analysis, the Proposed Project would result in a significant impact on global climate change if it would:

A. generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or

B. conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

Note that emissions associated with the Proposed Project were estimated for the various maintenance activities as a whole; for this reason, the impact discussion in this section is not broken down by the individual activities.

Environmental Impacts

Impact GCC-1: Temporary Increase in Greenhouse Gases during Maintenance Activities (Significance Criteria A, B; Less than Significant with Mitigation or Significant and Unavoidable)

Use of vehicles and equipment for Proposed Project maintenance activities would require fossil fuel combustion that would generate GHG emissions.

This analysis considers emissions from both existing SMP activities (conducted pursuant to the 2002 SMP EIR) and additional emissions resulting from implementation of the Proposed Project (SMP update from 2012 to 2022). The existing SMP allows the majority of maintenance activities to be conducted between June 15 and October 15, although some activities occur year-round. The Proposed Project would extend the period when maintenance activities could be conducted (for those not occurring year-round), from October 15 to December 31.

Table 3.5-2 summarizes average daily CO2e operational emissions for 2012 and 2020. For additional information on how emissions were estimated refer to Appendix E. Daily CO2e emissions would decrease between 2012 and 2020, primarily because the California Air Resources Board's Low Carbon Fuel Standard (LCFS) is expected to reduce CO2e emissions from vehicles by a total of 7.2 percent by 2020. CO2e emissions reductions from LCFS would occur through SCVWD's tiered vehicle replacement program.

Table 3.5-2. 2012 and 2020 Average Daily CO_2e Emissions

Emissions Source	2012 Estimate (pounds per day)	2020 Estimate pounds per day
Off-Road	48,565.7	41,824.0
On-Road	16,042.9	15,041.0
Pesticide Use	-	-
Total	*64,608.6*	*56,865.0*
BAAQMD Threshold	None	

Note: Daily vehicle trips and vehicle miles traveled would remain the same in the SMP Update as in the existing SMP.
Source: Data compiled by Horizon Water and Environment in 2011

Table 3.5-3 shows the Proposed Project's estimated annual CO_2e emissions. For additional information on how emissions were estimated refer to Appendix E. Annual emissions from the SMP Update would increase because of the extended work window, during which an additional 25 percent of work is estimated to be completed. This increase would be offset somewhat by a 7.2 percent emissions decrease, associated with the LCFS.

Table 3.5-3. 2012 and 2020 Annual CO_2e Emissions

Emissions Source	2012 Estimate (metric tons per year)	2020 Estimate (metric tons per year)
Existing SMP		
Off-Road	1,873.0	1,613.0
On-Road	1,892.5	1,774.3
Pesticide Use	-	-
Total	*3,765.5*	*3,387.3*
Additional Emissions under the SMP Update (2012-2022)		
Off-Road	468.2	403.2
On-Road	129.4	126.7
Pesticide Use	-	-
Total	*597.7*	*529.9*
Total SMP		
Off-Road	2,341.2	2,016.2
On-Road	2,022.0	1,901.0
Pesticide Use	-	-
Total	*4,363.2*	*3,917.3*
BAAQMD threshold	**1,100**	

Source: Data compiled by Horizon Water and Environment in 2011

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update, which would reduce GHG emissions during maintenance activities, although the exact extent cannot be quantified. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-29: Dust Management

Conclusion

Table 3.5-3 shows that annual emissions of GHGs from the SMP Update would be greater than BAAQMD operational significance thresholds. GHG emissions in exceedance of BAAQMD significance thresholds would be considered a potentially significant impact. The District would implement Mitigation Measure AIR-1A, which would reduce NOx emissions by 20 percent, and also may reduce other GHG emissions. Although possible, this measure is not expected to reduce GHG emissions below the threshold. Therefore, this impact would remain significant after this mitigation.

Therefore, the District would implement either Mitigation Measure GCC-1A or GCC-1B, or a combination of both measures, to offset annual GHG emissions in exceedance of BAAQMD significance thresholds. Implementation of either Mitigation Measure GCC-1A or GCC-1B, or a combination of both measures, would reduce this impact to a less-than-significant level. However, it is possible that these mitigation measures may not be feasible because of the factors discussed below. If the District found these mitigation measures to be infeasible, then this impact would be considered significant and unavoidable.

Mitigation Measures: GCC-1A On-site or Off-site GHG Emissions Mitigation Program

In recent years, SCVWD has reduced its GHG emissions on several projects, including production of energy from SCVWD-owned renewable sources. As a result, SCVWD has GHG emissions credits that have not been previously applied as reductions/offsets for GHG emissions. SCVWD also may establish a new program to implement off-site GHG emissions reduction projects within the SFBAAB to obtain the new emissions credits. SCVWD will use existing or new emissions credits to reduce/offset GHG emissions from the SMP in exceedance of BAAQMD operational significance thresholds.

The total credits will be equal to the average emissions above the threshold over the lifetime of the SMP Update, or 30,402 metric tons (the average exceedance between the 2012 and 2020 estimated emissions, multiplied by 10 years), as adjusted based on the emissions reductions achieved by Mitigation Measure AIR-1A. The GHG emission reductions credits/projects will be from sources of emissions that are not required by any existing law to reduce their GHG emissions. Offsetting annual emissions inherently includes offsetting daily emissions. Therefore, no additional reductions/offsets will be required for daily GHG emissions. Documentation of any existing or new GHG reductions/offsets will be provided to the BAAQMD. In addition, any existing or new SCVWD GHG offset credits accounted for under this mitigation measure will be verified by the Climate Action Reserve so that the offsets are real, permanent, and verifiable.

This mitigation measure may not be feasible, based on costs, logistics, or other factors. Regarding logistics, whether the District could develop a new on-site or off-site mitigation program to effectively reduce emissions to less-than-significant levels in a timely manner is uncertain.

Mitigation Measures: GCC-1B: GHG Emissions Offsets

As an alternative to Mitigation Measure GCC-1A, or if SCVWD does not have sufficient GHG credits, SCVWD may purchase additional GHG emissions credits. The total credits will be equal to the average emissions above the threshold over the lifetime of the SMP Update, or 30,402 metric tons, as adjusted based on the emissions reductions achieved by Mitigation Measure AIR-1A.

For purchased credits, SCVWD will open a Climate Action reserve account or engage a private broker to facilitate the purchase of carbon offset credits from a voluntary market. Carbon offset credits purchased by SCVWD will be banked by the Climate Action Reserve, so that carbon offset credits purchased are real, permanent, and verifiable. Carbon offset credits will be measured in metric tons of CO_2e. Documentation of existing and/or purchased GHG offsets will be provided to the BAAQMD.

This mitigation measure may not be feasible, based on costs or other factors.

Chapter 3.6

HAZARDS AND HAZARDOUS MATERIALS

3.6 Hazards and Hazardous Materials

3.6.1 Introduction

This section presents the regulatory setting, environmental setting, and potential impacts of the Proposed Project related to hazards and hazardous materials. Proposed Project activities may involve the use of hazardous materials (such as those used for maintenance equipment), could involve work within areas of existing contamination, or could have impacts related to other types of hazards such as wildfires, mosquitoes, emergency response, and pesticide use. Data resources used in the preparation of this section included the California Department of Forestry and Fire Protection's fire hazard maps, the State Water Resources Control Board's (SWRCB) Geotracker, and the California Department of Toxic Substances Control's (DTSC) EnviroStor database.

3.6.2 Regulatory Setting

Numerous laws and regulations govern the use of, or work near, hazardous materials. Other laws and regulations govern other potential hazards. Each relevant law and regulation is described briefly below.

Federal Plans, Policies, Regulations, and Laws

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, also called the Superfund Act) (42 U.S. Government Code [USC] Sec. 9601 et seq.) is intended to protect the public and the environment from the effects of past hazardous waste disposal activities and new hazardous material spills. Under CERCLA, the U.S. Environmental Protection Agency (USEPA) has the authority to seek the parties responsible for hazardous materials releases and to assure their cooperation in site remediation. CERCLA also provides federal funding (the "Superfund") for the remediation of hazardous materials contamination. The Superfund Amendments and Reauthorization Act of 1986 (Public Law 99-499) amends some provisions of CERCLA and provides for a Community Right-to-Know program.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) (42 USC Sec. 6901 et seq.) was enacted in 1976 as an amendment to the Solid Waste Disposal Act to address the nationwide generation of municipal and industrial solid waste. RCRA gives USEPA the authority to control the generation, transportation, treatment, storage, and disposal of hazardous waste, including underground storage tanks storing hazardous substances. RCRA also establishes a framework for the management of nonhazardous wastes. RCRA addresses only active and future facilities; it does not address abandoned or historical sites, which are covered by CERCLA (see preceding discussion).

Federal Insecticide, Fungicide, and Rodenticide Act

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 USC 136 et seq.) was enacted 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 review and registration process for new pesticide products, and provide thorough and understandable labeling that includes instructions for safe use.

State Plans, Policies, Regulations, and Laws

California state regulations, which are equal to or more stringent than federal regulations, require those handling hazardous wastes to plan for and manage waste to handle, store, and dispose them properly, to reduce risks to human health and the environment. Several key state laws pertaining to hazardous wastes are discussed next.

Hazardous Waste Control Act

The Hazardous Waste Control Act of 1972 created the state's Hazardous Waste Management Program, which is similar to but more stringent than the federal program under RCRA. The Hazardous Waste Control Act is implemented at the state-level by regulations contained in Title 26 of the CCR. Regulations in 26 CCR list more than 800 materials that may be hazardous and establish criteria for their identification, packaging, and disposal. Under the Hazardous Waste Control Act and 26 CCR, hazardous waste generators must complete a manifest that accompanies the waste from the generator to the transporter to the ultimate disposal location. Copies of the manifest must be filed with DTSC.

Department of Pesticide Regulation

USEPA has delegated primary authority to the California Department of Pesticide Regulation (CDPR) to enforce federal and state laws pertaining to the proper and safe use of pesticides (CDPR 2009a). However, County Agricultural Commissioners (CAC) and their staffs are largely responsible for the in-field enforcement of CDPR's pesticide use regulations in California's 58 counties. Personnel from CDPR's headquarters and CDPR field staff provide training, coordination, technical, and legal support to the counties (CDPR 2009a).

Title 3-Food and Agriculture, Division 6. Pesticides and Pest Control Operations in the California Code of Regulations describes the role of CDPR and provides guidance related to: pesticide regulatory programs; pesticides (including pesticide registration and the identification and use of restricted materials); licensing, work requirements, and pesticide-related worker safety during pest control operations; and environmental protection for groundwater, air quality, aquatic and marine environments, surface water, and compost (CDPR 2009b). CACs, on behalf of CDPR, are responsible for the in-field enforcement of these various human health and environmental protections from pesticides.

General NPDES Aquatic Pesticide Use Permit

The SWRCB has adopted a general National Pollutant Discharge Elimination System (NPDES) permit (Water Quality Order No. 2004-0009-DWQ, General Permit No. CAG990005) for the regulation of aquatic pesticides to control aquatic weeds in waters of the United States (SWRCB 2006). "Waters of the United States" includes all waters currently used, used in the past, or susceptible to use in interstate commerce; all interstate waters; all other waters the use, degradation, or destruction of which would or could affect interstate or foreign commerce; impoundments of and tributaries to waters of the United States and wetlands adjacent to waters of the United States; and flood protection channels that exchange water with waters of the United States (SWRCB 2006). This General NPDES permit only authorizes the discharge of the following aquatic pesticides: 2,4-D, acrolein, copper, diquat, endothall, fluridone, glyphosate, imazapyr, sodium carbonate peroxyhydrate, and triclopyr-based aquatic pesticides. Aquatic pesticides that are applied to waters of the United States in accordance with FIFRA label requirements are not considered pollutants. However, pesticides or by-products that persist in or leave the treatment area after a specified treatment period are considered pollutants and require coverage under this General Permit.

To obtain coverage under the General NPDES permit, a discharger must comply with all of the monitoring, reporting, and other restrictions detailed in the permit. First, an applicant must submit a Notice of Intent, a vicinity map, and an annual fee to the applicable Regional Water Quality Control Board (RWQCB) to apply for coverage under the permit. An applicant must comply with the specific monitoring requirements identified in the permit and must submit annual reports (at the least) to the applicable RWQCB. The General NPDES permit for weed control requires that dischargers comply with effluent limitations, including developing and implementing an Aquatic Pesticide Application Plan, and complying with applicable receiving water limitations (SWRCB 2006). A discharger covered by the permit must follow all pesticide label instructions and any terms contained in Use Permits issued by CACs. In addition, applicators of a pesticide designated as a restricted material must either be licensed by CDPR or must work under the supervision of a licensed professional (SWRCB 2006). All aquatic pesticides applied by SCVWD under the General NPDES permit are done so in accordance with the permit requirements.

Emergency Services Act

Under the Emergency Services Act, the State of California 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. This office coordinates the responses of other agencies, including USEPA, the California Highway Patrol, the nine RWQCBs, the various air quality management districts, and county disaster response offices.

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.

Regional and Local Plans, Policies, Regulations, and Ordinances

Some local agencies also have regulations related to hazards and hazardous materials.

Santa Clara County Agricultural Commissioner

The Santa Clara CAC directs the enforcement programs of the Santa Clara County Division of Agriculture. One of the enforcement programs regulates the use, storage, and disposal of all pesticides used in Santa Clara County (County of Santa Clara 2010a). The CAC investigates pesticide-related illnesses and complaints, strictly enforces regulations protecting workers who handle pesticides, samples produce for pesticide residues, and oversees all pesticide applications made to any crop in Santa Clara County. For SMP-related activities, the CAC requires that (County of Santa Clara 2010a):

- all employees that handle pesticides complete written training on specific topics listed in Title 3 California Code of Regulations, Section 6724 on an annual basis;
- all pest control companies that apply pesticides for hire must file a monthly use report with each county in which they perform work;
- all pest control advisors, pilots, and pest control businesses performing work in Santa Clara County must register with the CAC office before performing work; and
- a restricted materials permit or an operator number must be received from the CAC office before the use of pesticides on crops or by any professional pest control company.

SCVWD is considered equivalent to a pest control company for the purposes of the CAC regulation and submits monthly reports to the CAC as part of their SCVWD-wide vegetation management program. The application of pesticides as part of the SMP is included in these monthly reports.

Santa Clara County Burn Permit and Other Local Authorizations

The Santa Clara County Office of the Fire Marshal is responsible for fire prevention activities in unincorporated areas of the county. One of its duties is to regulate controlled burns on properties within the Santa Clara County Wildland Urban Interface Fire Area. The primary purpose of a burn permit is to assure that burning operations are conducted safely. Burn permits are issued for the purpose of disposing waste vegetation for agricultural waste, pest or disease control, and for defensible space clearance. The County Fire Marshal prohibits all other open burning. The permitted burn season is generally between November and May. For properties not located within the County Fire Marshal's jurisdiction, controlled burns are handled by local fire departments (County of Santa Clara Office of the Fire Marshal 2010).

3.6.3 Environmental Setting

This section presents an overview of hazards in the Project Area, including: (1) the potential types and locations of existing hazardous materials contamination in the county; (2) transportation routes, emergency response, and related considerations for routing of SMP Update vehicles; and (3) other types of hazards that could affect or be affected by the SMP Update, such as wildland fires and mosquito infestation.

Hazardous Waste Generating Sites

Numerous hazardous materials are found in Santa Clara County. During fiscal years (FY) 2008–2009 (July 2008 through June 2009), hazardous waste was produced from 3,693 generators throughout the county, excluding generators located in Gilroy, Santa Clara, and Sunnyvale that were regulated by each of those cities (Baker, pers. comm., 2010). Of this total number of generators, 112 were large RCRA-quantity generators or generators of large quantities of federally-regulated hazardous waste (Baker, pers. comm., 2010). Generally, the number of hazardous waste generators has increased over time though the types of generators have changed from primarily manufacturing industries to primarily service-type businesses and industries (e.g. dry cleaners, auto repairs) (Baker, pers. comm., 2010). Business and industrial generators include automotive and transportation industries, which store and use petroleum fuels, chlorinated solvents, and paints for repairs; manufacturing industries that use solvents, paints, metals, compressed gases, and cleaning agents; and the agricultural industry, which uses pesticides and fertilizers.

Maintenance activities proposed under the SMP Update would involve the handling and application of pesticides and hazardous materials associated with automobiles and other motorized equipment (petroleum fuels and lubricants). However, in compliance with Title 8 of the Cal/OSHA regulations, all maintenance workers would be subject to monitoring and personal safety equipment requirements. Adhering to these regulations would also reduce potential hazards to non-construction workers and Project Area occupants because of required site monitoring and reporting, and other required controls. Proposed Project workers who were in direct contact with soil or groundwater that contained hazardous levels of constituents would perform all activities in accordance with a site-specific hazardous operations health and safety plan, as outlined in Cal/OSHA standards.

Emergency Response

Hazardous materials emergency response is the responsibility of the Santa Clara County Department of Environmental Health (DEH), with the assistance of five participating agencies. In addition, hazardous materials emergency response also is provided by the City of Gilroy's Department of Building, Life, and Environmental Safety; Santa Clara City Fire Department; and the City of Sunnyvale's Department of Public Safety Fire Services Bureau; within their respective jurisdictions. Five participating agencies (the Santa Clara County, Milpitas, San Jose, Mountain View, and Palo Alto fire departments) assist and coordinate their activities with the Santa Clara County DEH (Unidocs 2009). These hazardous materials response teams are trained to respond to any level of hazardous materials incident in the county including overturned tank trucks, fires involving hazardous materials and chemicals, incidents involving radioactive materials, downed electrical lines and ruptured natural gas

lines, chlorine and toxic gas releases, fuel spills, and explosives and bombs. The SCVWD coordinates with emergency response providers, as needed, during its routine maintenance activities. Furthermore, the SCVWD has its own HAZMAT Team that responds to numerous types of hazardous emergencies and/or clean-ups.

Transportation Routes

SCVWD transports its hazardous wastes through the county by truck, primarily along major arterials and highways, for disposal at treatment, storage, and disposal facilities in other counties or outside of California. County roads and city streets may be used to transport hazardous wastes from their sources to major highways. Haulers are required to use the most direct, safe route.

Contaminated Sites and Brownfields

Brownfields are properties that have a potential for redevelopment or reuse but, because of actual or suspected contamination, are vacant. Former auto-wrecking yards, gas stations, computer-electronics industry sites with chlorinated solvent discharges, and lumber mills are examples of Brownfields found in Santa Clara County. The SWRCB and its nine RWQCBs regulate Brownfield sites.

According to the SWRCB's GeoTracker database (SWRCB 2010), 3,707 known sites located in Santa Clara County have been contaminated with hazardous waste. Of these, 2,420 sites have been remediated and are considered closed. The remaining 1,287 sites are open (i.e., still active) and either being remediated or remain in need of remediation. Remediated sites could contribute to legacy sources of contamination at SMP Update maintenance reaches; similarly, active sites have the potential to result in active sources of contamination at proposed maintenance locations.

Underground Storage Tanks and Other Hazardous Spills

Underground storage tanks are common throughout Santa Clara County. They are most often used for the storage of gasoline and diesel fuels, while also used for the storage of new and used motor oil, solvents, and chemicals. Leaking underground fuel tanks (LUFTs), mainly those containing petroleum, are the leading cause of soil and groundwater contamination in the county. LUFTs primarily occur in the urbanized areas of the county. Contaminated sites are tracked in the SWRCB's GeoTracker database. According to GeoTracker, 323 open LUFT sites are in Santa Clara County (SWRCB 2010). A total 2,304 closed or remediated LUFT sites exist in Santa Clara County. LUFTs have the potential to cause contamination at SMP Update maintenance locations, in a similar manner as those described above under *Contaminated Sites and Brownfields*.

Maintenance activities associated with the Proposed Project would vary in location and extent from year to year. In addition, the location and extent of contamination sites would vary from year to year, as old sites were cleaned up and new sites were identified. Current locations of contaminated sites are contained in the Geotracker database. All those within 1,500 feet of a stream that could potentially be maintained under the Proposed Project are shown on Figure 3.6-1.

Hazardous Waste Disposal Sites

Although some hazardous waste facilities collect household hazardous waste in Santa Clara County, no certified hazardous waste disposal facilities exist in the county that can accept and dispose contaminated sediments (DTSC 2007a). Thus, contaminated sediments would need to be disposed at hazardous waste landfills outside of the county. Three hazardous waste disposal sites are located in California: the Chemical Waste Management Inc. Kettleman Hills facility (Kettleman Hills); the Clean Harbors Buttonwillow facility (Buttonwillow); and the Clean Harbors Westmorland facilities (Westmorland). These facilities are capable of treating, storing, and/or disposing virtually all solid, semi-solid, and liquid hazardous, extremely hazardous, and non-hazardous wastes, including contaminated sediments (DTSC 2007b, 2008, 2010).

The Kettleman Hills hazardous landfill (B-18) has a capacity of approximately 10.7 million cubic yards (DTSC 2010) but can only accept very small quantities of hazardous waste (Brady, pers. comm., 2011) because it has nearly reached capacity. Buttonwillow, located west of Bakersfield, is a fully permitted hazardous waste facility that is permitted to receive, store, treat and landfill a variety of hazardous and non-hazardous waste streams (Clean Harbors 2010a). The permitted capacity of the Buttonwillow landfill is 13,325,000 cubic yards, and the current constructed landfill capacity is 950,000 cubic yards (Clean Harbors 2010a, DTSC 2008). That facility is capable of accepting large quantities of waste, including the amounts potentially to be generated by the Proposed Project (Winwood, pers. comm., 2011). The Westmorland facility, located near the Salton Sea, has a design capacity of 5 million cubic yards (Clean Harbors 2010b). Disposal at any of these facilities would be dependent on the characteristics of material to be disposed, the available capacity at the facility, and the transportation distance. Sediment classified as hazardous that is excavated as part of SMP Update activities would likely be disposed at Buttonwillow because it has sufficient capacity and is the second closest facility (after Kettleman Hills) to Santa Clara County.

Wildland Fire Hazards

The primary fire season in the Project Area extends from late summer through fall, when conditions are driest and air temperatures are high. Fire hazards in Santa Clara County are influenced by topography and wind patterns. The terrain of the Santa Clara Valley results in prevailing winds that flow roughly parallel to the Valley's northwest-southeast axis. According to the Wildland Fire Threat Area maps produced by the California Department of Forestry and Fire Protection (Figures 3.6-2 and 3.6-3), the wildfire threat is most extreme at the highest elevations, while the fire threat is the least in the lowest elevations of the county (California Department of Forestry and Fire Protection 2007). The State of California has responsibility for the control of wildland fire hazards in the Diablo Range and the Santa Cruz Mountains of the county (Figure 3.6-2), while the local responsibility areas (LRAs) are located in the lower elevation and more urbanized areas (Figure 3.6-3). The Santa Clara County Office of the Fire Marshal manages fire hazards in unincorporated areas of the county. Their Wildland Urban Interface Area maps, based on the Department of Forestry and Fire Protection maps, identify unincorporated county areas prone to wildland fires.

In the Project Area, very high fire hazard areas in LRAs occur east of the municipalities of Saratoga, Los Gatos, and Morgan Hill, and in a few unincorporated areas of the county (Figure 3.6-3). As shown in Figures 3.6-2 and 3.6-3, upper tributaries of Stevens, Los Gatos, Llagas, and Uvas creeks are within high and very high fire hazard areas. An emerging cause for concern would be fires started by mowing and use of power equipment (such as those used under the existing SMP) around very dry vegetation.

The County Fire Marshal would regulate flaming activities undertaken by SCVWD as part of the Proposed Project, in all of the cities within the Project Area except for the cities of Gilroy, Milpitas, Mountain View, Palo Alto, San Jose, Santa Clara, and Sunnyvale. Before undertaking any flaming activities, SCVWD would obtain a permit and/or authorization from the County Fire Marshal and the fire marshals of the seven cities listed above that provide their own fire protection. As part of the permit and authorization process, SCVWD would provide details on the type of flaming device, proposed flaming locations, the timing of any flaming activities, and the fire prevention measures that would be implemented.

Pesticide Use by the Santa Clara Valley Water District

As part of its implementation of the existing SMP, one method SCVWD has used to control vegetation along maintained creeks has been the application of pesticides. SCVWD has applied pesticides in accordance with the current SMP Manual, and with federal and state regulations and permits. Pesticide use is reported monthly to the CAC. During FY 2007–2009[1], the most recent years for which data is available, pesticides were applied to the Guadalupe River and Adobe, Alamitos, Barron, Berryessa, Calabazas, Canoas, Coyote, Hale, Heney, Llagas, Los Gatos, Matadero, Penitencia, Regnart, Rodeo, San Francisquito, Saratoga, Stevens, and Uvas creeks. Table 3.6-1 shows the various types of pesticides applied under the existing SMP and the type of vegetation targeted by that pesticide. Table 3.6-2 lists the types and quantities of pesticides applied under the existing SMP during FY 2007–2009.

Mosquito Abatement

The Santa Clara County Vector Control District (SCCVCD) manages vector control in Santa Clara County. The SCCVCD manages vectors such as rats, arthropods, mosquitoes, ticks, and yellow jackets, to control the spread of vector-borne diseases including West Nile virus, Lyme disease, rabies, and plague (SCCVCD 2010). The SCCVCD uses a variety of methods to control vectors, including stocking ponded areas with mosquito fish and the application of insecticides. Larval and adult mosquito surveys are conducted to monitor the spread of vector-borne diseases.

Under the California Health and Safety Code, mosquito abatement districts are empowered to take all necessary and proper steps for the elimination and extermination of mosquitoes. SCCVCD personnel make routine inspections of mosquito sources, such as ditches, channels, lagoons, drain lines, marsh areas, creeks, lakes, flood protection basins, utility vaults, catch basins, and fish ponds. If mosquito production is found, they take action to control or eliminate the problem.

[1] The District's fiscal year extends from July 1 through June 30.

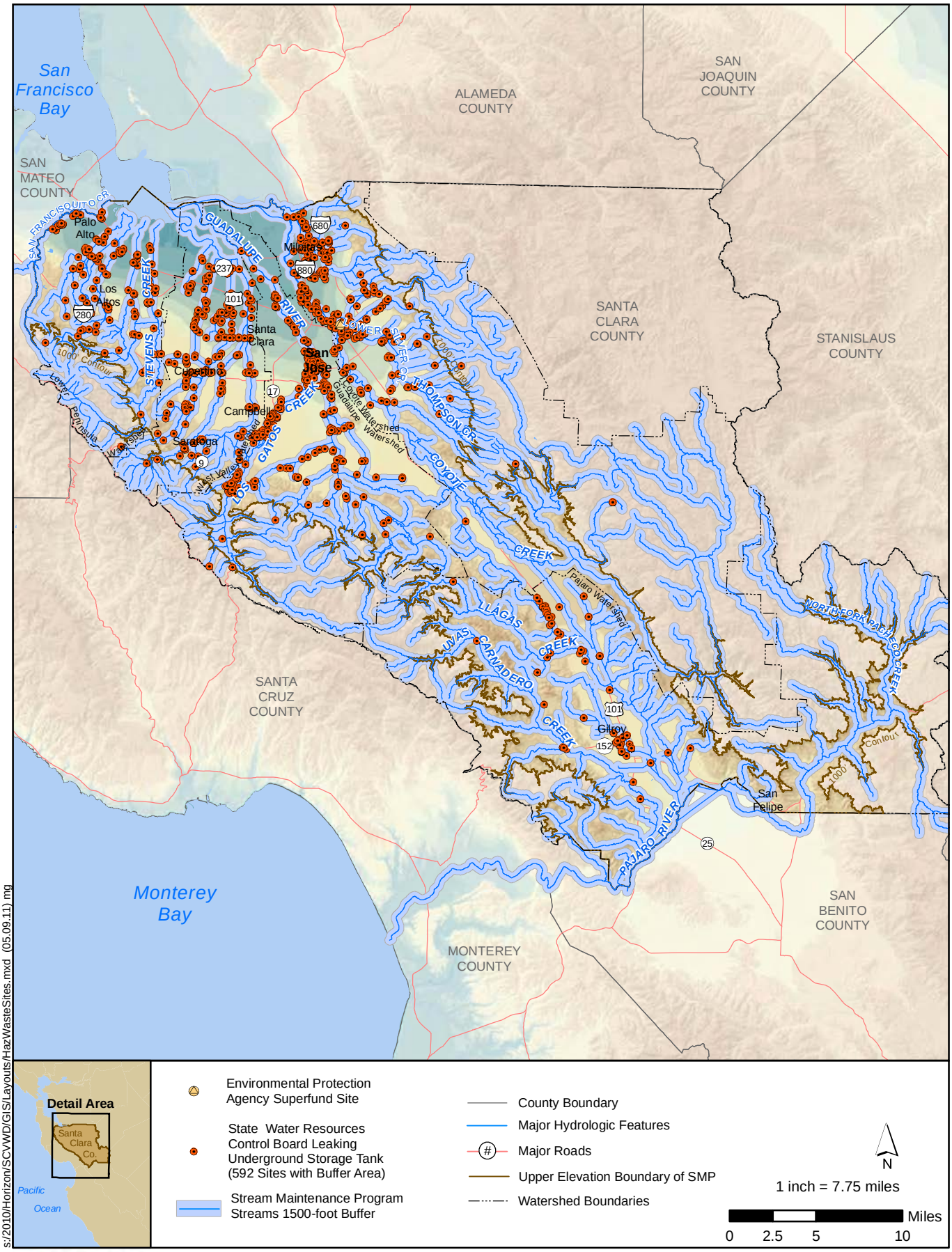

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Figure 3.6-1: Known Hazardous Sites in Project Area

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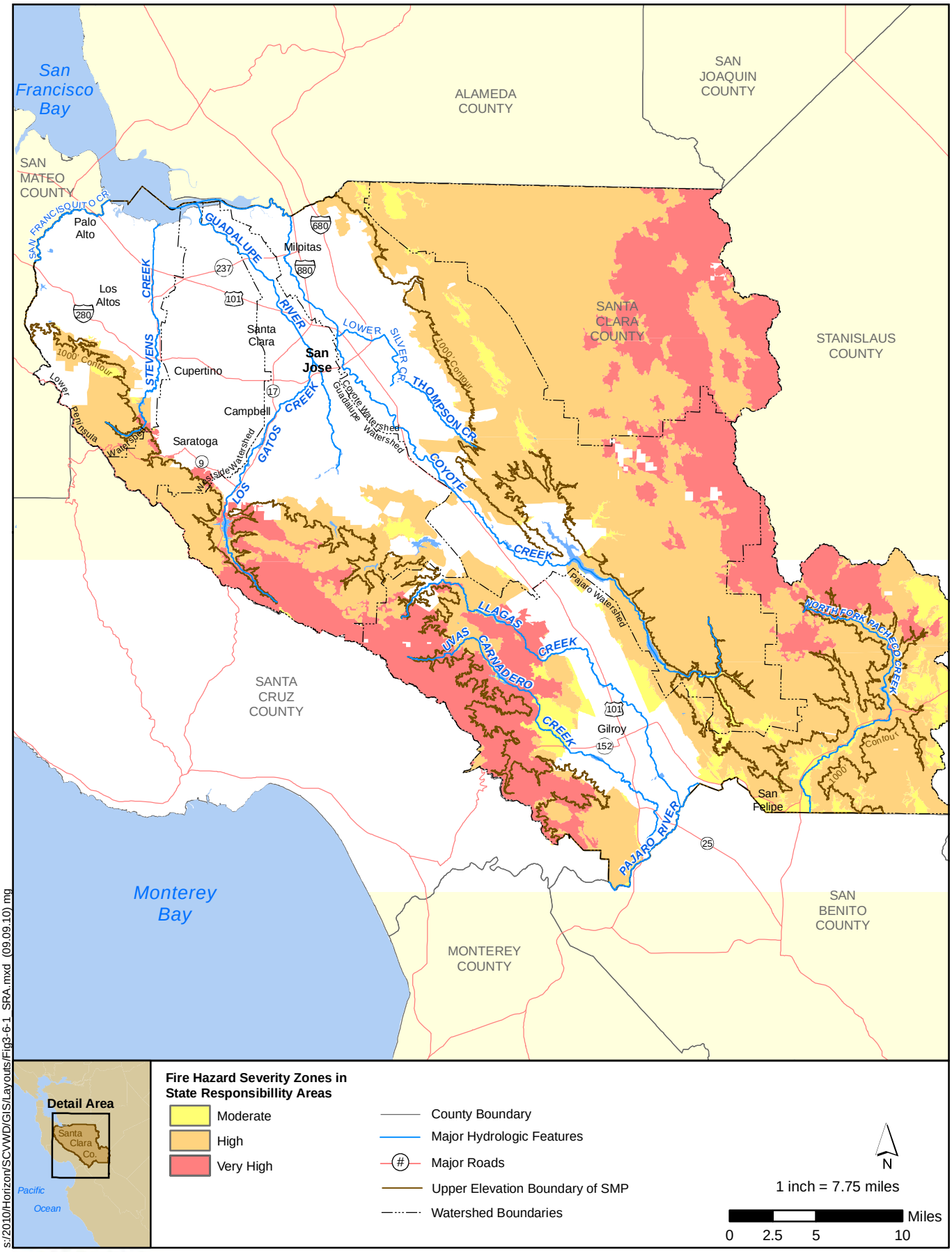

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Figure 3.6-2: Fire Hazard Severity Zones in State Responsibility Areas

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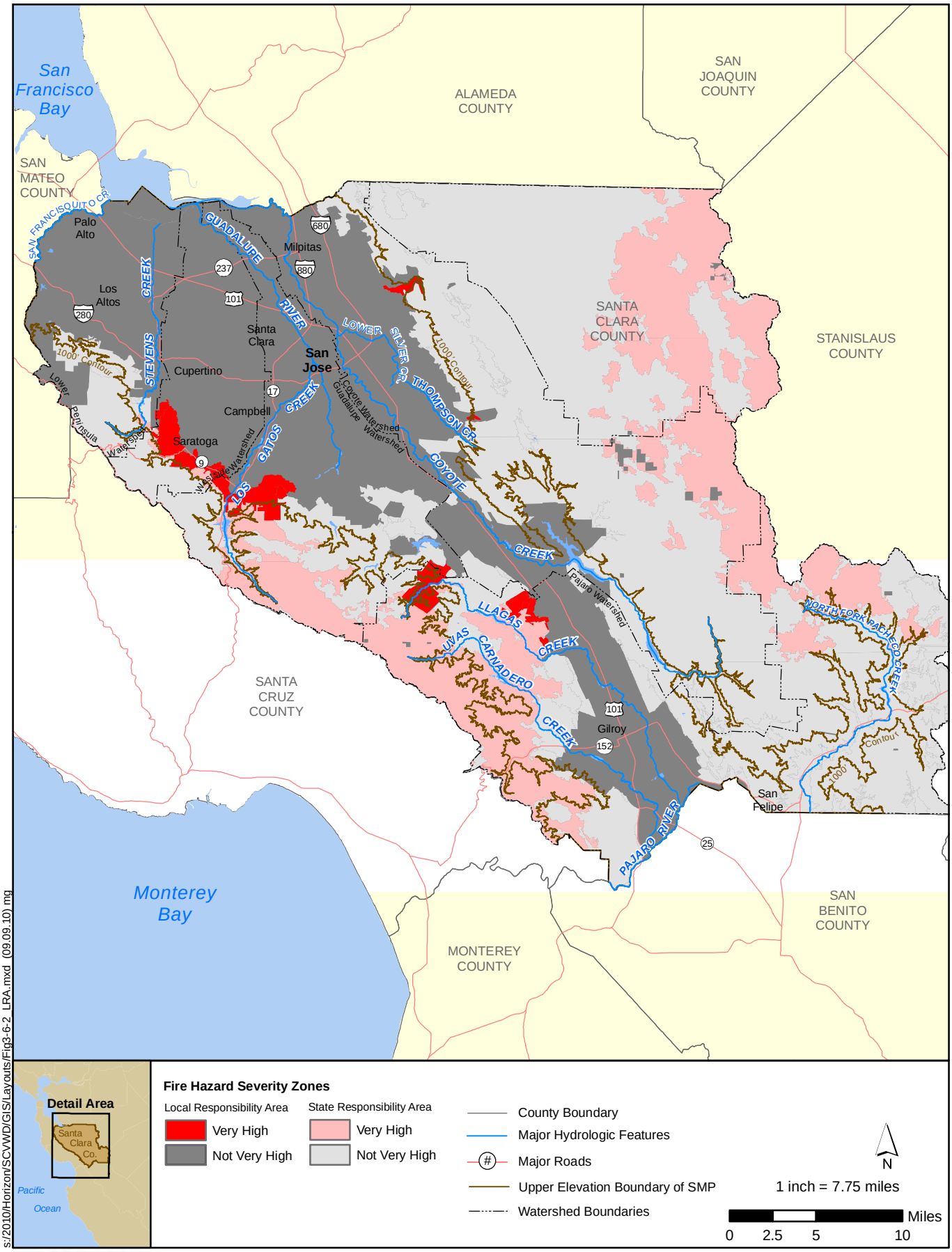

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Figure 3.6-3: Fire Hazard Severity Zones in Local Responsibility Areas

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Table 3.6-1. Pesticide Types Applied under the Current SMP

Active Chemical Ingredient	Manufacturer Trade Name	Pesticide Type	Target
Glyphosate	Accord XRT	Post-emergent herbicide	Non-selective
Glyphosate	Aquamaster	Post-emergent herbicide	Non-selective
Glyphosate	Roundup Pro	Post-emergent herbicide	Non-selective
Glyphosate	Roundup Pro-Concentrate	Post-emergent herbicide	Non-selective
Imazapyr	Habitat	Post-emergent herbicide	Aquatic
Isoxaben	Gallery	Pre-emergent herbicide	Broadleaf
Pendimethalin	Pendulum	Pre-emergent herbicide	Grasses/weeds
Pendimethalin	Pendulum Aquacap	Post-emergent herbicide	Non-selective Broadleaf/grasses
Oryzalin	Surflan A.S.	Pre-emergent herbicide	Non-selective Broadleaf/grasses
Triclopyr	Garlon 4	Post-emergent herbicide	Broadleaf
N/A	Surfactants	N/A	N/A
N/A	Agridex	Surfactant	N/A
Dialkyl Polyoxyethylene Glycol	Competitor	Surfactant	N/A
N/A	Dyes	N/A	N/A

N/A – not available
Source: SCVWD 2010a

Table 3.6-2. Pesticides Applied under the Current SMP (FY 2007–2009)

Active Chemical Ingredient	Manufacturer Trade Name	FY 2007 Quantity Applied (gallons)	FY 2008 Quantity Applied (gallons)	FY 2009 Quantity Applied (gallons)
Glyphosate	Accord XRT	3.25	0.04	0
Glyphosate	Aquamaster	421.94	328.01	321.22
Glyphosate	Roundup Pro	253.35	17.75	0
Glyphosate	Roundup Pro-Concentrate	356.26	571.37	617.82
Imazapyr	Habitat	0	0	0.01
Isoxaben	Gallery	803.95[1]	687.00[1]	813.36[1]
Pendimethalin	Pendulum	58.00	0	0
Pendimethalin	Pendulum Aquacap	437.90	551.9	737.59
Oryzalin	Surflan A.S.	60.45	0	0
Triclopyr	Garlon 4	0.07	0.01	3.06
N/A	Surfactants	84.09	62.68	1.46
N/A	Agridex (surfactant)	0	0	0.47
Dialkyl Polyo-xyethylene Glycol	Competitor (surfactant)	0.26	31.98	93.89
N/A	Dyes	21.76	9.77	16.17

Notes:
FY – fiscal year; N/A – not available
[1] Quantities of this chemical are provided in pounds instead of gallons.
Source: SCVWD 2010b

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3.6.4 Impact Analysis

Methodology

Impacts of the Proposed Project were evaluated qualitatively, based on the potential for relevant activities to create a significant hazard to the public or environment during or after their implementation.

Criteria for Determining Significance

For the purposes of this analysis, the Proposed Project would result in a significant impact from hazards and hazardous materials if it would:

A. create a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

B. emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;

C. create a significant hazard to the public or the environment from existing hazardous materials contamination on site or nearby;

D. for a project located within two miles of an airport or in the vicinity of a private airstrip, would the project result in a substantial safety hazard for people residing or working in the project area or to aircraft utilizing the airport;

E. impair implementation of an adopted emergency response plan; or

F. 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.

Although Proposed Project activities may be performed within 2 miles of an airport, these activities would not interfere with airport operations, would not involve the use of any equipment that would affect aircraft utilizing any airports in the Project Area, and would not result in a substantial safety hazard to people residing or working in vicinity of airports. For these reasons, this issue is not discussed further in the DSEIR.

The Proposed Project maintenance activities would not create standing water that would foster mosquitoes nor would it interfere with abatement efforts conducted by the SCCVCD, so this issue is not discussed further in the DSEIR.

Environmental Impacts

Impact HAZ-1: Use, Transport, or Accidental Release of Hazardous Materials such that a Significant Hazard to the Public or Environment Would Result (Significance Criterion A; Less than Significant)

Proposed maintenance activities would be temporary in any one location, and generally confined to a small area surrounding creek channels, canals, or sediment reuse/disposal sites. Maintenance activities would be located in or near public areas where residents or recreational users could be exposed to hazardous materials and/or channels or canals that could sequester or transport chemicals in the water and sediment. In addition, the transport of these materials to the maintenance sites could potentially expose the public or the environment to hazardous materials. If hazardous materials were accidentally released during use or transport, a significant impact on humans or the environment could result. Additional details regarding the potential use of hazardous materials for each proposed SMP Update activity are provided 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 would be removed once projects were completed. Hazardous materials would not be permanently stored at these maintenance sites. If hazardous materials were released into the water or the ground during equipment refueling or maintenance activities, contamination and harm to people or wildlife could result.

Vegetation Management

The Proposed Project's vegetation management activities would include the use of fuels and lubricants, similar to the sediment removal and bank stabilization activities described above. In addition, these activities would include the application of herbicides, including instream and bank bench areas. The use, transport, or accidental spills of these hazardous materials could adversely affect people or wildlife if the pollutants were released into the water or the ground.

Management of Animal Conflicts

Animal conflict management activities related to the Proposed Project would include lethal control methods involving the use of fumigants or placement of bait traps that would contain rodenticides. In particular, phosphine gas could be produced if water were to come in contact with Zinc Phosphide. These activities could present risk to humans or the environment if the rodenticides were accidentally ingested or inhaled by humans, or transported to local water bodies (impacts to wildlife are discussed in Chapter 3.3, *Biological Resources*).

Minor Maintenance/Canal Maintenance

Minor maintenance would potentially involve the use of hazardous materials during the use of heavy equipment for grading or sediment removal. Potential types of hazardous materials associated with minor maintenance would be similar to those described

previously for sediment removal and bank stabilization activities. Because routine canal maintenance activities include all general work activities, effects would be the same as described above for other routine maintenance work. In addition, although paint would be used for graffiti removal, it would not be expected to have a substantial adverse effect if handled properly.

Applicable Best Management Practices

The following BMPs would be implemented as part of SMP Update activities. In addition to those listed below, other BMPs (as cited in Section 3.3, *Biological Resources*) would be applicable for the specific protection of biological resources from the use, transport, or accidental release of hazardous materials. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-2: Instream Herbicide Application Work Window
BMP GEN-19: Work Site Housekeeping
BMP GEN-21: Staging and Stockpiling of Materials
BMP GEN-24: On-Site Hazardous Materials Management
BMP GEN-25: Existing Hazardous Materials
BMP GEN-26: Spill Prevention and Response
BMP GEN-30: Vehicle and Equipment Maintenance
BMP GEN-31: Vehicle Cleaning
BMP GEN-32: Vehicle and Equipment Fueling
BMP GEN-37: Implement Public Safety Measures
BMP GEN-39: Planning for Pedestrians, Traffic Flow, and Safety Measures
BMP ANI-1: Avoid Redistribution of Rodenticides
BMP HM-4: Posting and Notification for Pesticide Use

Conclusion

Implementation of BMPs would minimize the potential for the Proposed Project to result in a significant hazard to the public or the environment from the use, transport, or accidental release of hazardous materials. Therefore, this impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact HAZ-2: Potential to Interfere with Emergency Response (Significance Criterion E; Less than Significant)

Temporary road or lane closures, as well as traffic associated with the Proposed Project, could potentially affect emergency response as described below.

Sediment Removal

During sediment removal activities, temporary road or lane closures may be necessary. In addition, traffic would be generated by sediment removal activities (see Section 3.12, *Transportation and Traffic*). Road closures or SMP Update-generated traffic may interfere with emergency response efforts and extend response times.

Other Maintenance Activities

Other Proposed Project activities (bank stabilization, vegetation management, management of animal conflicts, minor maintenance, and canal maintenance) also could potentially require road closures and generate additional traffic. Potential impacts would be similar to those described above for sediment removal.

Applicable Best Management Practices

The following BMPs would be implemented as part of SMP Update activities. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-36: Public Outreach
BMP GEN-39: Planning for Pedestrians, Traffic Flow, and Safety Measures

Conclusion

Implementation of BMPs would direct Proposed Project-related traffic and temporary lane closures resulting from Proposed Project activities to be coordinated with local emergency response agencies, to help maintain emergency access. Therefore, this impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact HAZ-3: Be Located on a Known Existing Contaminated Site (Significance Criterion C; Less than Significant)

According to the SWRCB's GeoTracker database (SWRCB 2010), 3,707 known sites located in Santa Clara County have been contaminated with hazardous waste. Of these sites, 1,287 are active and either being remediated or remain in need of remediation. Figure 3.6-1 shows the locations of sites in proximity to SMP channels. The potential of the SMP Update activities to affect known contaminated sites is discussed further below.

Sediment Removal

Sediment removal activities could potentially disturb known existing contaminated sites. As discussed previously, the locations and extent of maintenance activities, including sediment removal activities, changes each year. The potential to disturb existing contaminated sites in the Project Area would be evaluated as part of the annual maintenance planning process.

In addition to the contaminated sites identified by the GeoTracker database, portions of the Guadalupe River watershed within the Project Area are affected by historic mercury mining activities. Soil and groundwater in some areas of this watershed contain hazardous levels of mercury contamination. Proposed maintenance activities involving ground disturbance, such as sediment removal and bank stabilization, may expose the mercury and potentially release it into the environment.

Other Maintenance Activities

All other SMP Update activities may involve some level of ground disturbance and the potential to disturb existing contaminated sites. Management of animal conflicts may

involve physical alterations of habitat, including surface compaction of levee faces or reconstruction of levee side slopes. Vegetation management activities would include discing of areas. Bank stabilization activities could disturb soils during the construction of new temporary access routes or during stabilization activities. Minor maintenance activities could include grading or sediment removal activities. Because routine canal maintenance activities would include all general work activities, effects would be the same as described above for other routine maintenance work. Potential effects of these ground disturbances would be similar to those described above for sediment removal activities.

Applicable Best Management Practices

The following BMPs would be implemented as part of SMP Update activities. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-3: Avoid Exposing Soils with High Mercury Levels
BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-23: Stream Access
BMP GEN-27: Existing Hazardous Sites

Conclusion

Implementation of BMPs to properly handle and remediate contaminated soils from Proposed Project maintenance activities, would prevent any planned maintenance activities (including sediment disposal or reuse) from disturbing known active contamination or remediation efforts. Through implementation of BMP GEN-3, activities in the Guadalupe River watershed would also avoid or minimize the potential for disturbance to existing mercury contamination. Therefore, this impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact HAZ-4: Be Located on a Previously Undiscovered Contaminated Site (Significance Criterion C; Less than Significant)

Creeks and canals are common locations for illegal dumping of trash containing hazardous wastes, such as tires, oil filters, and paint cans. In addition, pollutants transported in stormwater runoff can accumulate in these water bodies. The potential for Proposed Project activities to be located on a previously undiscovered contaminated site is discussed further below.

Bank Stabilization and Sediment Removal

In conducting bank stabilization and sediment removal activities, workers could encounter illegally dumped trash, and ground excavation activities could disturb previously unknown buried contamination.

Contaminants also are transported from streets and paved urban areas through storm drains and into stream channels. Areas surrounding storm drain culvert outfalls can accumulate urban contaminants, such as heavy metals and petroleum byproducts from automobiles. Excessive erosion and bank instability could occur near culvert outfalls,

resulting in the need for bank repairs under the Proposed Project. As part of these activities, contaminated locations could be encountered and disturbed.

Other Maintenance Activities

All other SMP Update activities (vegetation management, management of animal conflicts, minor maintenance, and canal maintenance) could involve some level of ground disturbance and have the potential to disturb undiscovered contaminated sites. Effects of ground disturbance during these activities would be similar to those described above for bank stabilization and sediment removal activities.

Applicable Best Management Practices

The following BMPs would be implemented as part of SMP Update activities. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-3: Avoid Exposing Soils with High Mercury Levels
BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-23: Stream Access
BMP GEN-25: Existing Hazardous Materials
BMP GEN-26: Spill Prevention and Response

Conclusion

By implementing these BMPs, if potential contaminants were found during Proposed Project 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 both worker health and the environment. Therefore, this impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact HAZ-5: Create Safety Hazards or Releases of Hazardous Materials in Proximity to a School (Significance Criterion B; Less than Significant)

A total of 398 public schools are located in Santa Clara County (Santa Clara County Office of Education 2010), of which 252 are located within one-quarter mile of a facility that potentially would be subject to maintenance under the Proposed Project (Table 3.6-3, Figure 3.6-4). Most of these schools are in session during a traditional school calendar, and some are open year-round. Thus, children may be present when SMP Update activities are implemented near schools and could potentially be exposed to hazardous materials from Proposed Project work sites.

Sediment Removal and Bank Stabilization

Potential hazardous materials used as part of sediment removal and bank stabilization activities, to be implemented near schools, would include fuels and oils associated with the use of heavy equipment. Improper storage or use of these materials could pose a risk to children, if accidental releases occurred in proximity to schools where children could be present.

Table 3.6-3. Schools within One-Quarter Mile of the Project Area

School	Street	City	State	Zip
Hazelwood Elementary	775 Waldo Rd	Campbell	CA	95008
Montessori Academy	177 E Rincon Ave	Campbell	CA	95008
Rosemary Elementary	401 W Hamilton Ave	Campbell	CA	95008
St. Lucy	76 E Kennedy Ave	Campbell	CA	95008
Village School	775 Waldo Rd	Campbell	CA	95008
West Valley SDA	95 Dot Ave	Campbell	CA	95008
Westmont High	4805 Westmont Ave	Campbell	CA	95008
Bethel Lutheran	10181 Finch Ave	Cupertino	CA	95014
Cupertino High	10100 Finch Ave	Cupertino	CA	95014
Eaton (C.B.) Elementary	20220 Suisun Dr	Cupertino	CA	95014
Garden Gate Elementary	10500 Ann Arbor Ave	Cupertino	CA	95014
Great Success	10505 Miller Ave	Cupertino	CA	95014
Homestead High	21370 Homestead Rd	Cupertino	CA	95014
Monta Vista High	21840 McClellan Rd	Cupertino	CA	95014
Montebello Elementary	15101 Montebello Rd	Cupertino	CA	95014
Regnart Elementary	1170 Yorkshire Dr	Cupertino	CA	95014
Stevens Creek Elementary	10300 Ainsworth Dr	Cupertino	CA	95014
Del Buono (Antonio) Elementary	9300 Wren Ave	Gilroy	CA	95020
Eliot Elementary	470 Seventh St	Gilroy	CA	95020
Gilroy Adult Education	385 IOOF Ave	Gilroy	CA	95020
Gilroy Community Day	275 IOOF Ave	Gilroy	CA	95020
Gilroy High	750 W 10th St	Gilroy	CA	95020
Glen View Elementary	600 Eighth St	Gilroy	CA	95020
Kelley Rod Elementary	8755 Kern Ave	Gilroy	CA	95020
Mt. Madonna High (Cont.)	8750 Hirasaki Ct	Gilroy	CA	95020
San Ysidro Elementary	2220 Pacheco Pass Hwy	Gilroy	CA	95020
South Valley School of Science and Global Studies	385 IOOF Ave	Gilroy	CA	95020
St. Mary's	7900 Church St	Gilroy	CA	95020
Blach (Georgina P.) Intermediate	1120 Covington Dr	Los Altos	CA	94024
Bullis-Purissima Elementary	25890 Fremont Road	Los Altos	CA	94022
Los Altos Christian	625 Magdalena Ave	Los Altos	CA	94024
Miramonte Elementary	1175 Altamead Dr	Los Altos	CA	94024
Pinewood (Lower)	477 Fremont Ave	Los Altos	CA	94024
Waldorf School of the Peninsula	11311 Mora Dr	Los Altos	CA	94024
Foothill College	12345 S El Monte Rd	Los Altos Hills	CA	94022
Pinewood (Upper)	26800 W Fremont Rd	Los Altos Hills	CA	94022
St. Nicholas	12816 El Monte Ave	Los Altos Hills	CA	94024
Academy of Our Mother	19101 Bear Creek Rd	Los Gatos	CA	95033
Alta Vista Elementary	200 Blossom Valley Dr	Los Gatos	CA	95032
Blossom Hill Elementary	16400 Blossom Hill Rd	Los Gatos	CA	95032
Daves Avenue Elementary	17770 Daves Ave	Los Gatos	CA	95030
Hillbrook Elementary	300 Marchmont Dr	Los Gatos	CA	95032
Lakeside Elementary	19621 Black Rd	Los Gatos	CA	95030
Lexington Elementary	19700 Santa Cruz Hwy	Los Gatos	CA	95030
Los Gatos Academy	220 Bel Gatos Rd	Los Gatos	CA	95032
Los Gatos High	20 High School Court	Los Gatos	CA	95032
Rolling Hills Middle	1585 More Ave	Los Gatos	CA	95030

Table 3.6-3. Schools within One-Quarter Mile of the Project Area

School	Street	City	State	Zip
St. Mary's	30 Lyndon Ave	Los Gatos	CA	95030
Yavneh Day	14855 Oka Rd	Los Gatos	CA	95032
Calaveras Hills Continuation H	1331 E Calaveras Blvd	Milpitas	CA	95035
Curtner Elementary	275 Redwood	Milpitas	CA	95035
Merryhill School	1500 Yosemite Dr	Milpitas	CA	95035
Milpitas Adult	1331 E Calaveras Blvd	Milpitas	CA	95035
Milpitas High	1285 Escuela Pkwy	Milpitas	CA	95035
Milpitas Montessori	1500 Yosemite Dr	Milpitas	CA	95035
Rainbow Bridge Center	1500 Yosemite Dr	Milpitas	CA	95035
Randall (Robert) Elementary	1300 Edsel	Milpitas	CA	95035
Rose (Alexander) Elementary	250 Roswell Dr	Milpitas	CA	95035
Russell (Thomas) Junior High	1500 Escuela Pkwy	Milpitas	CA	95035
Spangler (Anthony) Elementary	140 N Abbott	Milpitas	CA	95035
St. John the Baptist	360 S Abel St	Milpitas	CA	95035
Britton (Lewis H.) Middle	80 W Central Ave	Morgan Hill	CA	95037
Carden Academy of Morgan Hill	15700 Monterey Rd	Morgan Hill	CA	95037
Encinal Elementary	9530 N Monterey Rd	Morgan Hill	CA	95037
Machado Elementary	15130 Sycamore Ave	Morgan Hill	CA	95037
Morgan Hill Country	105 John Wilson Way	Morgan Hill	CA	95037
Paradise Valley/Machado Elementary	1400 La Crosse	Morgan Hill	CA	95037
South Valley Christian Elementary	145 Wright Ave	Morgan Hill	CA	95037
St. Catherine	17500 Peak Ave	Morgan Hill	CA	95037
Walsh (P. A.) Elementary	353 W Main Ave	Morgan Hill	CA	95037
Alta Vista High (Cont.)	1299 Bryant Ave	Mountain View	CA	94040
Canyon Heights Academy	310 Easy St	Mountain View	CA	94043
Castro (Mariano) Elementary	505 Escuela Ave	Mountain View	CA	94040
Crittenden Middle	1701 Rock St	Mountain View	CA	94043
German School of Silicon Valley	310 Easy St	Mountain View	CA	94043
Graham (Isaac Newton) Middle	1175 Castro St	Mountain View	CA	94041
Landels (Edith) Elementary	115 Dana St	Mountain View	CA	94041
Monarch Christian	310 Easy St	Mountain View	CA	94043
Mountain View–Whisman Community Day	1701 Rock St	Mountain View	CA	94043
Southbay Christian	1134 Miramonte Ave	Mountain View	CA	94040
Springer Elementary	1120 Rose Ave	Mountain View	CA	94040
St. Francis	1885 Miramonte Ave	Mountain View	CA	94040
St. Joseph	1120 Miramonte Ave	Mountain View	CA	94040
Whisman Community Day	1695 Rock St	Mountain View	CA	94043
Whisman Elementary	310 Easy St	Mountain View	CA	94043
Yew Chung International	310 Easy St	Mountain View	CA	94043
Barron Park Elementary	800 Barron Ave	Palo Alto	CA	94306
Briones (Juana) Elementary	4100 Orme Ave	Palo Alto	CA	94306
Challenger School	3880 Middlefield Rd	Palo Alto	CA	94303
Cubberly Community Center	4000 Middlefield Rd	Palo Alto	CA	94306
Cubberly Community Center & Palo Alto Preparatory	4000 Middlefield Rd	Palo Alto	CA	94306
El Carmelo Elementary	3024 Bryant St	Palo Alto	CA	94306

Table 3.6-3. Schools within One-Quarter Mile of the Project Area

School	Street	City	State	Zip
Emerson	4251 El Camino Real	Palo Alto	CA	94306
Fairmeadow Elementary	500 E Meadow Dr	Palo Alto	CA	94306
Gunn (Henry M.) High	780 Arastradero Rd	Palo Alto	CA	94306
Hoover (Herbert) Elementary	445 E Charleston Rd	Palo Alto	CA	94306
International School of the Peninsula	151 Laura Ln	Palo Alto	CA	94303
International School of the Peninsula	3233 Cowper St	Palo Alto	CA	94306
Keys	2890 Middlefield Rd	Palo Alto	CA	94303
Lady of Rosary	3233 Cowper St	Palo Alto	CA	94306
Mid-Peninsula Jewish Day	4000 Terman Dr	Palo Alto	CA	94306
Palo Verde Elementary	3450 Louis Rd	Palo Alto	CA	94303
Stanford (Jane Lathrop) Middle	480 E Meadow Dr	Palo Alto	CA	94306
Achiever Christian Elementary	820 Ironwood Dr	San Jose	CA	95125
Adult Education (Eastside Union)	625 Educational Park Dr	San Jose	CA	95133
Adult Education Program	625 Educational Park Dr	San Jose	CA	95133
Almaden Country Middle	6835 Trinidad Dr	San Jose	CA	95120
Almaden Preparatory	5670 Camden Ave	San Jose	CA	95124
Almaden Valley Christian	6291 Vegas Dr	San Jose	CA	95120
Apostles Lutheran	5828 Santa Teresa Blvd	San Jose	CA	95123
Archbishop Mitty High	5000 Mitty Ave	San Jose	CA	95129
Baldwin Elementary	280 Martinvale Ln	San Jose	CA	95119
Beacon	5670 Camden Ave	San Jose	CA	95124
Bernal Intermediate	6610 San Ignacio Ave	San Jose	CA	95119
Blackford Elementary	1970 Willow St	San Jose	CA	95125
Blackford High (Alt)	3800 Blackford Ave	San Jose	CA	95117
Blossom Valley Elementary	420 Allegan Cir	San Jose	CA	95123
Boeger (August) Junior High	1944 Flint Ave	San Jose	CA	95148
Broadway High	1088 Broadway Ave	San Jose	CA	95125
Broadway High (Cont.)	4825 Speak Ln	San Jose	CA	95118
Cadwallader Elementary	3799 Cadwallader Rd	San Jose	CA	95121
Calvary Chapel Christian Academy	1175 Hillsdale Ave	San Jose	CA	95118
Canoas Elementary	800 Wren Dr	San Jose	CA	95125
Carolyn Clark	3701 Rue Mirrasou	San Jose	CA	95148
Carson (Rachel) Elementary	4245 Meg Dr	San Jose	CA	95136
Castillero Middle	6384 Leyland Park Dr	San Jose	CA	95120
Cedar Grove Elementary	2702 Sugar Plum Dr	San Jose	CA	95148
Chaboya Middle	3276 Fowler Rd	San Jose	CA	95135
Challenger	19950 McKean Rd	San Jose	CA	95120
Challenger Elementary	880 Wren Dr	San Jose	CA	95125
Cureton (Horace) Elementary	3720 E Hills Dr	San Jose	CA	95127
Darling (Anne) Elementary	333 N 33rd St	San Jose	CA	95133
Dove Hill Elementary	1460 Colt Way	San Jose	CA	95121
East Valley Christian	2715 S White Rd	San Jose	CA	95148
Emmanuel Christian	467 North White Rd	San Jose	CA	95127
Empire Gardens Elementary	1060 E Empire St	San Jose	CA	95112
Evergreen Elementary	3010 Fowler Rd	San Jose	CA	95135
Evergreen Valley College	3095 Yerba Buena Rd	San Jose	CA	95135
Foothill Intermediate	1966 Flint Ave	San Jose	CA	95148
Forest Hill Elementary	4450 McCoy Ave	San Jose	CA	95130

Table 3.6-3. Schools within One-Quarter Mile of the Project Area

School	Street	City	State	Zip
Foundry	258 Sunol St	San Jose	CA	95126
George (Joseph) Middle	277 Mahoney Dr	San Jose	CA	95127
Glider Elementary	511 Cozy Dr	San Jose	CA	95123
Goss (Mildred) Elementary	2475 Van Winkle Ln	San Jose	CA	95116
Graystone Elementary	6982 Shearwater Dr	San Jose	CA	95120
Harte (Bret) Junior High	7050 Bret Harte Dr	San Jose	CA	95120
Holly Oak Elementary	2995 Rossmore Way	San Jose	CA	95148
Holy Spirit School	1200 Redmond Ave	San Jose	CA	95120
Independence High	1776 Educational Park Dr	San Jose	CA	95133
JF Smith	2220 Woodbury Ln	San Jose	CA	95121
Laurelwood Elementary	4280 Partridge Dr	San Jose	CA	95121
Ledesma (Rita) Elementary	1001 Schoolhouse Rd	San Jose	CA	95138
Leigh High	5210 Leigh Ave	San Jose	CA	95124
Leland High	6677 Camden Ave	San Jose	CA	95120
Leland Plus (Cont.)	6677 Camden Ave	San Jose	CA	95120
Ley Va (George V.) Middle	1865 Monrovia Dr	San Jose	CA	95122
Liberty Baptist	2790 S King Rd	San Jose	CA	95122
Little Scholars	3703 Silver Creek Rd	San Jose	CA	95121
Lone Hill Elementary	4949 Harwood Rd	San Jose	CA	95124
Los Gatos Christian	16845 Hicks Rd	San Jose	CA	95120
Lyndale Elementary	13901 Nordyke Dr	San Jose	CA	95127
Lynhaven Elementary	881 S Cypress Ave	San Jose	CA	95117
Majestic Way Elementary	1855 Majestic Way	San Jose	CA	95132
Mathson (Lee) Junior High	2050 Kammerer Ave	San Jose	CA	95116
Matsumoto (Tom) Elementary	4121 Mackin Woods Ln	San Jose	CA	95135
McCollam (Millard) Elementary	3311 Lucian Ave	San Jose	CA	95127
Metropolitan Adult Education-San Jose	1149 E Julian	San Jose	CA	95116
Meyerholz Elementary	6990 Melvin Dr	San Jose	CA	95129
Millbrook Elementary	3200 Millbrook Dr	San Jose	CA	95148
Montessori Academy	495 Massar Ave	San Jose	CA	95116
Morrill Middle	1970 Morrill Ave	San Jose	CA	95132
Mt. Pleasant Elementary	14275 Candler Dr	San Jose	CA	95127
Muir Elementary	6560 Hanover Dr	San Jose	CA	95129
Murdock Elementary School	1188 Wunderlich Dr	San Jose	CA	95129
Noble Elementary	3466 Grossmont Dr	San Jose	CA	95132
Noddin Elementary	1755 Gilda Way	San Jose	CA	95124
Northwood Elementary	2760 Trimble Rd	San Jose	CA	95132
Norwood Creek Elementary	3241 Remington Way	San Jose	CA	95148
Ocala Middle	2800 Ocala Ave	San Jose	CA	95148
Olinder (Selma) Elementary	890 E William	San Jose	CA	95116
Painter (Ben) Elementary	500 Rough and Ready Rd	San Jose	CA	95133
Pegasus High (Cont.)	1776 Educational Park Dr	San Jose	CA	95133
Phoenix High (Cont.)	6150 Snell Rd	San Jose	CA	95123
Piedmont Hills High	1377 Piedmont Rd	San Jose	CA	95132
Piedmont Middle	955 Piedmont Rd	San Jose	CA	95132
Prospect High	18900 Prospect Rd	San Jose	CA	95129
Queen of Apostles Elementary	4950 Mitty Way	San Jose	CA	95129

Table 3.6-3. Schools within One-Quarter Mile of the Project Area

School	Street	City	State	Zip
Rainbow of Knowledge	1718 Andover Ln	San Jose	CA	95124
Randol (James) Elementary	762 Sunset Glen Dr	San Jose	CA	95123
Reed Elementary	1524 Jacob Ave	San Jose	CA	95118
River Glen Elementary	1610 Bird Ave	San Jose	CA	95125
Rogers (William) Elementary	2999 Ridgemont Dr	San Jose	CA	95127
Ruskin Elementary	1401 Turlock Ln	San Jose	CA	95132
Ryan (Thomas P.) Elementary	1241 McGinness Ave	San Jose	CA	95127
Sakamoto Elementary	6280 Shadelands Dr	San Jose	CA	95123
San Jose Christian College	790 S 12th St	San Jose	CA	95112
San Jose High Academy	275 N 24th St	San Jose	CA	95116
San Jose High Academy Plus (Cont.)	275 N 24th St	San Jose	CA	95116
Santa Teresa High	6150 Snell Rd	San Jose	CA	95123
Sheppard (William L.) Middle	480 Rough and Ready Rd	San Jose	CA	95133
Shirakawa (George) Sr. (Elementary)	665 Wool Creek Dr	San Jose	CA	95112
Sierramont Junior High	3155 Kimlee Dr	San Jose	CA	95132
Silver Oak Elementary	5000 Farnsworth Dr	San Jose	CA	95138
South Valley Carden	1921 Clarinda Way	San Jose	CA	95124
St. Elizabeth's Day Home	950 St. Elizabeth Dr	San Jose	CA	95126
St. Victor Elementary	3150 Sierra Rd	San Jose	CA	95132
Stonegate Elementary	2605 Gassman Dr	San Jose	CA	95121
Summerdale Elementary	1100 Summerdale Dr	San Jose	CA	95132
Toyon Elementary	995 Bard St	San Jose	CA	95127
Union Junior High	2130 Los Gatos-Almaden Rd	San Jose	CA	95124
Valle Vista Elementary	2400 Flint	San Jose	CA	95148
White Road Baptist Academy	480 S White Rd	San Jose	CA	95127
Williams Elementary	1150 Rajkovich Way	San Jose	CA	95120
Yerba Buena High	1855 Lucretia Ave	San Jose	CA	95122
San Martin	100 North St	San Martin	CA	95046
San Martin/Gwinn Elementary	100 North St	San Martin	CA	95046
Bowers Elementary	2755 Barkley Ave	Santa Clara	CA	95051
Briarwood Elementary	1960 Townsend Ave	Santa Clara	CA	95051
Cabrillo Middle	2550 Cabrillo Ave	Santa Clara	CA	95051
Cedarwood Sudbury	2545 Warburton Ave	Santa Clara	CA	95051
Don Callejon	4176 Lick Mill Blvd	Santa Clara	CA	95054
Eisenhower Elementary	277 Rodonavan Dr	Santa Clara	CA	95051
Jubilee Academy	2499 Homestead Rd	Santa Clara	CA	94086
Laurelwood Elementary	955 Teal Dr	Santa Clara	CA	95051
Millikin Elementary	2720 Sonoma Place	Santa Clara	CA	95051
Mission College	3000 Mission College Blvd	Santa Clara	CA	95054
Neighborhood Christian	1290 Pomeroy Ave	Santa Clara	CA	95051
One World Montessori	2495 Cabrillo Ave	Santa Clara	CA	95051
Pomeroy Elementary	1250 Pomeroy Ave	Santa Clara	CA	95051
Santa Clara Christian	3421 Monroe St	Santa Clara	CA	95051
St. Justin	2655 Homestead Rd	Santa Clara	CA	95051
Sutter Elementary	3200 Forbes Ave	Santa Clara	CA	95051
Wilcox (Adrian C.) High	3250 Monroe St	Santa Clara	CA	95051
Blue Hills Elementary	12300 Desanka Ave	Saratoga	CA	95070
Marshall Lane Elementary	14114 Marilyn Ln	Saratoga	CA	95070

Table 3.6-3. Schools within One-Quarter Mile of the Project Area

School	Street	City	State	Zip
Redwood Junior High	13925 Fruitvale Ave	Saratoga	CA	95070
Sacred Heart Elementary	13718 Saratoga Ave	Saratoga	CA	95070
Saratoga Elementary	14592 Oak St	Saratoga	CA	95070
Saratoga High	20300 Herriman Ave	Saratoga	CA	95070
St. Andrews Elementary	13601 Saratoga Ave	Saratoga	CA	95070
West Valley College	14000 Fruitvale Ave	Saratoga	CA	95070
Escondido Elementary	890 Escondido Rd	Stanford	CA	94305
Nixon (Lucille)	171 Stanford Ave	Stanford	CA	94305
Braly Elementary	675 Gail Ave	Sunnyvale	CA	94086
Cupertino Middle	1650 S Bernardo Ave	Sunnyvale	CA	94087
Fairwood Elementary	1110 Fairwood Ave	Sunnyvale	CA	94089
Peterson Middle	1380 Rosalia Ave	Sunnyvale	CA	94087
Rainbow Montessori	790 E Duane Ave	Sunnyvale	CA	94085
San Miguel Elementary	777 San Miguel Ave	Sunnyvale	CA	94086
Stocklmeir	592 Dunholme Way	Sunnyvale	CA	94087
The Kings Academy High	562 N Britton Ave	Sunnyvale	CA	94086
West Valley Elementary	635 Belleville Way	Sunnyvale	CA	94087

Source: Data compile by Horizon Water and Environment in 2011 from information provided by SCVWD

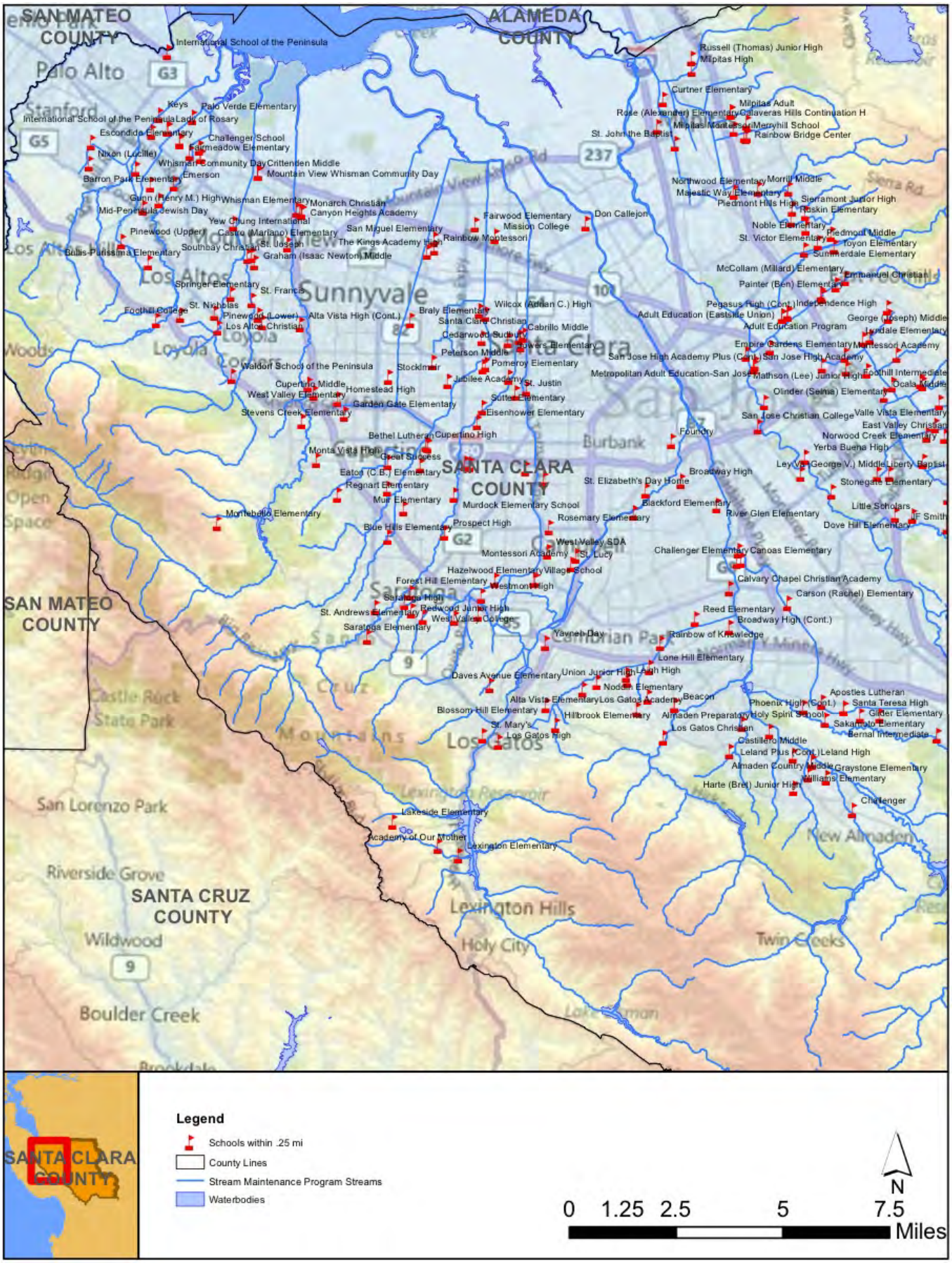

Figure 3.6-4a: Schools within One-Quarter Mile of Project Area, Northern Portion

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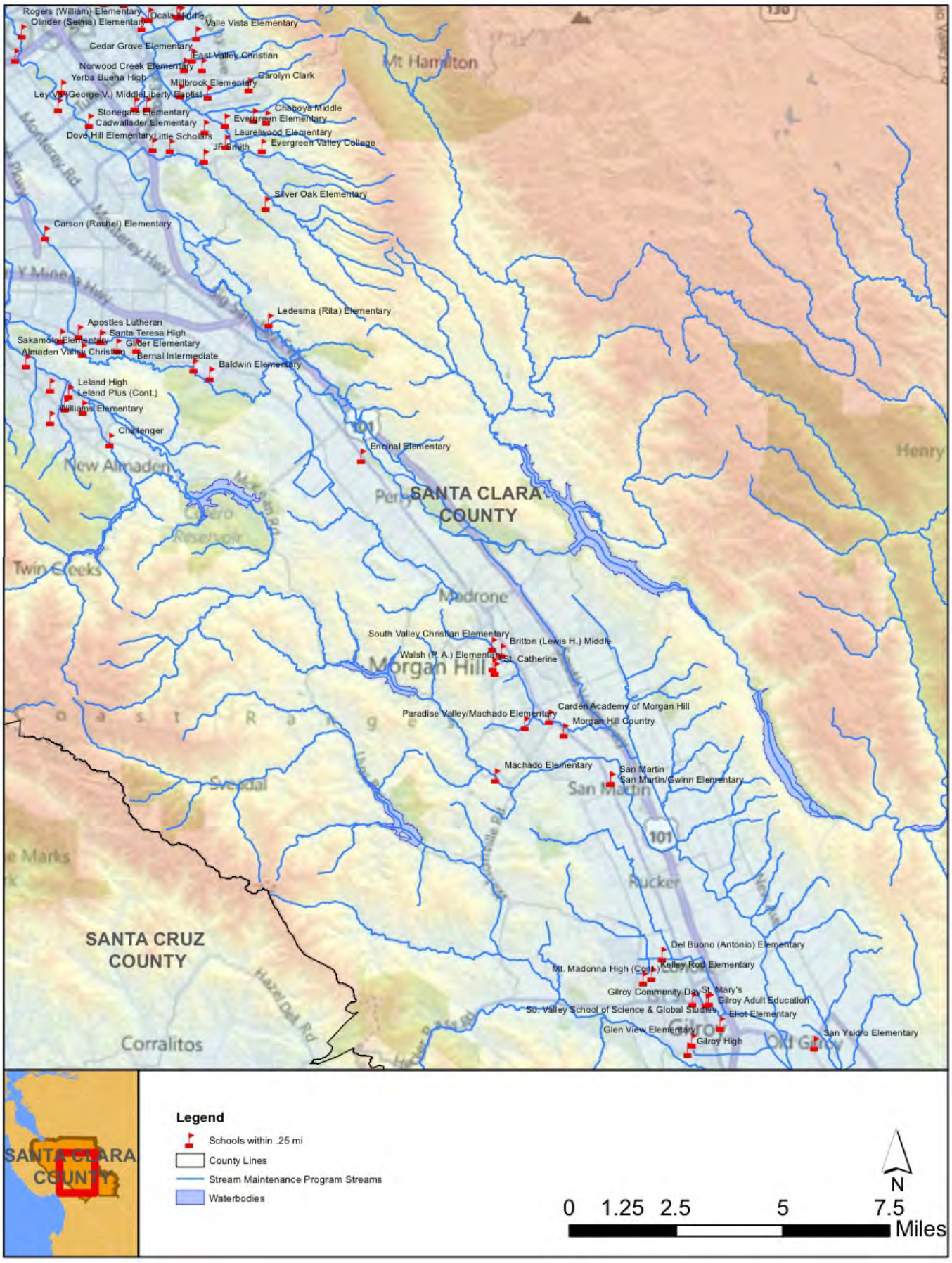

Figure 3.6-4b. Schools within One-Quarter Mile of Project Area, Southern Portion

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Vegetation Management

Vegetation management activities would include the application of herbicides. Improper use or storage of these materials near schools could pose a potential risk to children who may be exposed.

Management of Animal Conflicts

Lethal control activities as part of the management of animal conflicts could include the use of fumigants and bait traps with rodenticides. Fumigants would be placed directly in animal (squirrel or gopher) burrows. Bait traps would be designed to prevent the capture of nontargeted species. In addition, use of zinc phosphide, if it were to come into contact with water, could convert to phosphine gas, an inhalation hazard. Although the application or use of these materials would be performed to target specific species (squirrels and gophers) and used in accordance with State law, their use could pose a potential risk to children when work activities occurred in proximity to schools and the materials were accidentally ingested or inhaled.

Minor Maintenance

Minor maintenance activities of the Proposed Project could involve the use of heavy equipment for grading or minor sediment removal activities and the subsequent use of hazardous materials (i.e., fuels, oil) associated with this equipment. The accidental release of these materials near schools could potentially expose children to them.

Canal Maintenance

Because routine canal maintenance activities would include all general work activities, effects would be the same as described above for other routine maintenance work.

Applicable Best Management Practices

The following BMPs would be implemented as part of SMP activities. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-24: On-Site Hazardous Materials Management
BMP GEN-25: Existing Hazardous Materials
BMP GEN-26: Spill Prevention and Response
BMP GEN-30: Vehicle and Equipment Maintenance
BMP GEN-31: Vehicle Cleaning
BMP GEN-32: Vehicle and Equipment Fueling
BMP ANI-1: Avoid Redistribution of Rodenticides
BMP HM-4: Posting and Notification for Pesticide Use

Conclusion

Implementation of BMPs would minimize the potential risks associated with the use of hazardous materials during Proposed Project activities, by properly storing and managing these materials, minimizing the transport of these materials to any local water bodies, notifying local residents of the use of pesticides, and designing bait traps for targeted species (that typically would have standard design features, such as openings that would be difficult for non-target species to enter). Maintenance activities located near schools would

not pose any significant safety hazards or threats from hazardous material release, and they would have a less-than-significant impact. No mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact HAZ-6: Exacerbate Wildland Fires (Significance Criterion F; Less than Significant)

The primary fire season in the Project Area extends from late summer through fall, when conditions are driest and air temperatures are high. According to the Wildland Fire Threat Area maps provided by the California Department of Forestry and Fire Protection (Figures 3.6-1 and 3.6-2), wildfire threat is most extreme at the highest elevations, while the fire threat is the least in the lowest elevations of the county (California Department of Forestry and Fire Protection 2007). In the Project Area, very high fire hazard areas in LRAs occur east of the municipalities of Saratoga, Los Gatos, and Morgan Hill, and in a few unincorporated areas of the county (Figure 3.6-2). As shown in Figures 3.6-1 and 3.6-2, upper tributaries of Stevens, Los Gatos, Llagas, and Uvas creeks are within high and very high fire hazard areas. The potential use of equipment which would involve flames or could result in a spark in dry vegetated areas would present a wildland fire threat.

Vegetation Management

Vegetation management activities for the Proposed Project would potentially include mowing, discing, and flaming activities. Such activities around dry vegetation could cause uncontrolled fires, if the equipment was not used cautiously.

Other Maintenance Activities

Other SMP Update activities (bank stabilization, sediment removal, minor maintenance, management of animal conflicts, and canal maintenance) would potentially require the use of heavy equipment to stabilize channel banks, remove sediments, perform grading, and/or physically alter animal habitats. The use of heavy equipment near dry vegetation could present a potential wildland fire threat similar to that described for vegetation management activities.

Applicable Best Management Practices

The following BMPs would be implemented as part of SMP Update activities. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-28: Fire Prevention
BMP GEN-36: Public Outreach
BMP VEG-4: Use Flamers with Caution
BMP VEG-5: Conduct Flaming During Appropriate Weather and Seasonal Conditions

Conclusion

Through implementation of BMPs GEN-28, VEG-4, and VEG-5, flaming equipment would be used cautiously during Proposed Project activities, and other maintenance activities would be performed in a way to minimize the potential for the creation of wildland fires. In

addition, SCVWD would obtain the required burn permit or authorization from applicable city or county fire marshals before using any flaming equipment. Therefore, this impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact HAZ-7: Disposal of Contaminated Sediments (Significance Criterion A; Less than Significant)

SMP Update channels (and to a lesser extent, canals) within the Project Area would function to receive and transport stormwater runoff. Stormwater runoff could contain urban contaminants, such as automobile-related contaminants, pesticides, and fertilizers. Many of these contaminants could bind with sediment in the channel bed, where they could accumulate. When sediment was removed, a potential would exist for toxic concentrations of contaminants to be present in the excavated sediment at levels considered hazardous, if released into the environment or if people or wildlife were exposed to it. Additionally, as discussed under Impact HAZ-3, the Guadalupe River watershed is known to contain hazardous levels of mercury. Sediment removed from this area may require special handling and disposal for hazardous levels of mercury.

Applicable Best Management Practices

The following BMPs would be implemented as part of SMP Update activities. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-3: Avoid Exposing Soils with High Mercury Levels

Conclusion

Implementation of BMPs would minimize the exposure of contaminated soils by Proposed Project activities and provide for contaminated soils to be handled and disposed in compliance with all applicable laws and regulations. Therefore, this impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Chapter 3.7

HYDROLOGY AND GEOMORPHOLOGY

3.7 Hydrology and Geomorphology

3.7.1 Introduction

This section presents the regulatory setting, environmental setting, and potential impacts of the Proposed Project as related to hydrology and geomorphology.

Hydrology is the science (or study) of water in the natural environment, with a focus on the circulation and distribution of water as expressed in the hydrologic cycle or water balance (Goudie 1994). *Geomorphology* is the study of the earth's surface, its landforms and the processes that shape them. Within geomorphology, fluvial geomorphology is the more specific study of rivers and streams, and typically includes aspects of hydrology (the quantity and timing of watershed runoff that enters the river), hydraulics (the behavior of channelized flows in the river), and sediment dynamics (how sediment is variably eroded, transported, and deposited along the river continuum).

This section evaluates the potential for Proposed Project activities to affect the geomorphic form and function of rivers and creeks in the Project Area. Although the disciplines of fluvial geomorphology, hydrology, and hydraulics are extensive, the focus of this discussion is to consider how stream flow, stream and river features, and fluvial processes affect the physical functions that support aquatic and riparian habitats and water quality conditions. Therefore, this section supports the information presented in Section 3.3, *Biological Resources* and Section 3.13, *Water Quality*. Specifically, this section provides an overview of the existing hydrologic and geomorphic setting in the Project Area.

3.7.2 Regulatory Setting

No federal, state, regional, or local plans, policies, regulations, laws, or ordinances specifically address the geomorphology of rivers and streams in the Project Area. In practice, regulatory agencies (including the Regional Water Quality Control Board, California Department of Fish and Game, and National Marine Fisheries Service) encourage the use of geomorphic principles in the design and maintenance of stream channels and banks. Although no specific statutory requirements mandate that such measures be applied or implemented, the issuance of discretionary permits by regulatory agencies often are predicated on application of geomorphic principles in the design of instream and bank protection projects.

In recent years, state and local agencies that regulate stormwater have focused on addressing the impacts of urban hydromodification. *Hydromodification* is a process whereby surface runoff is increased because of increased impervious surfaces. The delivery time of surface runoff to creeks is reduced, and peak discharge rates in the creeks are increased. Hydromodification can lead to increased erosion in channels downstream of areas with increased peak discharges, and thus increasing sediment delivery further downstream.

Hydromodification management approaches also focus on the control of runoff, where it is generated at development parcels (source control) or considered in regards to instream erosion protection for streams subject to increased runoff. Proposed Project activities would not result in any increases in source runoff.

The Santa Clara Valley Urban Runoff Pollution Prevention Program is an association of thirteen cities and towns in Santa Clara Valley, the County of Santa Clara, and the Santa Clara Valley Water District that share a common National Pollution Discharge Elimination System (NPDES) permit to discharge stormwater to South San Francisco Bay. The NPDES permit requires co-permittees to manage increases in runoff peak flows, volumes, and durations from projects creating more than one acre of impervious surface that may cause downstream erosion, through the implementation of a Hydromodification Management Plan (HMP). The final HMP, adopted by the Water Board on July 20, 2005, delineates areas where increases in runoff are most likely to impact channel health and water quality and provides management options for maintaining pre-project runoff patterns. See Section 3.13, *Water Quality* for more information on NPDES permitting. The HMP includes several BMPs to minimize the hydrologic impacts of new development. These measures reduce the potential for development to generate damaging runoff that further destabilizes streams in the Santa Clara Basin. Although no regulatory authority is associated with the HMP that directly applies to the SMP Update, the provisions of the HMP influence stream geomorphology within the Project Area.

Other examples of hydromodification-related regulations in the Project Area include the Pajaro River Sediment Total Maximum Daily Load (TMDL) (including the San Benito River and Uvas, Llagas, and Rider Creeks, Figure 2-6) (Central Coast RWQCB 2007). As discussed in Section 3.13, *Water Quality,* the Pajaro Watershed has experienced acute erosion and sedimentation problems as a result of urban and agricultural encroachment on streams, poor and outdated drainage infrastructure (i.e., ditches, culverts, and roads), stream channelization, and other land use changes leading to increased runoff. The Pajaro River Sediment TMDL establishes sediment allocations for various land uses, targeting the greatest load reductions for agricultural activities, roads, and gravel mines. The Pajaro River Sediment TMDL also establishes a Land Disturbance Prohibition that addresses the controllable discharge of soil, silt, or earthen material from various land use activities and modifications (Central Coast RWQCB 2007).

3.7.3 Environmental Setting

Climate and Hydrology

Surface water hydrology (primarily runoff and stream flow) is largely a function of climate, land cover, and soil. In much of California, including Santa Clara County, surface hydrology also is influenced by water resources management that may capture, store, release, or transfer surface water across or between watersheds. The Project Area experiences a Mediterranean type climate, characterized by warm, dry summers and cool, wet winters. Precipitation is mainly concentrated in the winter months and falls primarily as rain, though the high elevations of the Santa Cruz Mountains and Diablo Range can receive limited snowfall. Weather in the region is subject to high annual variability as well as

longer-term climatic cycles, including the Pacific-North American Oscillation, the El Niño Southern Oscillation, and the Pacific Decadal Oscillation (Andrews et al. 2004:337–348). These cycles affect temperature, precipitation, and the frequency of extreme weather events.

Rainfall, land cover, soil structure, soil moisture, slope, watershed size, reservoir operations, and other factors all influence the magnitude and duration of flows (or discharge) in rivers and streams in the Project Area. Urbanized lands with a higher proportion of impervious surfaces and reduced infiltration generally demonstrate a rapid runoff response to rainfall events. Such "flashy" hydrologic systems are noted for the short lag-times between rainfall and peak discharge and show very steep (needle-like) rising limbs of storm hydrographs[1]. Unregulated streams (i.e., those without water supply reservoirs, or located above impoundments) also may show more rapid runoff response compared to streams that have structural features that provide runoff retention or detention. Although typically unregulated, streams tend also to be surrounded by land uses that have higher rates of infiltration, reducing the amount of runoff.

Many of the streams in the Project Area are downstream of dams, and flows on these streams are regulated by these dams for water supply purposes. On regulated creek systems, peak discharges are reduced, the frequency/duration relationships are more equitable (less extreme), and base flow discharge (non-storm flow) typically extends into the later spring, summer, and fall months compared to non-regulated streams. Also, several of the reservoirs in the Project Area release flow through the summer months to recharge groundwater aquifers.

To understand Project Area hydrology, it is useful to compare representative hydrographs from various Project Area watersheds. Four representative hydrographs from the Guadalupe River, Coyote Creek, Upper Penitencia Creek, and Llagas Creek are shown in Figures 3.7-1a and 3.7-1b. All four of these creeks are regulated by upstream reservoirs. The figures show the long-term mean daily discharge for the four stations. The Guadalupe River and Coyote Creek are the largest streams in Santa Clara County, and both drain north into San Francisco Bay. Penitencia Creek is a tributary to Coyote Creek and drains into Coyote Creek in San Jose. Llagas Creek is in the Pajaro Watershed and flows south into the Pajaro River, and ultimately into Monterey Bay.

The pattern shown on each of the mean daily hydrographs in Figures 3.7-1a and 3.7-1b exemplify the Mediterranean type climate in the Project Area, with most of the stream flow in the winter and spring months and a much smaller base flow in the summer months. For example, as shown in the Coyote Creek hydrograph, for over a 10-year recorded period, the highest average mean daily flow of 191 cubic feet per second (cfs) occurred during early March, while the lowest average mean daily flow of 13 cfs (about one fifteenth as large) occurred at the end of July. The Guadalupe River, Coyote Creek, and Penitencia Creek all show a similar pattern of higher stream flow during the winter and early spring and lower flows during the summer.

[1] A hydrograph is a graph or measure of stream flow over time, typically with discharge plotted along the vertical axis and time charted along the horizontal axis.

In comparison to the mean daily flows shown in Figures 3.7-1a and 3.7-1b, Figure 3.7-2 shows peak flow discharges on the Guadalupe River for most of the years recorded between 1930 and 2002. Like the mean daily discharges, the peak discharge record also highlights the annual variability in stream flow that is characteristic of streams in the Project Area. The highest peak flow of 11,000 cfs, recorded in 1995, is over 80 times larger than the lowest peak flow 125 cfs, recorded in 1960. The distribution of peak flows over time on the Guadalupe River shows no discernable pattern, which emphasizes the unpredictability of Mediterranean type climate streams. A comparison from 2004 to 2009 of the peak flows of Coyote Creek (which drains north into San Francisco Bay) and Llagas Creek (which drains south into the Pajaro River) shows that although both creeks follow the same general pattern of higher peak flows in 2006 and 2008, and a lower peak flow in 2007, Coyote Creek shows more variability in peak flows (Figure 3.7-3). This could be caused in part by the relative locations of the stream gages, the difference in watershed size, or the degree to which flows are managed in each watershed. Coyote Creek's stream gage captures a much larger portion of a larger watershed (319 square miles out of a 320-square mile watershed) and is closer to the mouth of the creek, while Llagas Creek's stream gage is closer to the headwaters of the creek and in a smaller watershed (gaging 9.63 miles of a 104-square mile watershed).

Geomorphology

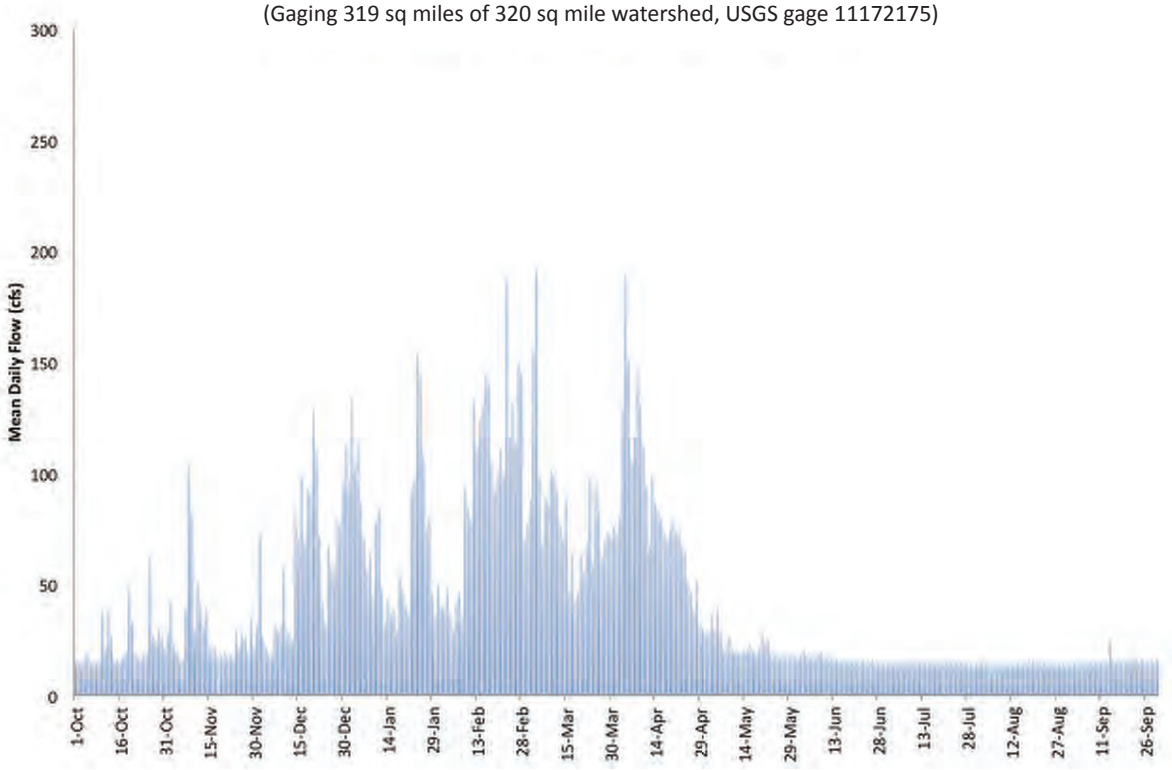
Many factors influence the geomorphology of rivers and streams, including geology, hydrology, climate, land use, and vegetation. This section describes regional geomorphic patterns in Santa Clara County, and then describes the individual watershed areas in the Project Area where stream maintenance occurs. This discussion concludes with a description of the primary channel types in the Project Area, and a summary of known changes in the Project Area since the 2002 SMP was implemented.

Regional Setting

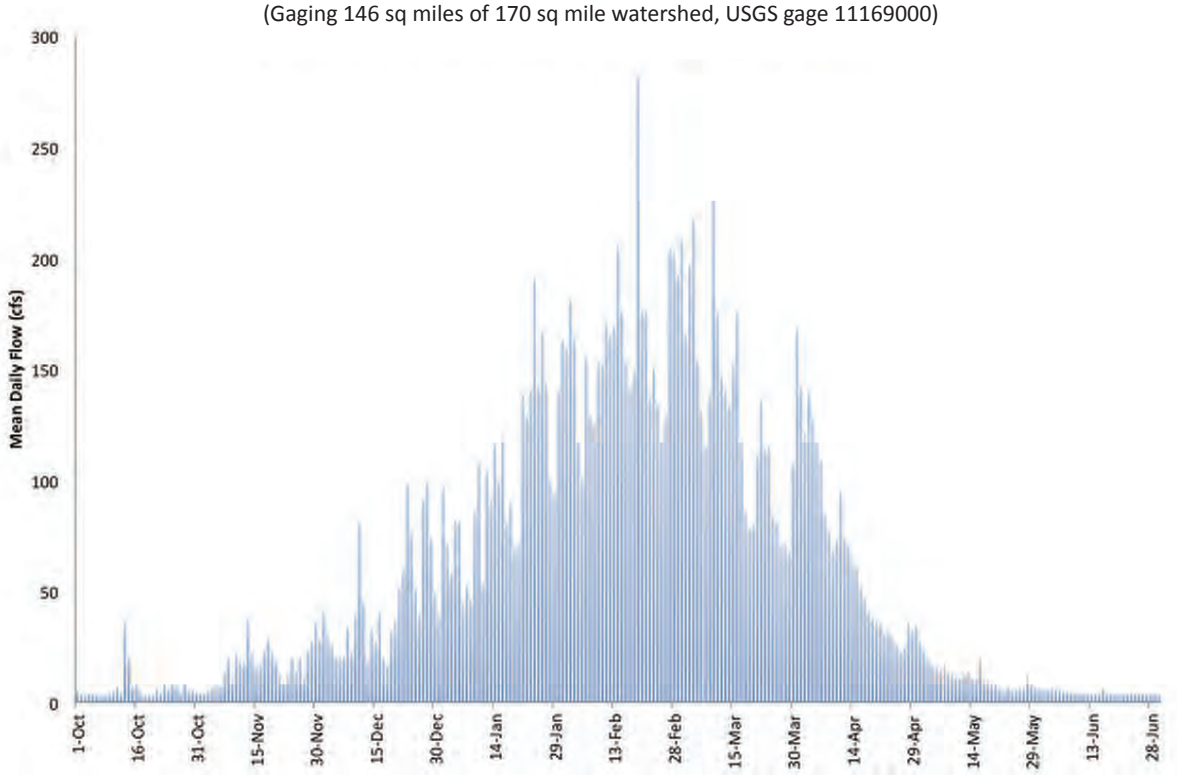
Santa Clara County is situated in the Central Coast Range province of California. The Central Coast Range is characterized by its northwest-southeast trending mountain ranges. Typically, the ranges are separated by structural depressions (valleys) that fill with alluvium (stream transported sediment) derived from the adjacent ranges. Most often, the alluvial valleys contain a primary or "trunk" stream that collects runoff and sediment from the side valley tributary streams (generally to the east and west) that ascend higher in the contributing watershed toward the ridgelines.

This general pattern holds true in Santa Clara County, with the Santa Cruz Mountains to the west and the southern Diablo Range to the east. These two ranges frame the Santa Clara Basin below (Figure 2-1), which drains to San Francisco Bay. In the southern Project Area, the Gilroy Valley of the Pajaro Watershed serves as the central alluvial valley between the Santa Cruz Mountains and Diablo Ranges. The Pajaro Watershed drains to Monterey Bay, as shown in Figure 2-1.

Mean Daily Discharge of Coyote Creek above Highway 237 at Milpitas
Based on Recorded Data, 1999-2009
(Gaging 319 sq miles of 320 sq mile watershed, USGS gage 11172175)



Mean Daily Discharge of Guadalupe River, at San Jose
Based on Recorded Data, 1930-2003
(Gaging 146 sq miles of 170 sq mile watershed, USGS gage 11169000)



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Horizon WATER and ENVIRONMENT

Figure 3.7-1a
Representative Hydrographs from Project Area Watersheds

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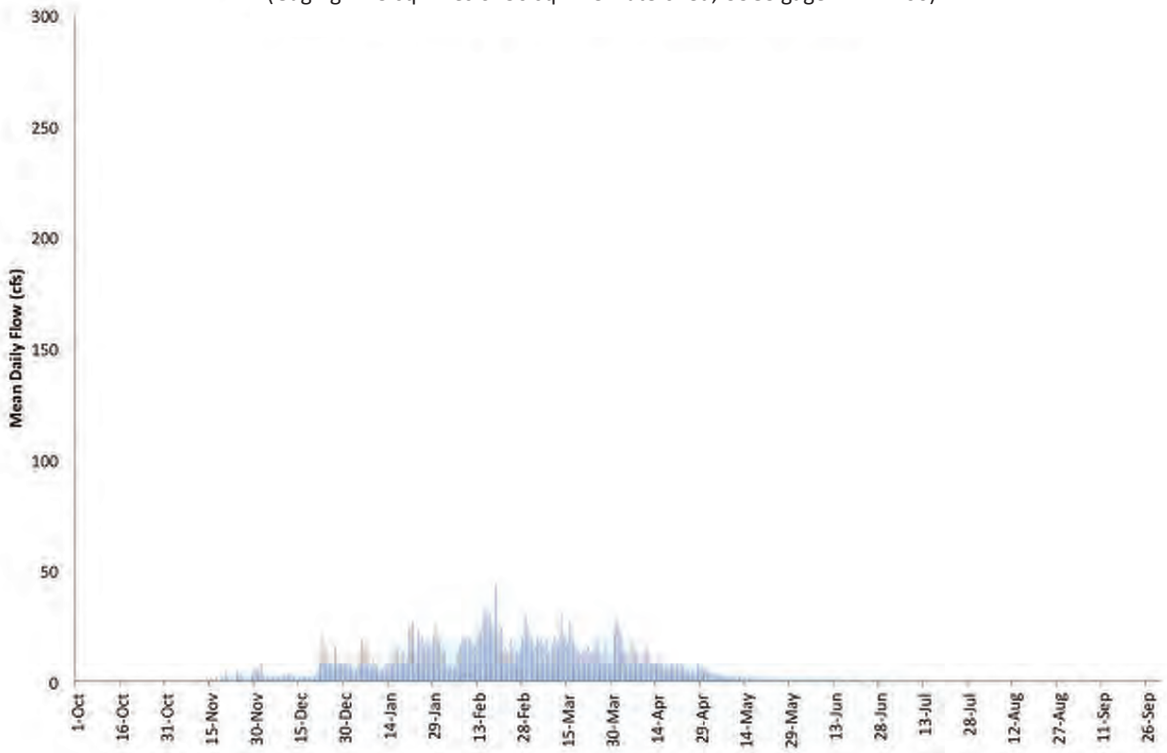
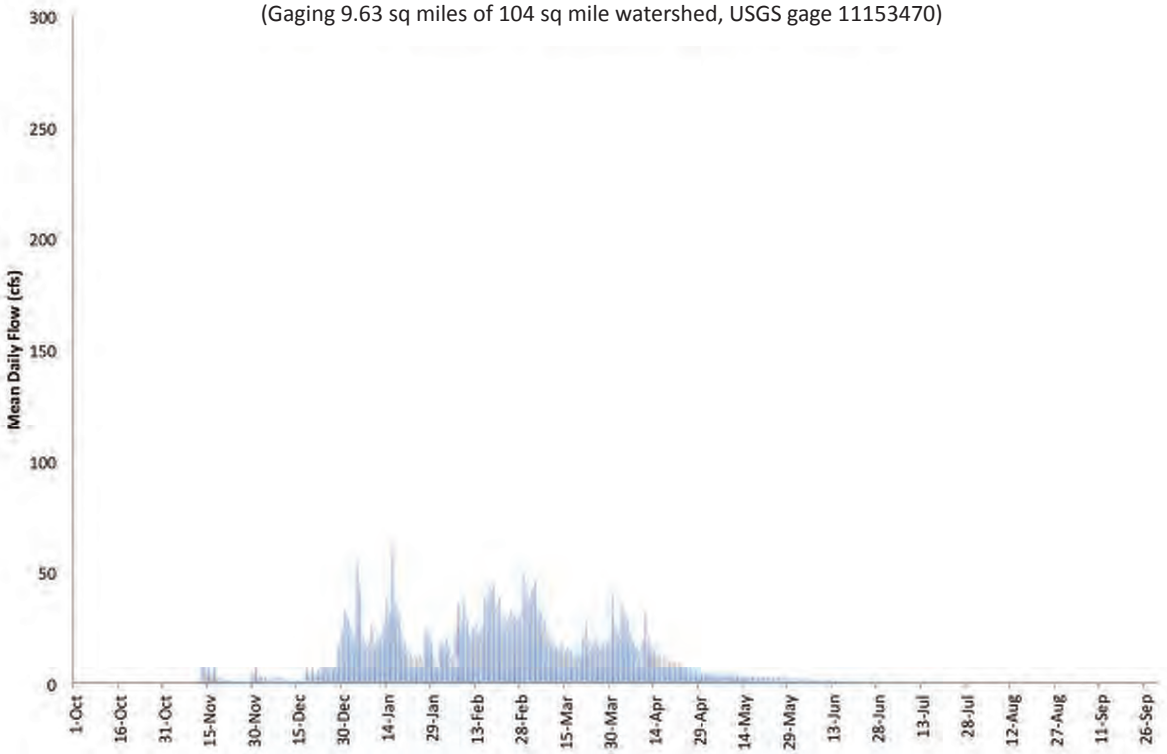
Mean Daily Discharge of Upper Penitencia Creek, San Jose
Based on Recorded Data, 1962-1987
(Gaging 21.5 sq miles of 30 sq mile watershed, USGS gage 11172100)



Mean Daily Discharge of Llagas Creek above Chesbro Reservoir Near Morgan Hill
Based on Recorded Data, 1972-2009
(Gaging 9.63 sq miles of 104 sq mile watershed, USGS gage 11153470)



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Horizon WATER and ENVIRONMENT

Figure 3.7-1b
Representative Hydrographs from Project Area Watersheds

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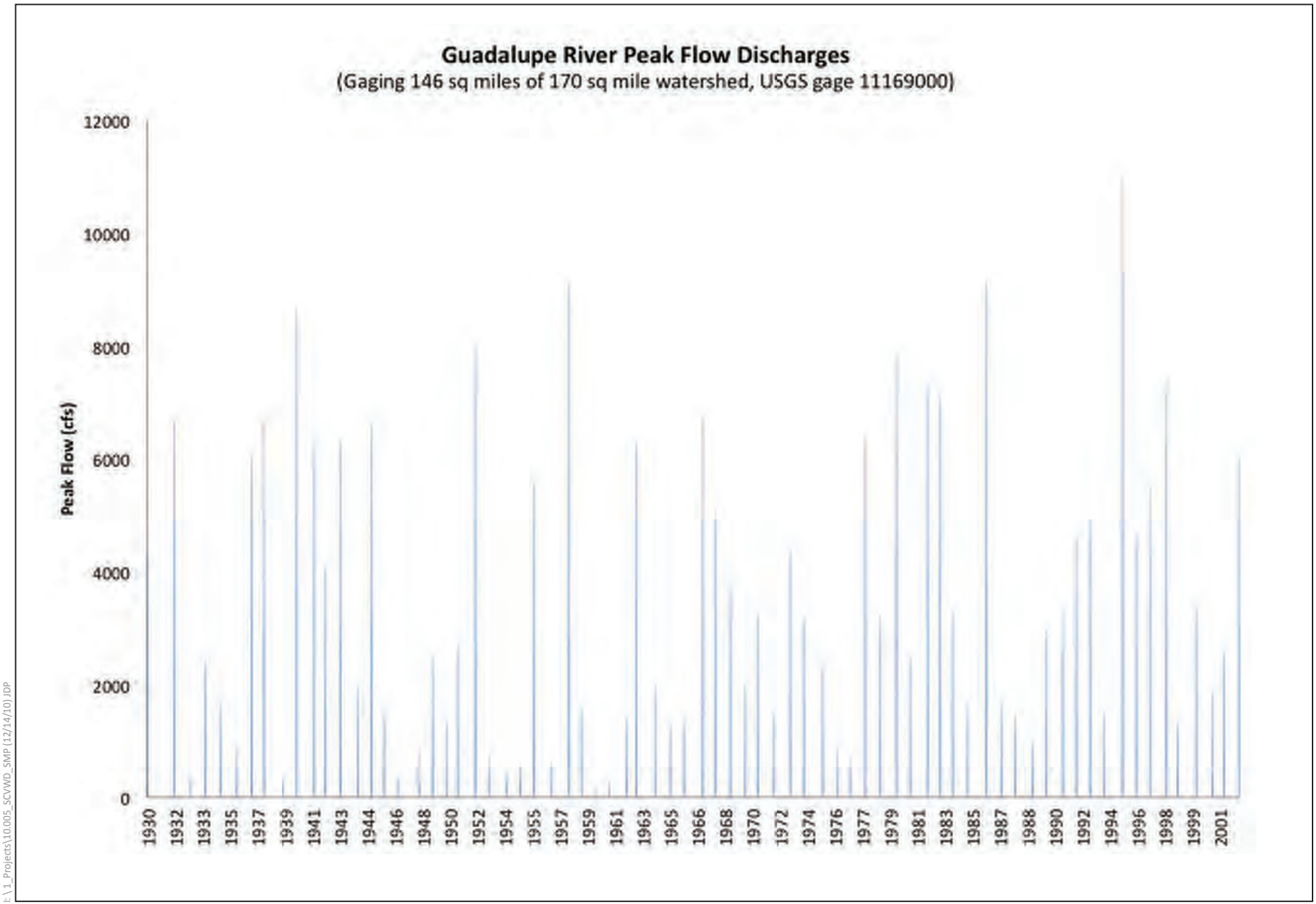

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Horizon WATER and ENVIRONMENT

Figure 3.7-2
Guadalupe River Peak Flow Discharges

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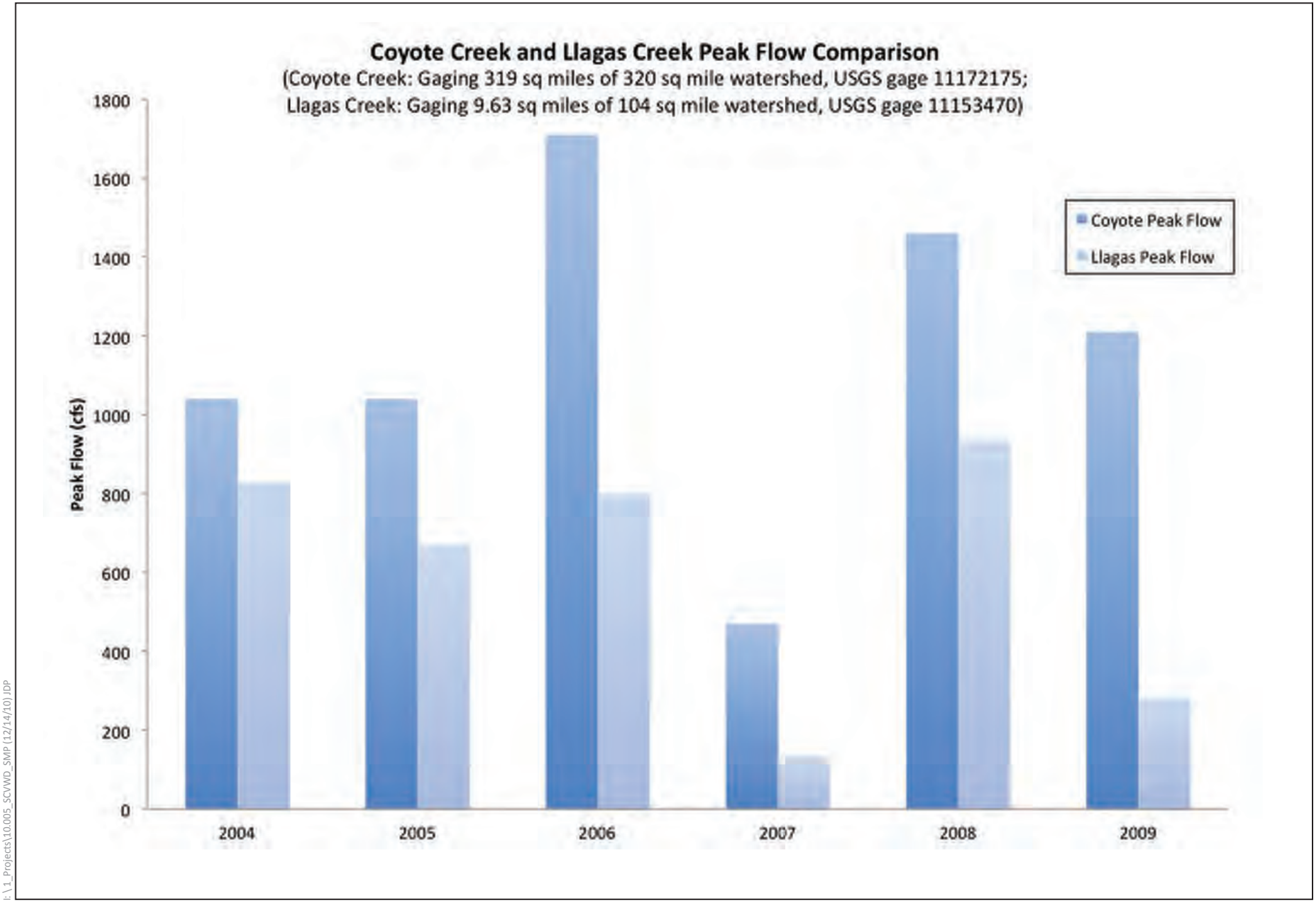

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Horizon WATER and ENVIRONMENT

Figure 3.7-3
Comparison of Peak Flows-Coyote Creek and Llagas Creek

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The ridge-valley structure of Santa Clara County presents a three-part continuum of geomorphic conditions, with crystalline or bedrock areas in the upper watersheds, transitioning to foothill alluvial fans, then to lower watershed bays and alluvial plains. These geomorphic zones are described next, following Helley et al. (1979), SCVWD (2002), and PWA (2002).

Bedrock Uplands

Bedrock uplands form the steep, mountainous headwater terrain of the principle drainages in the Project Area. In the western Project Area (Figure 2-1), the eastern slopes of the Santa Cruz Mountains form the headwaters of many Project Area waterways, including San Francisquito Creek, Adobe Creek, and the Guadalupe River. The underlying bedrock geology in this region is commonly the Franciscan Complex, a formation of compressed, uplifted, and rotated marine sedimentary materials that was deposited in the early Cretaceous Period (approximately 146 to 100 million years ago) (Norris and Webb 1990, Sullivan and Galehouse 1991). Locally, younger Mesozoic meta-sedimentary and volcanic rocks with smaller quantities of Tertiary sandstones, siltstones, and mudstones are exposed (PWA 2002). In the eastern Project Area, elevations in the Diablo Range vary from 500 to 2,800 feet above mean sea level, with slopes similar to those on the eastern Santa Cruz Mountains (SCVWD 2001). In addition to the Franciscan Complex geology, the Diablo Range includes the characteristic sandstone and mudstone depositional layers of the Great Valley Sequence. Similar to the Santa Cruz Mountains, stream channels in the Diablo Range are steep and flow through deeply incised valleys with little or no floodplain area.

In terms of climate, the steep ridgelines and relatively high elevations of the Santa Cruz Mountains generate a strong orographic effect (increased cooling and precipitation when air masses are forced up and over mountain fronts) on winter storms (cyclones) that approach from the west and southwest, laden with moisture from the Pacific Ocean. The Santa Cruz Mountains area receives the highest average rainfall totals in the county, ranging from 30 to 50 inches per year. The combination of high rainfall, steep gradients, weathered bedrock, and active landslides creates the potential for the watershed to produce high sediment yields.

The Diablo Range in the eastern Project Area receives substantially less average rainfall than the Santa Cruz Mountains, ranging from 20 to 32 inches, caused by a "rain shadow" effect as fronts move from the ocean over ranges toward the interior. Similar to the Santa Cruz Mountains, stream channels in the Diablo Range are steep and often flow through deeply incised valleys with little or no floodplain area. Active erosion in the Diablo Range includes downslope mass movement of fractured bedrock, such as debris slides and rock falls (SCVWD 2001). Fluvial geomorphic processes in this range include the headward (upstream) erosion of streambeds to form incised channels.

In several drainages (e.g., Coyote, Alamitos, Guadalupe, and Los Gatos creeks), the existence of reservoirs has effectively reduced the delivery of coarse sediment from the watershed uplands to the alluvial fans/plains below. The fine material (typically finer material and washload held in suspension) that is not trapped by reservoirs is transported downstream, and can collect and deposit in the stream channels of the Project Area (PWA 2002, SCVURPPP 2006). In addition, reservoirs can alter the geomorphology of downstream

channels by changing the magnitude, frequency, duration, and timing of stream flows. Typically, reservoirs reduce the magnitude and frequency of flood events. Drainages without reservoirs in the mountain and/or foothill regions deliver higher sediment loads to the alluvial plains below.

Typically, no Proposed Project stream maintenance activities would occur in bedrock uplands, as these are above the 1000-foot elevation contour.

Foothill Alluvial Fans

The foothill alluvial fans in the Project Area are found downstream of the bedrock uplands and provide a topographic transition to the alluvial plains further downstream in the watershed. Alluvial fans collect stored sediment, much of it coarse gravel and sand. The characteristic process of alluvial fans involves distributary channels that migrate (if unconstrained) and distribute sediment across the fan surface. In the Coast Ranges, alluvial fans are typically geologically young depositional landforms from the Quaternary Period (the last 1.8 million years). Although depositional when viewed through longer geologic time scales, in the short term, present-day alluvial fans can function variably as zones of sediment erosion, sediment transport, or sediment deposition. Many of the current alluvial fan channels in the Project Area, particularly in the upper fan zones, are incising and transporting coarse sediments downstream (PWA 2002). Gullying and headward erosion through the alluvial fans in many instances have been caused or exacerbated by historic land use practices, development encroachment on stream corridors, and the channelization of streams that have essentially fixed their locations. Where streambanks have been artificially steepened, rotational slumps (the movement of a mass of soil and rock downslope and rotating) and other slope failures can occur (SCVWD 2001).

Proposed Project activities that would occur in the foothill alluvial fans typically include bank protection, sediment removal, and vegetation management.Bay Plain and Alluvial Valleys

The floodplains and alluvial valleys situated between the foothills and San Francisco Bay are formed of relatively young sedimentary deposits, dating from the Holocene epoch of the last 10,000 years. Sediment grain sizes are coarsest near the foothills and alluvial fans and become finer moving downstream toward San Francisco and Monterey bays. Whereas upper alluvial fans may slope up to a 5 percent gradient, in the lower plain regions stream slopes typically are less than 1 percent. Before large-scale human modification and flood protection activities, sediment deposition in the alluvial plains occurred primarily during moderate to large floods, with coarse material depositing over riverbanks to form natural levees and finer sediments dispersed over the broader floodplain further from the channel. The lower bay plain is composed of medium to fine grained alluvium and estuarine deposits. Many of these deposits were laid during estuarine backwater flooding conditions when winter stream flows met high tides (PWA 2002). Near the margins of San Francisco Bay, estuarine sediments intergrade with fine alluvium in the deltas of SCVWD-maintained streams; extensive areas of artificial fill and diked baylands also are found.

Although the processes that shaped the Bay plain and lower alluvial valleys have largely been disrupted through channelization and construction of artificial levees, the lower valley

and Bay plain zone continues to be highly depositional. Engineered stream channelization in this lower watershed zone (and its current maintenance) has nearly eliminated past floodplain processes, such as lateral channel migration, which is now either non-existent or highly unlikely. In this lower watershed zone, some localized streambank erosion occurs as streams attempt to dissipate energy by restoring plan form sinuosity (i.e., meander patterns). These processes and their relationship to Proposed Project maintenance activities are discussed further in Section 3.7.4, *Impact Analysis*.

Project Area Watersheds

Santa Clara Basin

The Santa Clara Basin includes approximately half of Santa Clara County and small parts of San Mateo and Alameda Counties (Figure 2-1). The Santa Clara Basin consists of San Francisco Bay south of the Dumbarton Bridge and the 824 square miles that drain, generally in a northerly direction, to the Bay. The Diablo Range and the Santa Cruz Mountains form the eastern, western, and southern basin boundaries. Land uses within the Santa Clara Basin range from residential, commercial, and industrial uses in the northern portion of the basin to a primarily rural southern portion with cattle ranching, water-supply catchments, and scattered low-density residential development (SCBWMI 2000).

For the purposes of resource management, SCVWD has divided the Santa Clara Basin into five watershed management areas (WMA): Lower Peninsula, West Valley, Guadalupe, Coyote, and Pajaro WMAs (Figures 2-2 through 2-6). A general description of these watersheds is discussed next. Following this discussion, Table 3.7-1 provides a summary of the main drainages in each WMA.

Lower Peninsula WMA

The Lower Peninsula WMA (98 square miles) is located in the northwest portion of the Santa Clara Basin (Figures 2-1 and 2-2). The Lower Peninsula headwaters begin in the Santa Cruz Mountains at elevations greater than 2,500 feet. Tributary creeks fall steeply from the headwaters region to the more gently sloping alluvial fans and plains. Major streams under SCVWD's management within the Lower Peninsula WMA include San Francisquito, Stevens, Permanente, Adobe, Barron, and Matadero creeks (WMI 2007). These streams generally flow northward, conveying flows to the Palo Alto Flood Basin and, ultimately, San Francisco Bay. However, portions of Buckeye, Adobe, Permanente, and Stevens creeks flow more easterly/westerly, where their stream valleys follow the San Andreas Fault Zone, which disrupts their drainage pattern (Figure 2-2).

San Francisquito Creek marks the border between Santa Clara and San Mateo counties. SCVWD only maintains the side of the creek that is within Santa Clara County. Up to 1,500 cfs of runoff in Permanente Creek may be diverted to Stevens Creek via the Permanente Creek Diversion (Figure 2-2), built in 1959. During storm events, high flows from Barron Creek may be diverted to Matadero Creek via the Barron Creek Bypass structure. SCVWD manages Stevens Creek Reservoir (3,465 acre-feet), the largest reservoir

in the Lower Peninsula Watershed, for water supply storage purposes with incidental flood protection benefits[2].

Land uses in the Lower Peninsula Watershed generally consist of open space and low-density residential development in the upper watershed, with higher density residential and commercial development on the valley floor. Municipalities that are partially or entirely with the WMA include Los Altos Hills, Palo Alto, Mountain View, Los Altos, Cupertino, and Sunnyvale. A large quarry is in the upper Permanente Watershed and mines limestone for cement production.

West Valley WMA

The West Valley WMA (85 square miles) is situated southeast of the Lower Peninsula Watershed and northwest of the Guadalupe Watershed (Figures 2-1 and 2-3). The major natural drainages in this WMA are Calabazas, San Tomas Aquino, and Saratoga creeks. These streams begin as natural channels at relatively low elevations in the Santa Cruz Mountains (less than 1,500 feet) (WMI 2007). As these streams transition from the alluvial fan regions to the Bay plain, they become highly modified channels that traverse the Bay plain and ultimately discharge to Guadalupe Slough. The Sunnyvale West and East Channels, constructed channels that provide drainage for large portions of Sunnyvale, also discharge to Guadalupe Slough. Like much of the western Santa Clara Basin, land use in the upper West Valley Watershed is primarily forest or undeveloped rangeland with low-density residential development, while the lower watershed is highly developed for residential and commercial uses. However, within the Calabazas drainage, several areas of heavy industry are in the upper watershed. Municipalities that are partially or entirely within this WMA include Sunnyvale, Santa Clara, Cupertino, San Jose, Santa Clara, Campbell, Monte Sereno, Los Gatos, and Saratoga. (SCBWMI 2000)

Guadalupe WMA

The Guadalupe WMA (Figures 2-1 and 2-4) drains approximately 170 square miles, beginning in the eastern Santa Cruz Mountains near the summit of Loma Prieta (3,790 feet above mean sea level) and eventually discharging to San Francisco Bay via Alviso Slough. The Guadalupe River, the largest drainage in the watershed, begins at the confluence of Alamitos and Guadalupe creeks and flows north through heavily urbanized portions of San Jose and Santa Clara to Alviso Slough. Alamitos Creek flows northwesterly to Almaden Reservoir (2,000 acre-feet), and then flows northerly to its confluence with Calero Creek, and eventually to its confluence with Guadalupe Creek. Three main tributaries, Ross, Canoas, and Los Gatos creeks, join the Guadalupe River on the Bay plain as it flows north towards the Bay. SCVWD operates five reservoirs in the Guadalupe Watershed for water supply storage purposes (with incidental flood protection benefits): Guadalupe, Calero, Almaden, Lexington, and Vasona Reservoirs. Municipalities that are partially or entirely with this WMA include Campbell, Santa Clara, Los Gatos, Monte Sereno, and San Jose.

[2] SCVWD does not handle maintenance activities at reservoirs or dams as part of its Stream Maintenance Program. However, stream maintenance at the reservoir outfall below the dam is included, as is any necessary stream maintenance upstream of the reservoir (below the 1,000-foot contour).

Coyote WMA

The Coyote WMA is the largest watershed in the Santa Clara Basin, encompassing over 320 square miles (Figures 2-1 and 2-5). The Coyote Watershed drains the west-facing slopes of the Diablo Range that lie within the Santa Clara Basin. The eastern and southern portions of the watershed are upland areas with elevations up to 4,000 feet above mean sea level; the northern and western portions encompass the valley floor. Coyote Creek is the principal drainage in the watershed; 29 major tributaries drain into Coyote Creek including Upper Penitencia Creek, Berryessa Creek, Lower Silver Creek, and Fisher Creek (SCVWD 2001). Streams in the watershed generally drain in a northwesterly direction to San Francisco Bay. Coyote and Anderson reservoirs (22,925 and 89,073 acre-feet, respectively) capture runoff from the upper Coyote Watershed. Anderson Reservoir's purpose is to facilitate groundwater recharge in the Santa Clara Valley groundwater basin, provide emergency water supply, and provide flood protection (PVWMA et al. 2007). Flows in the lower watershed are highly regulated by these reservoirs, which are managed largely for groundwater recharge. The Hayward and Calaveras faults are major potentially active earthquake faults that cross the watershed. The upper Coyote Watershed includes unincorporated, predominantly agricultural areas. The entire city of Milpitas and portions of San Jose and Morgan Hill lie within the watershed boundaries (SCVWD 2001).

Pajaro WMA

The Pajaro WMA is located within San Benito, Santa Clara, Santa Cruz, and Monterey counties and encompasses approximately 1,300 square miles (Figures 2-1 and 2-6) (PVWMA et al. 2007). The Pajaro Watershed is one of the Central Coast's largest watersheds and is well-known for its world-class agricultural soils and powerful flooding characteristics (DWR 2009). Most of the watershed is mountainous or hilly, with level lands confined to the floodplains of Pajaro River and its tributaries (Central Coast RWQCB 2005). Unlike streams of the Santa Clara Basin, the Pajaro River drains directly to the Pacific Ocean, near the geographic center of Monterey Bay.

Major sub-watersheds within the Pajaro River Basin include the San Benito River and Tres Pinos, Uvas, Llagas, and Corralitos creeks, the last three of which are within the Project Area. Agriculture has long been the dominant land use in the watershed and is a major source of nutrients and sediment loading to the Pajaro River. However, in recent years, substantial portions of the upper watershed area have been developed into residential subdivisions. In addition to residential and agricultural uses, historic mercury mining activities occurred in the Hernandez Lake area and gravel mining occurred along Pajaro and San Benito rivers. (Central Coast RWQCB 2005)

Major reservoirs in the Pajaro Watershed include the Chesbro and Uvas reservoirs. Chesbro Reservoir discharges to Llagas Creek, and Uvas Reservoir discharges to Uvas Creek. Anderson Reservoir discharges to Coyote Creek, outside of the Pajaro Watershed, but was historically connected to the Pajaro River Basin via a pipeline. The purpose of Chesbro and Uvas reservoirs is to facilitate groundwater recharge in the Gilroy–Hollister groundwater basin (Chesbro Reservoir also is managed for flood protection). Municipalities that are partially or entirely with this WMA include San Jose, Morgan Hill, and Gilroy.

Table 3.7-1. Principal Creeks in Project Area Watersheds

Creek or Channel	Drainage Area (square miles)	Channel Length (approx. miles)	Main Tributaries
Santa Clara Basin			
Lower Peninsula Watershed			
Adobe Creek	10	NP	Purissima Creek
Barron Creek	3	NP	N/A
Matadero Creek	14	NP	Deer Creek; Stanford Channel
Permanente Creek	17	13	Hale Creek
San Francisquito Creek	45	12.5	Los Trancos Creek
Stevens Creek	29	19	Permanente Creek Diversion; Heney Creek
West Valley Watershed			
Calabazas Creek	17	13.3	Prospect, Rodeo, and Regnart Creeks; El Camino Storm Drain
San Tomas Aquino Creek	22	16	Saratoga, Smith, Vasona, and Wildcat Creeks
Saratoga Creek	17	15	N/A
Sunnyvale West Channel	7.5	3	N/A
Sunnyvale East Channel	7.1	6	N/A
Guadalupe Watershed			
Alamitos Creek	37	8.5	Golf, Greystone, Randol, Calero and Herbert Creeks; Jacques Gulch; and Barrett Canyon
Guadalupe Creek	15.2	NP	Shannon, Pheasant, and Hicks Creeks
Los Gatos Creek	51	NP	Limekiln Canyon, Soda Spring, Aldercroft, Black, Briggs, and Hendrys Creeks; Moody Gulch
Guadalupe River	170	NP	Alamitos, Guadalupe, Ross, Canoas, and Los Gatos Creeks
Coyote Watershed			
Coyote Creek	320	42	Fisher, Upper Silver, Lower Silver, and Upper Penitencia Creeks, and other creeks tributary to the two reservoirs on Coyote Creek
Lower Penitencia Creek	30	NP	East Penitencia Channel and Berryessa Creek
Pajaro Basin			
Pajaro Watershed			
Pajaro River	1,300	NP	Pacheco, Llagas, and Uvas-Carnadero Creeks

N/A – not applicable, NP – not provided
Sources: SCBWMI 2000, PVWMA et al. 2007, WMI 2007

SMP Channel Types and Drainage Features

All Proposed Project maintenance activities would take place in channels below the 1,000-foot elevation contour. Within this zone, four primary channel types are found in which maintenance may occur: natural or mixed[3] channels on alluvial fans, mixed or concrete tributary channels on the Bay plain, mixed or concrete mainstem channels on the Bay plain, and tidally-influenced channels. An overview of each of these channel types is described next; proposed maintenance activities related to channel morphology also are discussed.

Type 1: Natural or mixed channels on alluvial fans

As streams transition from headwaters and canyons in the bedrock uplands to the foothill alluvial fans, channel slopes decrease and channel widths generally increase. As a result, sediment transport capacity decreases and bedload deposition increases. Unmanaged, sediment deposition in SCVWD-maintained channels reduces flow conveyance capacity, resulting in increased flooding risks. Consequently, under the existing SMP, the SCVWD actively maintains channel capacity by removing accumulated sediment and managing vegetation (to control hydraulic roughness), and it would continue to do so under the Proposed Project. Under the existing SMP, these maintenance activities have occured on numerous creeks throughout the foothills region, including streams such as Permanente, Calabazas, Penitencia, and Alamitos creeks, and such maintenance would continue under the Proposed Project.

Type 2: Mixed or concrete tributary channels on the Bay plain

This stream type includes the small to medium sized channels on the Bay plain that are tributary to the main streams that discharge to the Bay. Some of these channels have been engineered and straightened for flood protection and land development purposes, while others remain in a more natural state. Most of these drainages have seasonal stream flows, unless fed by artificial drainage (e.g., golf courses) or dam releases. Figures 2-11 and 2-13 show a general cross section and a photo example from Sierra Creek for this type of channel.

Channels on the Bay plain are depositional under natural conditions. Historical modifications to these channels, such as expanding cross-sectional areas for flood protection, often increase the rate of sedimentation. In-channel structures (such as weirs, bridges and culverts that control stream grade or alter hydraulics) also may influence sediment transport capacity and depositional patterns in these channels. SCVWD actively maintains channel capacity by removing accumulated sediment and managing vegetation. Streambank protection also is common in this channel type (see Section 3.7.4, *Impact Analysis*).

Type 3: Mixed or concrete mainstem channels on the Bay plain

This channel type includes the major drainages on the valley floor, such as the lower reaches of Adobe, Permanente, Stevens, Calabazas, San Tomas Aquino, and Coyote creeks, the Guadalupe River, and Sunnyvale East and West channels. Figure 2-7 provides a diagrammatical cross section and representative photographs of this channel type.

[3] See Chapter 2, *Project Description* for definitions of "natural" and "mixed" channel types.

Similar to the tributary channels, the main drainages on the Bay plain are depositional under natural conditions. Channelization and channel modification activities that have straightened, widened, and deepened these stream channels have further supported depositional processes. SCVWD has undertaken several capital improvement projects that were intended to reduce the need for ongoing sediment management by restoring the geomorphic function of these channels. This has involved construction of multistage channels and bypass features to more efficiently manage sediment discharge. Nevertheless, in many situations SCVWD must still actively maintain channel capacity by removing accumulated sediment. Bank stabilization, vegetation management, and streambank protection activities also are common in this channel type.

Type 4: Tidally-influenced channels

The delta (river to estuary interface) portions of the Type 3 channels described above are tidally influenced. Figure 2-9 provides representative photographs of this channel type. The channels in this region are typical of brackish tidal sloughs with wide and shallow cross sections and tall emergent vegetation on the channel margins. Substrate is generally poorly consolidated, fine-textured marine and alluvial sediment. Proposed Project maintenance activities in this channel type generally would include bank stabilization, sediment removal, and vegetation management.

Groundwater

The Project Area includes a number of groundwater basins and subbasins, as defined in the *California Water Plan Update* (DWR 2009). The major groundwater basins and subbasins in the project area are the Gilroy–Hollister Valley Basin (which includes the Llagas Area, Bolsa Area, Hollister Area, and San Juan Bautista Area subbasins), the Pajaro Basin, and the Santa Clara Subbasin. The Gilroy–Hollister Valley Basin and the Pajaro Basin are in the Central Coast Hydrologic Region. Within the Central Coast Hydrologic Region, groundwater is an important source of supply, accounting for 83 percent of the total supply for agricultural and urban purposes in 1995. Aquifers in the Central Coast vary, from small inland valleys and coastal terraces to extensive alluvial valleys with multiple layers of aquifers and aquitards. The four subbasins that comprise the Gilroy–Hollister Valley Basin have a combined area of 183,600 acres, most of which is in the Project Area. The Pajaro Basin is bounded to the west by Monterey Bay and to the east by the San Andreas Fault and the Santa Cruz Mountains. The Pajaro Basin has a total area of 76,800 acres, of which only a small portion is in the Project Area. Groundwater levels have been decreasing over time in the Pajaro Basin because of pumping in excess of recharge (DWR 2009).

The Santa Clara Subbasin is located in the San Francisco Bay Hydrologic Region and has an area of 153,600 acres, most of which is in the Project Area. The Santa Clara Subbasin is bounded by the Diablo Range on the west, the Santa Cruz Mountains in the east, and is in a structural trough parallel to the Coast Ranges. Land subsidence has been a problem in the Santa Clara Subbasin in the past, and an annual monitoring program has been set up to reduce land subsidence and promote groundwater recharge to ensure groundwater will continue to be a viable water supply in the future (DWR 2009).

3.7.4 Impact Analysis

Methodology

Potential impacts to hydrologic conditions and geomorphic resources were evaluated based on how the Proposed Project could affect hydrologic or geomorphic functions. Alterations to flooding conditions also were considered, under the basic assumption that stream maintenance activities would be intended to reduce flood risk. Potential short-term and long-term impacts of primary maintenance activities (sediment removal, vegetation management, and bank stabilization) were considered.

Proposed Project maintenance activities would not change runoff sources, storm drainage pathways, or outlets (outfalls) from the storm drainage network to downstream areas. Therefore, this impact analysis focuses on anticipated changes occurring within the stream channels to be maintained, and how such changes may influence other aspects of the geomorphic system. In general, the proposed sediment removal, bank stabilization, and vegetation management activities would be a continuation of SCVWD's current SMP practices. The SMP Update process would include some areas (as indicated in Figures 2-14 through 2-38) where maintenance activities did not occur during the first decade of the SMP (2002-2012) but would occur between 2012 and 2022.

Criteria for Determining Significance

For the purposes of this analysis, the Proposed Project would result in a significant impact on hydrologic or geomorphic resources if it would:

A. substantially alter existing drainage courses or patterns of the site or area, including changes to the timing or amount of runoff or alteration of the course of a stream or river in a manner which would result in substantial erosion, siltation, or stream instability;

B. contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems;

C. substantially deplete surface water supplies;

D. place structures within a 100-year flood hazard area which would impede or redirect flood flows;

E. expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam;

F. substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level; or

G. expose people or structures to a significant risk of inundation by seiche, tsunami, or mudflow.

Because the intended purpose and primary objective of the current SMP is to reduce the risk of flooding, many of the criteria above are inherently counter to the objectives of the Proposed Project. Therefore, the review of potential environmental impacts that is presented next focuses on the potential for increased erosion and sedimentation caused by Proposed Project activities. The evaluation is divided into two time scales: near-term and short-term potential impacts that could occur during the immediate staging, preparation, and implementation of proposed maintenance activities; and longer-term potential effects.

Environmental Impacts

Impact HYD-1: Short-Term Instream Erosion or Sedimentation from Sediment Management Activities (Significance Criterion A; Less than Significant)

The Proposed Project would involve sediment removal and related activities, such as construction of temporary coffer dams for dewatering, culvert clearing and debris removal. During the immediate channel access, staging, and sediment removal activities, erosion from the streambanks or sediment loading into the channel and scouring may increase if the Proposed Project creates sudden vertical transitions downstream from sediment removal sites. Furthermore, sediment loads to the channel could increase if stockpiled soils or sediment-laden water at work sites enters the channel or if new areas are disturbed for staging activities. Erosion or sediment loading into the channel also could occur if the activities do not restore low-flow channels as closely as possible to their original location and form, except in areas where the original location could cause future erosion.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to minimize the potential for short-term instream erosion and sedimentation from proposed maintenance activities. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-20: Erosion and Sediment Control Measures
BMP GEN-21: Staging and Stockpiling of Materials
BMP GEN-22: Sediment Transport
BMP GEN-23: Stream Access
BMP SED-2: Prevent Scour Downstream of Sediment Removal
BMP SED-3: Restore Channel Features
BMP SED-4: Berm Bypass

Conclusion

Implementation of the BMPs listed above would prevent sediment at work sites from entering the channel and would, following sediment removal, restore low-flow channels as closely as possible to their original location and form where the original location would not cause future erosion. Therefore, the Proposed Project would not significantly affect instream erosion or sedimentation rates. This impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact HYD-2: Long-Term Instream Erosion or Sedimentation from Sediment Removal Activities (Significance Criterion A; Beneficial)

Although the proposed sediment removal activities are not anticipated to cause short-term adverse impacts through excessive erosion/sedimentation, the long-term potential effects of removing an average of over 45,000 cubic yards of sediment annually[4] were considered. In general, the flood protection channel network is not a system in geomorphic equilibrium, where sediment gains are balanced with sediment losses. The system is in disequilibrium because most reaches are net depositional, and sediment accumulates over time.

The cause for this net depositional condition is a result of disruption of the sediment delivery system, associated with historic land development in the region, subsidence of the Valley floor caused by historic groundwater pumping, and the construction of the flood protection channel network. Historically, before development and channelization, the streams in the Project Area periodically overtopped their banks and deposited sediment onto the adjacent floodplain. Non-channelized streams also migrated across the floodplain, seeking the most efficient pathway downstream. These pre-channelization geomorphic processes can be reviewed in standard geomorphic texts such as Dunne & Leopold (1978), Ritter (1986), or Mount (1995). Once flood protection channels were established in the Project Area to reduce overbank flooding, these channels lost their ability to spread and distribute sediments across adjacent floodplains. Upstream sediment sources, however, have not been reduced. The net result of these processes is that sediment is delivered to channels that are restricted from depositing and storing this sediment on their adjacent floodplains. The channels themselves have become the reservoirs for sediment storage. The baseline flood protection channel system is and will continue to be depositional and requires periodic sediment removal to help the streams' design flow conveyance capacities to be maintained.

Removing abundant sediment volumes from a system that is in geomorphic equilibrium may cause adverse geomorphic impacts to the overall system and, in particular, to downstream channel processes. In such a situation, the downstream channels would be "starved" of sediment transported from upstream. Such channels "starved" of sediment could respond by using the energy that would otherwise be used to transport sediment into eroding local instream sediment. This is often the origin of channel incision.

However, for the Proposed Project, the baseline condition is net depositional, whereby sediment loading far outpaces the ability for channels to transport their material downstream. The sediment removed from the Project Area's channels under the Proposed Program typically would not outpace the sediment transport capacity of downstream reaches. In other words, because the flood protection channels in the Project Area in general receive an abundant sediment supply, removing a portion of this sediment through proposed maintenance activities would not create "starved" channels downstream.

Additionally, from an ecological viewpoint, excessive buildup of sediment in low gradient Project Area channels causes a succession of the instream habitat toward monocultural stands of cattail marsh. Removing the sediment could have a beneficial effect by providing a

[4] SCVWD has removed an average 46,411 cubic yards of sediment annually under the current SMP.

more varied habitat until ongoing sediment aggradation triggers the need for sediment removal again. *Conclusion*

In the long term, Proposed Project sediment management activities would provide beneficial flood protection and no impact would occur.

Mitigation Measures: No mitigation is required.

Impact HYD-3: Short-Term Erosion or Sedimentation from Vegetation Management Activities (Significance Criterion A; Less than Significant)

Instream emergent vegetation (such as cattails) develops well in non-shaded flood protection channels with shallow and low velocity flows during drier season low-flow conditions. Cattail growth results in constricting the channel bottom with thick vegetation stalks and trapping more fine sediment, resulting in further bed aggradation. Proposed vegetation management activities would remove such instream emergent vegetation that traps sediment and obstructs channel flows. The Proposed Project also would thin/prune and remove instream woody vegetation that obstructs or diverts flows, resulting in an increased flood risk. When such vegetation is removed, the opportunity for erosion caused by channel bed disturbance and exposure increases. Deposited sediment could migrate to downstream areas during subsequent flow events in the channel. This potentially eroded sediment would have the potential to travel downstream and aggrade in a downstream location. Effects of the eroded sediment on aquatic habitat are described in Section 3.3, *Biological Resources*.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to minimize the potential for short-term erosion or sedimentation from proposed vegetation management activities. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP VEG-1: Minimize Local Erosion Increase from In-channel Vegetation Removal
BMP REVEG-1: Seeding

Conclusion

Implementing these BMPs would help minimize the potential for any increase in local erosion or sedimentation that may result from in-channel vegetation removal. Therefore, the Proposed Project would have a less-than-significant impact on short-term erosion or sedimentation and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact HYD-4: Short-Term Erosion or Sedimentation from Bank Stabilization Activities (Significance Criterion A; Less than Significant)

Bank stabilization activities would be implemented along stream banks where failure or severe erosion had occurred. At bank stabilization sites, SCVWD would continue to evaluate the cause of bank erosion or failure and would prepare a treatment design to provide a

stable bank form while minimizing potential impacts. As described in the 2012 SMP Manual (Appendix A), SCVWD has template designs for up to 28 bank stabilization approaches. Most commonly, SCVWD would repair failing banks with earth, rock, and other natural materials, backfilled to a stable slope. Where possible, SCVWD would encourage use of biotechnical approaches, including the use of willow wattles, vegetation mattresses, and planting of native riparian trees at the top of banks and the toe of slopes to create additional bank stability and increased canopy in the channel. Once the eroded or failed bank was stabilized and new plantings became established, the active source of eroding sediment would be eliminated, providing a longer-term benefit. However, during implementation of bank stabilization projects, the banks would be exposed and vulnerable to ongoing erosion.

The use of hardscape bank treatments (such as rip rap) would be used where other alternatives would not result in a sufficiently stabilized slope. A typical condition where a hardscape solution may be used is to stabilize the bank upstream and downstream of an outfall culvert to prevent reoccurring erosion. In such cases, rock may be used adjacent to the culvert outfall to help maintain the stability of the culvert. When repairs were made, banks would be recontoured to match the adjacent bank slope, where possible (i.e., returned to pre-failure condition). If site conditions allowed, the bank slope may be stabilized at a shallower slope (reducing the likelihood of renewed failure), but only if the work is conducted within the confines of the original channel as-built condition. Stabilized banks would be flush with the existing upstream and downstream bank slope. As a result, stream flows would not be altered such that velocity would be increased or erosion would result near or downstream of the project site. It is unlikely that measurable changes to stream flow characteristics in the project reach would occur. Overall, hardscape would be minimally used in proposed bank stabilization projects, placement of hardscape would be localized to small areas, and bank stabilization sites would be contoured to match the existing bank. The amount of sediment generated by bank stabilization activities would be relatively small.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to minimize the potential for short-term erosion or sedimentation from proposed bank stabilization activities. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP BANK-1: Bank Stabilization Design to Prevent Erosion Downstream
BMP BANK-3: Bank Stabilization Post-Construction Maintenance

Conclusion

The Proposed Project would minimize erosion caused by bank stabilization, by ensuring that site design measures would be used to prevent potential downstream erosion impacts and by maintaining or repairing bank stabilization projects that have been damaged by winter flows. Therefore, the impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact HYD-5: Long-Term Erosion and Sedimentation from Vegetation Management and Bank Stabilization Activities (Significance Criterion A; Beneficial)

Proposed vegetation removal, revegetation, and bank stabilization activities would have long-term beneficial effects on potential erosion and sedimentation. Pruning and selective removal of trees on streambanks that have the potential to capture debris or redirect erosive flows toward the banks would tend to reduce erosion/sedimentation processes along streambanks. Similarly, the stabilization and treatment of streambanks that are actively eroding or slumping would tend to reduce the long-term erosion and sedimentation of an actively destabilized streambank.

Conclusion

Proposed project maintenance activities would stabilize eroding streambanks such that long-term erosion and sedimentation from the banks would be reduced over time. Therefore, the proposed maintenance activities would be beneficial and no impact would occur.

Mitigation Measures: No mitigation is required.

Impact HYD-6: Harm to People, Structures, or Water Quality from Flooding (Significance Criteria D and E; Beneficial)

The Proposed Project would seek to improve flow conveyance conditions, to reduce the potential for flooding. The proposed maintenance activities would occur within the designated 100-year flood zone of channels in the Project Area.

Sediment Removal

Sediment removal activities would restore the flow conveyance capacity of Project Area channels to their design levels. Therefore, these proposed maintenance activities would reduce the potential for flooding. The Proposed Project would not involve construction of any new structures within the 100-year flood zone that could result in harm to people or structures.

Proposed sediment removal activities would include ground-disturbing activities that would occur primarily during the dry season, avoiding or minimizing the potential for flooding. However, many work sites would occur at perennial streams that carry water year-round. To conduct proposed maintenance activities such as sediment removal and bank stabilization, work sites would sometimes require dewatering, which would involve installation of a cofferdam or similar structure to prevent water from entering the work site. If the ponded water behind the temporary dewatering berm was accidently released, localized inundation of the work site and downstream area could result. However, the amount of stored water would not be substantial and would be entirely held within the flood protection channel, so no potential would exist to damage structures or harm people.

Vegetation Management

Proposed vegetation management activities would restore the flow conveyance capacity of Project Area channels to their design levels by removing instream vegetation.

Bank Stabilization

Proposed bank stabilization activities would return creek channels to their operational design. Bank stabilization activities may require the use of dewatering structures. Potential effects of the use of these structures would be similar to that described for sediment removal activities.

Other Maintenance Activities

Other proposed maintenance activities (management of animal conflicts, minor maintenance, and canal maintenance) also would generally improve the flow conveyance capacity of Project Area channels by removing trash or sediment from culverts and other crossings, and/or repairing levees that had been damaged by animals.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to minimize the potential for harm to people, structures, or water quality from flooding. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-33: Dewatering for Non-Tidal Sites
BMP GEN-34: Dewatering in Tidal Work Areas

Conclusion

The Proposed Project would decrease the possibility of flooding within the Project Area. The proposed maintenance activities would be beneficial and no impact would occur.

Mitigation Measures: No mitigation is required.

Impact HYD-7: Alterations to the Recharge, Quality, or Quantity of Groundwater (Significance Criterion F; Beneficial)

The Proposed Project would not utilize groundwater supplies; thus, no adverse impact on groundwater supply would occur. The majority of the creek channels (and some canals) maintained by SCVWD would be earthen, as opposed to having concrete-lined beds and banks. These creek channels (and certain canals) would provide passive avenues for groundwater recharge because water would be allowed to percolate down to shallow and deeper groundwater aquifers.

The current sediment transport conditions in the Project Area encourage accumulation of fine materials in stream channels, particularly where vegetation is overgrown and where the longitudinal slope of the channel is low. Groundwater recharge capacity is reduced in these locations as fine sediments clog pores and interstices between bed sediments. Over time, this reduces the rate at which surface water in the channels percolates down to the groundwater below.

Sediment Removal

Annual sediment removal activities and reshaping of the channel in some locations to keep sediment from depositing in the channel bed would improve infiltration and percolation to groundwater.

Bank Stabilization

Stabilizing failing stream banks would assist in reducing fine sediment inputs to the channels.

Vegetation Management

Vegetation management activities would support the growth of riparian vegetation along channel banks and would result in beneficial impacts to groundwater recharge by assisting in the reduction of fine sediment inputs to the channels.

Minor Maintenance

Minor maintenance activities would include sediment removal that would have similar beneficial impacts on groundwater quantities as those described for sediment removal activities.

Management of Animal Conflicts

Reductions in animal burrowing would assist in reducing fine sediment inputs from the levees to the channels.

Canal Maintenance

Because routine canal maintenance activities would include all general work activities, effects would be the same as described above for other routine maintenance activities.

Conclusion

The proposed sediment removal, bank stabilization, in-channel and riparian vegetation management, minor maintenance, canal maintenance, and management of animal conflicts would not deplete groundwater supplies or interfere with groundwater recharge. By reducing the amount of fine sediment in the channels/canals, these activities would improve percolation of surface water and increase groundwater levels. These proposed activities would be considered beneficial and no impact would occur.

Mitigation Measures: No mitigation is required.

Impact HYD-8: Occurrence of Seiche, Tsunami, or Mudflow (Significance Criterion G; No Impact)

The northern portion of the Project Area is located at the southern margin of San Francisco Bay. The California Emergency Management Agency has mapped areas that could be potentially inundated by tsunamis in the northern portion of the Project Area. In the Project Area, reaches of Coyote Creek and the Guadalupe River (extending approximately one-half mile inland from their mouths), the reach of Alviso Slough (extending one mile inland from its mouth), and less than one-half mile of the tidal mudflats and sloughs west of Alviso Slough are susceptible to tsunami inundation (CEMA et al. 2010).

Bank Stabilization

Proposed bank stabilization activities would not exacerbate tsunami conditions in areas that would be susceptible to tsunamis. In addition, no large bodies of water would be present in the Project Area that could create seiche hazards. Furthermore, bank stabilization activities would reduce the potential for impacts of mudflow.

Other Maintenance Activities

Similar to bank stabilization activities, other proposed maintenance activities (sediment removal, vegetation management, minor maintenance, management of animal conflicts, and canal maintenance) would not be located in tsunami-susceptible areas or near any seiche hazard areas. Management of animal conflicts may involve physical habitat alterations (such as compaction of levee faces or reconstruction of levee side slopes) that potentially could reduce any mudflow impacts. Vegetation management activities would generally remove in-channel vegetation and would not remove vegetation on levee slopes or stream banks such that the potential for mudflows would be increased. Sediment removal and minor maintenance activities generally would not affect any potential mudflows. Because routine canal maintenance activities would include all general work activities, effects would be the same as described for other routine maintenance activities.

Conclusion

No impacts related to seiche, tsunami, or mudflows would occur.

Mitigation Measures: No mitigation is required.

Impact HYD-9: Geomorphic Effects of Sediment Reuse (Significance Criterion A; Less than Significant)

Sediment reused at Pond A8 or another similar location would be placed to improve the geomorphic function in these locations. The Proposed Project would not reuse sediment in locations that could result in adverse geomorphic effects.

Conclusion

The geomorphic impact of sediment reuse would be beneficial in some cases, and in no case would have significant impacts. No mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact HYD-10: Creation of Runoff Water and Depletion of Surface Water Supplies (Significance Criteria B and C; Less than Significant)

The Proposed Project could contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems if it substantially increased the quantity of existing impermeable surface areas in the Project Area. Surface water supplies could be depleted if the Proposed Project generated significant water demands that were met by surface water supplies.

Bank Stabilization

Proposed bank stabilization activities are not a projected activity and would be performed on an as-needed-basis. These activities could include the use of concrete to repair unstable lined channels or side slopes. The use of concrete as part of these activities is not anticipated to be significant and would not substantially increase impermeable surface areas in the Project Area or subsequently contribute increases in runoff such that the capacity of existing or planned stormwater drainage systems were exceeded. The performance of bank stabilization activities may require use of water supplies, including surface water supplies, as detailed under Impact PSU-3 in Section 3.10, *Public Services and Utilities*. However, as described in that impact discussion, trucked-in SCVWD water supplies would be used to meet any water demands of the Proposed Project. Demands of the Proposed Project would not be expected to substantially deplete surface water supplies.

Other Maintenance Activities

Other proposed maintenance activities (sediment removal, minor maintenance, management of animal conflicts, vegetation management, and canal maintenance) could create water demands as described under Impact PSU-3 in Section 3.10, *Public Services and Utilities*. These water demands would be met with trucked-in SCVWD water supplies and would not be anticipated to be substantial or require significant quantities of surface water supplies. These proposed activities would not increase the impermeable surface area in the Project Area and would not create substantial quantities of runoff that would exceed the capacity of existing or planned stormwater drainage systems. The removal of sediments, vegetation, and trash from channels and canals would restore the design capacity of the existing stormwater drainage systems.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to minimize the potential for creation of runoff water and depletion of surface water supplies. A description of this BMP is provided in Chapter 2, *Project Description*.

BMP GEN-4: Minimize the Area of Disturbance

Conclusion

The Proposed Project would not substantially alter the existing impermeable surface area or resulting runoff in the Project Area. In addition, the Proposed Project would not substantially deplete surface water supplies. Therefore, this impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact HYD-11: Short-Term Erosion and Sedimentation from Minor Maintenance, Management of Animal Conflicts, and Canal Maintenance Activities (Significance Criterion A; Beneficial)

Proposed minor maintenance, management of animal conflicts, and canal maintenance activities may involve sediment removal and/or ground-disturbing activities that could affect creek channel erosion and sedimentation processes. Erosion and sedimentation-related effects of these activities would be similar to the effects described above for sediment removal activities, although on a reduced scale. During these activities, sediment loads to the channel could increase if stockpiled soils or sediment-laden water at work sites entered the channel. In addition, increased erosion and scouring could occur following these activities if the minor maintenance activities created sudden vertical transitions downstream from sediment removal sites.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to minimize the potential for short-term erosion and sedimentation from proposed maintenance activities. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-20: Erosion and Sediment Control Measures
BMP GEN-21: Staging and Stockpiling of Materials
BMP GEN-22: Sediment Transport
BMP GEN-23: Stream Access
BMP SED-2: Prevent Scour Downstream of Sediment Removal
BMP SED-3: Restore Channel Features
BMP SED-4: Berm Bypass

Conclusion

The Proposed Project would prevent sediment at project sites from entering the channel and would, following sediment removal, restore low-flow channels as closely as possible to their original location and form where the original location would not cause future erosion. Therefore, the Proposed Project would not substantially affect instream erosion or sedimentation rates. This impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact HYD-12: Long-Term Erosion and Sedimentation from Minor Maintenance, Management of Animal Conflicts, and Canal Maintenance Activities (Significance Criterion A; Beneficial)

Proposed minor maintenance, management of animal conflicts, and canal maintenance activities would minimize long-term erosion and sedimentation effects in creek channels if they removed sediments and/or stabilized creek banks. As described above, most channel reaches in the Project Area are net depositional and require the periodic removal of sediments to maintain channel conveyance capacities. Removal of sediments as part of the proposed minor maintenance activities would be beneficial. Animal conflict management activities, including the reconstruction of levee side slopes or surface compaction of levee faces, would reduce erosion/sedimentation processes along streambanks. Canal maintenance activities could include any of the proposed sediment removal, bank stabilization, vegetation management, or minor maintenance activities and would reduce the long-term erosion and sedimentation effects of an actively destabilized streambank.

Applicable Best Management Practices

None of the BMPs provided in Chapter 2, *Project Description,* are applicable.

Conclusion

The proposed minor maintenance, canal maintenance, and management of animal conflicts would be beneficial to prevention of erosion and sedimentation of destabilized streambanks in the Project Area. No impact would occur.

Mitigation Measures: No mitigation is required.

Chapter 3.8

LAND USE AND PLANNING

3.8 Land Use and Planning

3.8.1 Introduction

This section presents the regulatory setting, environmental setting, and potential impacts of the Proposed Project related to land use and planning. Resources consulted included:

- the General Plans for the cities of Campbell (2001), Cupertino (2005), Gilroy (2002), Los Altos (2002), Milpitas (2002), Monte Sereno (2008), Morgan Hill (2001), Mountain View (1992), San Jose (2009), Santa Clara (2002), Sunnyvale (2009); the town of Los Gatos (2000); and Santa Clara County (1994);

- the General Plan Update for the City of Saratoga (2007) and Town of Los Altos Hills (2007); and

- the Palo Alto Comprehensive Plan (2007).

3.8.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

No federal plans, policies, regulations, or laws related to land use and planning are applicable to the Proposed Project.

State Plans, Policies, Regulations, and Laws

No state plans, policies, regulations, or laws related to land use and planning are applicable to the Proposed Project.

Regional and Local Plans, Policies, Regulations, and Ordinances

The following discussion and Appendix D describe the policies and regulations that are relevant to the analysis of potential land use impacts of the Proposed Project, with a particular focus on those policies and regulations that have been updated since the SMP EIR was certified in 2002.

Governance Policies of the Board (Ends Policies, as of May 2011)

The SCVWD Board of Directors has adopted policies (Ends Policies) to provide goals and other guidance to direct the activities of SCVWD. Those goals most relevant to the Proposed Project are listed in Chapter 2, *Project Description*, and they are summarized briefly below:

Flood Protection Goal 3.1: Natural flood protection for residents, businesses, and visitors

- Balance environmental quality and protection from flooding in a cost effective manner.
- Preserve flood conveyance capacity.

Flood Protection Goal 3.2: Reduced potential for flood damages

- Reduce risk of flood damages in flood prone areas.
- Avoid the creation of expanded flood prone areas.

Water Resources Stewardship Goal 4.1: Healthy creek and bay ecosystems

- Balance water supply, natural flood protection and water resources stewardship functions.
- Improve watersheds, streams, and natural resources.
- Promote awareness of creek and bay ecosystem functions.

Water Resources Stewardship Goal 4.2: Clean, safe water in creeks and bay

- Preserve or improve surface and ground water quality for beneficial uses.
- Promote awareness of water quality and stream stewardship.

Water Resources Stewardship Goal 4.3: Improved quality of life in Santa Clara County through trails, open space and water resources management

- Support additional trails, parks and open space along creeks and in the watersheds when reasonable and appropriate.
- Reduce greenhouse gas emissions when reasonable and appropriate.

3.8.3 Environmental Setting

Most of the creek lengths within SCVWD jurisdiction are within unincorporated Santa Clara County, the City of Gilroy, and the City of San Jose. Within the Project Area, approximately 38 percent of the total creek miles flow through urban (residential, commercial, and industrial) areas, and the remainder flow through non-urban areas. Channels flowing through urban areas are surrounded by residential, commercial, industrial, or institutional (hospitals, schools) development. Outside of urban areas, channels traverse less developed land uses, including rural residential, agricultural and grazing lands, parks, and open space. Although some relatively undeveloped areas are located within urban areas (e.g., urban parks), most of these areas are immediately upstream or downstream of the core urban areas. Because of the additional maintenance requirements in engineered, rather than natural channels, the majority of projected maintenance work is anticipated to occur within

the boundaries of incorporated cities. SCVWD does not have any authority to control land uses under the jurisdiction of cities or Santa Clara County.

Channel maintenance activities in residential areas may be more likely to create impacts because of the higher number of people near work sites. Conversely, channel maintenance activities in streams adjacent to open space, agricultural, and recreational areas may be less likely to create impacts because fewer people would be near work sites and less potential would exist for property damage caused by flooding.

3.8.4 Impact Analysis

Methodology

The analysis of land use and planning was generally qualitative and consisted of an evaluation of applicable land use policies, plans, and programs in the context of the Proposed Project, to identify potential inconsistencies.

Criteria for Determining Significance

For the purposes of this analysis, the Proposed Project would result in a significant impact on land use and planning if it would:

A. physically divide an established community;

B. create substantial conflicts or incompatibility with existing and planned future land uses within or adjacent to the project study area; or

C. conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project.

Conflicts between the Proposed Project and applicable local or regional policies or ordinances protecting biological resources, such as tree preservation ordinances, habitat conservation plans, or other land conservation plans, are discussed in Section 3.3, *Biological Resources*.

Environmental Impacts

Impact LU-1: Division of Existing Neighborhoods or Communities (Significance Criterion A; Less than Significant)

Proposed Project activities would be restricted to channel areas and easements that would provide access to channel areas. The SMP Update would not permanently affect access to any of the surrounding land uses, nor create any new permanent, physical barriers between developed areas. However, any Proposed Project maintenance activities or staging for these activities could cause temporary disruptions to existing roadways or recreational trails connecting existing communities, as described next.

Vegetation Maintenance

Use of mechanical equipment for vegetation removal, vegetation pruning, herbicide application, mowing, discing, flaming, and/or grazing could require temporary access restrictions of the surrounding trails and roadways. These potential disturbances are addressed in Section 3.11, *Recreation* and Section 3.12, *Traffic and Transportation*. As detailed in these sections, these temporary maintenance-related disturbances would be less than significant. Once vegetation maintenance activities were completed, Proposed Project-related access disruptions to existing neighborhoods would cease.

Other Maintenance Activities

Implementation and staging for the remainder of SMP Update activities (sediment removal, bank stabilization, management of animal conflicts, minor maintenance, and canal maintenance) would potentially result in similar disturbances as those described above for vegetation maintenance activities.

Applicable Best Management Practices

The following BMPs would be implemented to prevent maintenance activities from substantially disrupting existing roadways or recreational trails connecting existing communities and to inform the public of any temporary disruptions. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-36: Public Outreach
BMP GEN-37: Implement Public Safety Measures
BMP GEN-39: Planning for Pedestrians, Traffic Flow, and Safety Measures

Conclusion

Because maintenance related to the Proposed Project would be a short-term activity and access disruptions would be temporary, this impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact LU-2: Incompatibility with Adjacent Land Uses (Significance Criterion B; Less than Significant)

The proposed maintenance activities are not considered "new development" and no new permanent habitable structures would be created. In addition, no project areas would be permanently altered from their ongoing use. In fact, the flood protection services maintained by the Proposed Project would help protect adjacent land uses in many cases. However, as described previously, construction work or staging could temporarily disrupt existing adjacent land uses.

Vegetation Management

Vegetation management activities could result in potential direct and indirect construction impacts on surrounding land uses, which would be substantially similar for all locations and may include traffic delays, trail access disruption, or public safety hazards. Air emissions also could be generated through vehicle use. Vegetation management activities could generate noise emissions from use of mechanized hand tools, mowers, or other equipment. Although these potential impacts are addressed in the relevant resources sections throughout Chapter 3, *Environmental Setting and Impact Analysis* of this document, they have been considered here for their indirect impacts on adjacent land uses. In general, all are considered to be less than significant. Once maintenance activities were completed, Proposed Project-related disturbances to adjacent land uses would cease.

Other Maintenance Activities

Maintenance activities for the remainder of SMP Update activities (sediment removal, bank stabilization, management of animal conflicts, minor maintenance, and canal maintenance) would potentially result in similar disturbances as those described above for vegetation maintenance activities. All of the other SMP activities could require the use of heavy equipment, which also could contribute to noise and air emissions, public safety hazards, traffic delays, and trail access disruption.

Applicable Best Management Practices

The following BMPs would be implemented to prevent maintenance activities from resulting in substantial direct or indirect impacts on the surrounding land uses. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-19: Work Site Housekeeping
BMP GEN-36: Public Outreach
BMP GEN-37: Implement Public Safety Measures
BMP GEN-39: Planning for Pedestrians, Traffic Flow, and Safety Measures

Conclusion

Although temporary impacts would be associated with the proposed activities, the longer-term implementation of the Proposed Project would not alter any existing land uses. Because the construction would be a short-term activity and disruptions to adjacent land uses would be temporary, this impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact LU-3: Compatibility with Land Uses Plans and Policies (Significance Criterion C; Less than Significant)

Applicable land use plans and policies are described in Appendix D. Although a large number of plans and applicable policies exist, they can be summarized as follows:

- promote shared usage of and access to public agency/utility-owned areas for public recreation;
- protect and maintain natural resources (wildlife, habitats, cultural);
- implement effective mitigation, including preservation and restoration of native vegetation habitat types, and trees;
- encourage multi-jurisdictional partnerships/coordination for countywide improvements and resource protection;
- protect public health and safety;
- minimize risk of injury and property damage caused by flooding;
- provide for safe and environmentally-sensitive land development (enforcement of buffer zones, land use restrictions, pollution/run-off prevention, grading measures);
- protect regional water quality and minimize pesticide application;
- guide effective management and adequate functioning of public facilities (stormwater, canals, parks); or
- conduct flood protection practices in an environmentally sensitive manner (habitat restoration, remove invasive species, remove concrete-lined channels).

As described in Impact LU-2, no work would be conducted that would result in permanent changes to existing land uses. Instead, the implementation of all Proposed Project activities would support the general land use goals and policies of Santa Clara County and its incorporated jurisdictions by providing adequate channel capacities, reducing risk of flooding, and providing enhanced riparian habitat within the Project Area.

Applicable Best Management Practices

All of the BMPs described in Chapter 2, *Project Description* would be applicable and would each meet at least one of the land use plan and policy categories described above.

Conclusion

The Proposed Project would provide for natural resource enhancement and protection, which would support existing land use plans and would not result in incompatibilities with existing and adjacent land uses. Therefore, this impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Chapter 3.9

NOISE

3.9 Noise

3.9.1 Introduction

This section describes the regulatory setting, environmental setting, and potential impacts of the Proposed Project related to noise. Maintenance activities under the current SMP bear great similarity to construction activities and have a similar potential for noise generation; therefore, they are treated as such for the purposes of this noise analysis.

Overview of Noise Concepts and Terminology

Noise can be defined as unwanted sound. Therefore, to understand noise impacts, it is important to understand some basic concepts regarding sound. Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor used to characterize the loudness of an ambient sound level. The decibel (dB) scale is used to quantify sound intensity. Because the difference in sound pressure between sounds at the lower and upper range of human hearing is so large, a logarithmic scale is used to keep sound intensity numbers at a convenient and manageable level. The human ear is not equally sensitive to all frequencies in the entire spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive in a process called "A-weighting," written "dBA."

Different types of measurements are used to characterize the time-varying nature of sound. Below are brief definitions of these measurements and other terms used in this section:

- Sound is a vibratory disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, can be detected by a receiving mechanism, such as the human ear or a microphone.
- Noise is sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- Decibel (dB) is a unit of measure of sound. It works on a logarithmic scale, which is calculated as the square of the ratio of the pressure amplitude of a sound to a reference sound pressure amplitude (20 micro-pascals).
- A-weighted decibel (dBA) is an overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- Maximum sound level (Lmax) is the maximum sound level measured during the measurement period.
- Minimum sound level (Lmin) is the minimum sound level measured during the measurement period.

- Equivalent sound level (Leq) is the equivalent steady-state sound level that, in a stated period of time, would contain the same acoustical energy as a time-varying sound level during that same period of time.

- Percentile-exceeded sound level (Lxx) is the sound level exceeded a specific percentage of time during a specific time period. As an example, L10 is the sound level exceeded 10% of the time.

- Day-night level (L_{dn}) emphasizes the undesirability of noise occurring during the night. This is accomplished by adding 10 dB to the A-weighted sound levels during the period from 10:00 p.m. to 7:00 a.m.

- Community noise equivalent level (CNEL) is another way of emphasizing the undesirability of noise during the night, which adds 5 dB to the A-weighted sound levels between 7:00 p.m. and 10:00 p.m. and 10 dB added to the A-weighted sound levels between 10:00 p.m. and 7:00 a.m.

L_{dn} and CNEL values rarely differ by more than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered to be equivalent and are treated as such in this analysis. In general, human sound perception is such that a change in sound level of 3 dB is just noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling (for an increase) or halving (for a decrease) the sound level. Table 3.9-1 presents example noise levels for common noise sources; the levels are measured adjacent to the source.

Table 3.9-1. Examples of Common Noise Levels

Source	Noise Level (dBA)
Weakest sound heard by average ear	0
Whisper	30
Normal conversation	60
Ringing telephone	80
Power lawnmower	90
Tractor	96
Hand drill	98
Bulldozer	105
Chain saw	110
Ambulance siren	120
Jet engine at takeoff	140
12-gauge shotgun blast	165

Source: National Institute of Safety and Health 2008

Sensitivity

Sensitive receptors include residents, recreational users, children, recovering sick patients, and anyone else who would be disrupted by unwanted noise. Areas where stream maintenance activities take place may contain potential sensitive receptors to noise generation.

An individual's reaction to noise is determined by the nature and volume of the noise itself as well as by the environment in which the noise occurs, and the individual's tolerance for noise. For example, individuals accustomed to noisy environments or use of loud equipment such as chainsaws are less likely to consider this noise to be intrusive than those who are not. Conversely, the use of chainsaws in areas with low ambient noise levels is more likely to be considered disruptive than usage in areas where noise levels are normally high.

3.9.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

No commonly accepted federal thresholds exist for acceptable levels of noise from construction activities. The Federal Transit Administration (FTA) suggests the guidelines shown in Table 3.9-2 as reasonable criteria for the assessment of construction noise impacts.

Table 3.9-2. FTA-Suggested Construction Noise Criteria

	One-Hour Leq (dBA)	
Land Use	**Day**	**Night**
Residential	90	80
Commercial	100	100
Industrial	100	100

Source: Federal Transit Administration 1995

State Plans, Policies, Regulations, and Laws

State Land Use Compatibility Standards for Community Noise

The California Government Code requires cities and counties to include a noise element in their general plans. The purpose of the noise element is to provide a guide for establishing a pattern of land uses that minimizes the exposure of community residents to excessive noise. The State Office of Planning and Research has published general plan guidelines (California Governor's Office of Planning and Research 2003) that include guidelines for the compatible noise levels for various land uses, presented in Table 3.9-3.

Table 3.9-3. State Land Use Compatibility Standards for Community Noise Environment

Land Use Category	Community Noise Exposure - L_{dn} or CNEL (db)							
	50	55	60	65	70	75	80	
Residential – Low Density Single Family, Duplex, Mobile Homes								
Residential - Multi-Family								
Transient Lodging – Motels, Hotels								
Schools, Libraries, Churches, Hospitals, Nursing Homes								
Auditoriums, Concert Halls, Amphitheaters								
Sports Arenas, Outdoor Spectator Sports								
Playgrounds, Neighborhood Parks								
Golf Courses, Riding Stables, Water Recreation, Cemeteries								
Office Buildings, Business Commercial and Professional								
Industrial, Manufacturing, Utilities, Agriculture								

	Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
	Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
	Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
	Clearly Unacceptable: New construction or development generally should not be undertaken.

Source: California Governor's Office of Planning and Research 2003

Regional and Local Plans, Policies, Regulations, and Ordinances

Santa Clara County and each of the cities within the county have established policies and guidelines that aim to minimize the effects of noise on people through prescriptive construction standards, zoning restrictions, hours of operation, and suppression techniques. Noise level goals are defined that are assumed to be compatible with various land use types within each jurisdiction. However, all jurisdictions recognize that higher than standard noise levels will be generated from time to time by heavy equipment engaged in construction or maintenance activities. Because heavy-equipment noise is an unavoidable necessity particularly for public works projects, jurisdictions typically include wording in noise ordinances and elements exempting these short-term, temporary, higher noise levels from compliance with the overall standards for land uses. Noise standards and policies established by Santa Clara County and incorporated cities within the Project Area are summarized in Table 3.9-4 and further detailed in Appendix D.

Table 3.9-4. General Plan and Noise Ordinance Standards

Jurisdiction	Specific Noise Criteria
Santa Clara County	Operation of tools or construction equipment on weekdays and Saturdays not allowed between the hours of 7 p.m. and 7a.m. No operation allowed on Sundays or holidays except for emergency work. Mobile equipment must not result in a noise level in excess of 75dBA for single/two-family residential (SFR), 80dBA for multi-family residential (MFR), or 85 dBA for commercial areas.
City of Campbell	Powered equipment is limited to the hours of 8 a.m. and 7 p.m. Monday through Friday and between the hours of 9 a.m. and 6 p.m. Saturday, Sunday, and on national holidays. However, noise from public works and maintenance construction projects may be exempted by the city manager.
City of Cupertino	Construction activities are limited to daytime hours (7 a.m. to 8 p.m. Monday through Friday, and 9 a.m. and 6 p.m. Saturdays and Sundays). High-quality noise muffler and abatement devices must be installed and in good condition on all construction equipment, and no single device may produce a noise in excess of 87 dBA at a distance of 25 feet OR noise levels at nearby properties must not exceed 80 dBA. However, special exemptions may be granted by the noise control officer, which would include notification to nearby properties.
City of Gilroy	Construction equipment may only be operated between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday and 9:00 a.m. and 7:00 p.m. on Saturday. No construction work is permitted on Sunday or city holidays. Exceptions may be granted by the chief building official.
City of Los Altos	Construction activities limited to the hours between 7:00 a.m. and 5:30 p.m. Monday through Friday and between 9:00 a.m. and 3:00 p.m. on Saturday in residential areas. In non-residential areas, construction can occur between 7:00 a.m. and 7:00 p.m. Monday through Friday and between 9:00 a.m. and 6:00 p.m. on Saturday. No construction work is permitted on Sunday or city holidays. Equipment may not be operated on holidays. Maximum permissible noise levels during daytime operation is 75 dBA for R1 zones, 80 dBA for PCF and R3 zones, and 85 dBA for OA and C zones.

Table 3.9-4. General Plan and Noise Ordinance Standards

Jurisdiction	Specific Noise Criteria
Town of Los Altos Hills	Construction near residential areas is limited to the hours of 8:00 a.m. to 5:30 p.m. Monday through Friday. Construction is not permitted on Saturdays without a permit, and no construction is permitted on Sundays or public holidays.
Town of Los Gatos	Construction activities are limited to 8 a.m. to 8 p.m. on weekdays and 9 a.m. to 7 p.m. on weekends and holidays. No single device may produce a noise in excess of 85 dBA at a distance of 25 feet and the noise levels at nearby properties must not exceed 85 dBA. Use of powered equipment is not time-limited in commercial, industrial, or public spaces.
City of Milpitas	Noise associated with SMP exempted from noise ordinance as maintenance of utility facilities.
City of Monte Sereno	Construction activities are generally limited to 8 a.m. to 8 p.m. on weekdays and 9 a.m. to 5 p.m. on Saturdays. Construction is not permitted on Sundays/public holidays. However, work not requiring a permit from the city is exempted from the time restrictions.
City of Morgan Hill	Construction activities are generally limited to 7 a.m. to 8 p.m. on weekdays and 9 a.m. to 6 p.m. on Saturdays. Construction is not permitted on Sundays or public holidays. However, public work activities are exempted from the time restrictions.
City of Mountain View	Construction activities are limited to 7 a.m. to 6 p.m. on weekdays. No work is permitted on weekends or holidays without prior approval.
City of Palo Alto	Construction activities on non-residential areas are limited to the hours of 8 a.m. to 6 p.m. on weekdays and 9 a.m. to 8 p.m. on Saturdays. Construction is not permitted on Sundays or public holidays. No single piece of equipment may produce a noise level in excess of 110 dBA at 25 feet, nor may noise level at any point outside of the property plane exceed 110 dBA. A sign must be posted at the entrance of the construction site indicating construction hours and violation penalties.
City of San Jose	Construction occurring within 500 feet of a residential unit is limited to the hours of 7 a.m. to 7 p.m. on weekdays. However, these time restrictions are limited only to construction activities requiring a permit from the city.
City of Saratoga	Construction activities permitted only between the hours of 7:30 a.m. and 6:00 p.m. on weekdays and between 9 a.m. to 5 p.m. on Saturdays in residential areas. No construction is permitted on holidays and on weekends in commercial areas. No individual piece of equipment may exceed a noise level of 83 dBA at a distance of 25 feet.
City of Santa Clara	Construction occurring within 300 feet of a residential area is generally limited to the hours of 7 a.m. to 6 p.m. on weekdays and 9 a.m. to 6 p.m. on Saturdays. Construction is not permitted on Sundays or holidays.
City of Sunnyvale	Construction activities permitted only between the hours of 7 a.m. and 6 p.m. on weekdays and between 8 a.m. to 5 p.m. on Saturdays. Construction is not permitted on Sundays or on national holidays.

Source: Data compiled by Horizon Water and Environment in 2011

3.9.3 Environmental Setting

Within the Project Area, background noise levels vary greatly from very low noise levels in the semi-rural western and eastern foothills to high noise levels in the urbanized Santa Clara Valley floor. Approximately 38 percent of the total creek miles within the Project Area flow through urban (residential, commercial, and industrial) areas and approximately 46 percent of creek miles within the Project Area flow through parkland or agricultural (open space) areas. Open space, agricultural, and recreational areas are anticipated to have fewer noise conflicts with proposed maintenance activities because relatively fewer sensitive receptors would exist. Approximately 73 percent of the total miles of creeks in the Pajaro River Basin are adjacent to natural open space and agricultural lands, compared with 34 percent of the total miles of creeks in the Santa Clara Basin.

The highest noise levels in the Project Area are in the vicinity of the San Jose International Airport. The noise environments of the north and central portions of Santa Clara Valley are heavily influenced by airplane takeoffs and landings. Noise monitoring conducted around the airport indicates that noise levels from aircraft alone exceed 65 dBA (CNEL).

Noise Sensitive Land Uses

Many of the streams maintained under the Proposed Project would be located in the vicinity of noise sensitive land uses. Given the extent of the Project Area, it is not plausible to identify the specific characteristics of every location that may be affected by the Proposed Project; however a brief synopsis of noise sensitive areas is provided below.

Recreational Areas

Some public parks and trails are located adjacent to areas where Proposed Project activities could occur. Some portions of recreational streamside trails are not as populated as other areas, and are located on the outskirts of urban areas. In less frequented trail reaches, it is possible for one person to travel for long periods of time without seeing other people. Ambient noise levels in this situation are predominantly characterized by the sounds of the natural environment. Conversely, many public parks and trails within the Project Area are located in urban and residential areas. During the summertime and particularly on weekends, congested conditions along streamside trails and parks are commonplace. In these areas, ambient noise reflects these human activities and may fluctuate seasonally.

Residential Areas

Proposed Project activities may take place adjacent to residential neighborhoods and homes. Residents in less-developed areas are potentially the most sensitive noise receptors within urban areas, as noise from adjacent waterway activities may be the only significant noise sources generated by human activity that affect these properties. Unlike recreational land uses, which are made up of transient user groups, residences are permanent dwellings. Thus, residents would be unable to avoid noise from adjacent land uses and would be exposed to them for longer periods of time.

The degree to which sound reaches residents from adjacent areas would depend on the type of activity being conducted, the distance from the noise source to the residence, and the

materials from which the home was constructed. Though the county and some cities impose a minimum building setback from waterways to protect life and property, residences may still be subject to loud or continuous noise from users of these waterways.

Other Areas

Noise sensitive land uses identified in the California Government Code include residences, recreation areas, schools, hospitals, nursing homes, churches, libraries, and long-term medical or mental care facilities. In addition to recreational and residential areas, Proposed Project activities may occur near any of these other sensitive land uses. As described above, the degree to which sound would reach these sensitive users would be dependent on a variety of factors. Seniors and others residing at hospitals, nursing homes, or long-term medical or mental care facilities would be anticipated to have longer noise exposure periods (similar to those in residential areas) because they would generally be unable to avoid noises from adjacent land uses. Schools, churches, or libraries would be used for shorter periods of time and may have noise exposure periods of shorter duration.

Land uses sensitive to noise generation are primarily those with an outdoor use component that includes an expectation of increased noise levels. Examples of sensitive land uses include backyards and gardens in residential areas, parks and open space reserves, outdoor shopping areas, and schoolyards and cemeteries. In these areas, excessive noise levels are a nuisance to people using outdoor facilities. Noise levels can normally be reduced for interior spaces through the use of modern construction techniques. Interior noise levels inside residences adjacent to creeks are typically less than 45 dBA CNEL with the windows closed because of the noise attenuation provided by walls and windows. However, outdoor areas cannot be easily shielded from high noise levels without the construction of noise barriers. In the Project Area, channels with a large extent (more than 3 miles) of adjacent residential land use are found in Adobe, Canoas, Matadero, Los Gatos, Permanente, Ross, San Francisquito, Lower Silver, Stevens, San Tomas Aquino, Saratoga, Sunnyvale East Channel, and Wildcat creeks, and the Guadalupe River.

3.9.4 Impact Analysis

Methodology

Impacts related to noise from the Proposed Project were analyzed quantitatively using noise sound levels measured in SCVWD's 2002 SMP EIR, for the various construction equipment and vehicles associated with proposed maintenance activities.

Data collected from the 2002 SMP EIR (Santa Clara Valley Water District 2002) were used to estimate noise exposure levels to sensitive receptors at a distance of 100 feet from the construction site. This data was used because noise generated by maintenance equipment is not believed to have changed substantially in the last 10 years. Contrarily, equipment may now be quieter and, as such, using the 2002 data provides a conservative analysis. To predict the noise levels at different distances, the methodology used in the 2002 SMP EIR treated the Proposed Project equipment as a point or stationary noise source and calculated noise levels based on the assumption that noise spreads out uniformly in waves from a source and attenuates (decrease in force and magnitude as it spreads) at a given rate per distance doubled. Noise attenuation from a point source was estimated based on the

presence of "soft" non-reflective ground and intervening vegetation between the noise source and the receptor. Thus, the attenuation rate was estimated at 9dB for each doubling of distance, with further increases in attenuation because of air absorption over distances greater than 1,000 feet. Table 3.9-5 illustrates the noise level estimates from typical maintenance activity equipment:

Table 3.9-5: Typical Noise Associated with SMP Activities

Noise source	dBA at 100 feet	dBA at 50 feet
Excavator working from top of bank	67	76
Chainsaw	75	84
Mowers/ spray trucks/ weed-eaters	65-70	74-79
Excavator and truck working concurrently (bank stabilization-type projects)	68-73	74-79

Source: SCVWD 2002

Any noise generated by proposed maintenance activities would be temporary. Typical maintenance activities would be short term, expected to last up to 10 days for sediment removal (although in certain cases they could last for several weeks or longer), and 8 days for bank stabilization. Vegetation management activities would be conducted on an ongoing basis, but would typically not occur in any given location for longer than a few days.

Criteria for Determining Significance

For the purposes of this analysis, the Proposed Project would result in a significant impact on noise if it would:

A. expose persons to or would generate noise levels in excess of standards established in the local general plans or noise ordinances, or applicable standards of other agencies;

B. expose persons to or generate excessive vibration or groundborne noise levels; or

C. result in a substantial temporary or permanent increase in ambient noise levels in the project vicinity above levels existing without the project

Noise levels associated with the Proposed Project were compared against local noise ordinance standards presented in Section 3.9.2, *Regulatory Setting* and summarized in Table 3.9-4. All Proposed Project-related noise would be temporary in nature; therefore, permanent noise impacts are not discussed further.

Environmental Impacts

Impact NZ-1: Temporary Exposure of the Public to Noise Levels in Excess of City or County Standards (Significance Criterion A; Significant and Unavoidable)

SMP Update activities typically would involve the use of heavy machinery and equipment, such as bulldozers, excavators, dump trucks, gradalls (hydraulic, wheel-mounted backhoes often used with wide buckets for dressing earth slopes), tractor mowers, and hand-held devices (chainsaws, hand sprayers) that may expose the public to noise. Stream maintenance would occur on weekdays. In rare instances, work could be conducted on weekends; for instance, if the work window was about to end and SCVWD had to complete winterization of a site. As a standard operating procedure, the District would use sound barriers around stationary generators when working near homes, to decrease the noise because this equipment typically runs 24 hours a day. A greater description of the potential noise effects from the various primary SMP Update activities is provided next.

Sediment Removal and Reuse/Disposal

Heavy equipment would be operated from either the top of a bank, if accessible, or within a channel or canal during sediment removal activities. When working within a channel or canal, the slopes generally would serve as a noise barrier for sensitive receptors. Adjacent receptors would be somewhat less shielded from heavy equipment when operations occurred on the top of a bank; thus, the noise associated with work at this upper location would represent a more conservative estimation of effects.

As described in the 2002 SMP EIR, monitoring of a SCVWD excavator sited on the top of the bank and removing sediment from Lower Penitencia Creek channel recorded an Leq of approximately 67 dBA at 100 feet. Based on standard attenuation estimates, an excavator working 50 feet from a residential backyard with soft ground and intervening vegetation would generate 76 dBA. The SCVWD estimates that on average, sediment removal projects progress at a rate of 200-400 feet of creek channel per day. Therefore, a typical subdivision lot (60 feet wide) located 50 feet from the operating equipment would be subject to 73 dBA for 1 to 2 hours during sediment removal operations. As the equipment moved further along the channel, noise levels would attenuate until equivalent to the background noise levels and would no longer be perceptible. (SCVWD 2001)

Sediment reuse/disposal would involve similar types of equipment and would be anticipated to have similar impacts as those described above.

Vegetation Management

Of the proposed vegetation management methods, hand removal (including the use of chain saws and weed eaters) and mechanical removal (including mowing and discing) would have the highest potential to create elevated noise levels. Although chain saws produce noise levels of approximately 75 dBA at 100 feet (SCVWD 2002), this type of equipment would be used infrequently and only for short periods of time. Noise levels associated with equipment used in more moderate durations (such as weed-eaters, mowers, and herbicide spray trucks) are commonly in the range of 65-70 dBA at 100 feet (SCVWD 2002). The use of animals for grazing would only be conducted where permitted by local ordinances and

policies, including noise ordinances, and this is not expected to be a significant source of noise.

Bank Stabilization

Noise levels associated with typical bank protection activities were analyzed in the 2002 SMP EIR. According to the data, noise levels ranged from 68 to 73 dBA at 100 feet with both a truck and excavator working concurrently. Based on standard attenuation, noise levels within 50 feet of working equipment are approximately 74 to 79 dBA. Depending on site-specific conditions of the Proposed Project activity, the SCVWD estimates that the range of progression for bank protection work typically would be between 20 to 40 feet per day. Therefore, the standard residential lot (60 feet wide) located within 50 feet of bank protection activities could experience noise levels up to 79 dBA over 3 to 10 hours (depending on the difficulty of the activity). Although the Proposed Project would incorporate several new methods of bank repair, potential noise effects associated with implementation are anticipated to remain the same.

Management of Animal Conflicts and Minor Maintenance

As described in Chapter 2, *Project Description*, these proposed maintenance activities would occur as needed and would not be projected activities. Management of animal conflicts would involve trapping or baiting to remove unwanted species (e.g., ground squirrels), or other means of control to discourage unwanted behavior. Such methods are not expected to be a significant source of noise to adjacent receptors. Similarly, the majority of minor maintenance activities are not considered significant sources of noise (i.e., trash and debris removal, fence repair, graffiti removal, and obstruction removal). On occasion, machinery may be required to remove in-channel sediment or debris, or grade maintenance roads; however, such actions would be relatively small in scale and shorter in duration than identified for the activities above. As such, noise emissions from heavy equipment associated with minor maintenance would be similar to that described for sediment removal activities; however, the overall duration and extent of use would be substantially less.

Canal Maintenance

Because routine canal maintenance activities would include all general work activities, effects would be the same as described above for other routine maintenance work.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to minimize temporary exposure of the public to noise levels in excess of city or county standards. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-36: Public Outreach
BMP GEN-38: Minimize Noise Disturbances to Residential Areas

Conclusion

Maintenance work under the Proposed Project would be a transient activity, and permanent changes in the existing noise environment would not result. Instead, effects would be analogous to construction-type noise, the significance of which would be determined by applicable construction-noise related policies and its potential to disturb adjacent receptors. In general, bank stabilization work would result in the greatest noise generation, though this type of work usually would occur in varied locations over the period of the Proposed Project. Other work activities (sediment removal and vegetation removal) may repeat two or three times in the same location over the 10-year SMP Update. Although in general, activities in the Proposed Project would represent a continuation of activities undertaken by SCVWD since implementation of the 2002 SMP EIR, the Proposed Project also would include work areas that were not projected in 2002 and where maintenance would not have been done in the recent past. However, the types and relative distances of sensitive receptors to SCVWD facilities would not differ substantially throughout the Project Area, and estimated noise levels associated with activities would be substantially similar for all locations.

Based on the noise estimations and the close proximity of adjacent property boundaries to SCVWD facilities (some less than 50 feet), stream maintenance activities could increase ambient noise levels by 3 dB or more (a noticeable increase), and/or result in exterior noise levels in excess of 75 dBA. These increases would be considered potentially significant in the context of the adopted noise policies within the Project Area, even though they would be temporary and, in some cases, conducted at the request of a homeowner, and even though this work would be exempted from the standards in some jurisdictions (Table 3.9-4). Overall, this impact would be significant. With the implementation of the above BMPs, the Proposed Project would minimize noise disturbances to residential areas but would still exceed several adopted ordinances in the Project Area. Additional mitigation, such as use of hay bales as temporary sound barriers, would not be considered feasible, as they would block access along many of the access roads and impede movement of maintenance equipment. No feasible mitigation is available to further reduce the significant and unavoidable impact associated with temporary noise impacts from SMP Update activities to a less-than-significant level. Therefore, Impact NZ-1 would remain significant and unavoidable.

Mitigation Measures: No mitigation is feasible.

Impact NZ-2: Generate Groundborne Vibrations (Significance Criterion B; No Impact)

The Proposed Project would not utilize heavy equipment that would generate groundborne vibration and affect local residents.

Bank Stabilization/Sediment Removal

Bank stabilization and sediment removal activities typically would involve the use of heavy machinery and equipment, such as bulldozers, excavators, dump trucks, gradalls, and tractor mowers. These activities would not require the use of any vibration-generating equipment, such as pile drivers. Any groundborne vibration associated with heavy

equipment would be very minor and localized, and this activity would have no impact on the surrounding land uses.

Other Maintenance Activities

All other SMP Update activities may require the use of heavy equipment similar to that utilized for the bank stabilization/sediment removal activities, and the effects of this equipment use would be similar to that described for bank stabilization/sediment removal.

Conclusion

The Proposed Project would not involve pile driving or other activities that would produce substantial groundborne vibrations. No impact would occur, and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact NZ-3: Temporary Substantial Increase in Noise above Ambient Levels (Significance Criterion C; Significant and Unavoidable)

Temporary use of heavy equipment (e.g., bulldozers, dumptrucks) for the Proposed Project could result in noise levels greater than ambient conditions. As a standard operating procedure, the District would use sound barriers around stationary generators when working near homes, to decrease the noise because this equipment typically runs 24 hours a day.

Bank Stabilization/Sediment Removal

Bank stabilization and sediment removal activities would involve the use of heavy equipment that would result in increases in the ambient noise levels, as discussed under Impact NZ-1. The anticipated noise levels could increase by 3dB or more above the ambient level near the maintenance site, which would represent a noticeable increase in noise. However, these increases would be of short duration and infrequent, and typically would last from 1 day to up to 10 days for sediment removal activities at any given location. However, in some instances, sediment removal activities could persist for a longer duration at a given location (e.g., up to 6 weeks in limited cases).

Other Maintenance Activities

Other SMP Update activities (vegetation management, management of animal conflicts, minor maintenance, and canal maintenance) also could require the use of heavy equipment or hand-held equipment that would generate temporary increases in the ambient noise levels, resulting in similar impacts as described previously for bank stabilization and sediment removal. The duration of these activities also would be short-term and would be expected to last less than the duration of bank stabilization and sediment removal activities.

Applicable Best Management Practices

The following BMPs would be implemented as part of SMP Update activities to keep temporary substantial increases in noise above ambient levels to a minimum. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-36: Public Outreach
BMP GEN-38: Minimize Noise Disturbances to Residential Areas

Conclusion

Because the Proposed Project would include noise-reducing measures and the notification of maintenance activities to residences, businesses, or other sensitive receptors, and noise generated in any one location would be short-term, this impact would generally be less than significant and no mitigation would be required. However, in some cases, these temporary impacts would persist for a longer period at a given location (e.g., sediment removal activities lasting longer than 3 weeks). In these cases, this impact would be considered significant. As described under Impact NZ-1, mitigation such as temporary sound barriers would be infeasible. Thus, this impact would be significant and unavoidable.

Mitigation Measures: No mitigation is feasible.

Chapter 3.10

PUBLIC SERVICES AND UTILITIES

3.10 Public Services and Utilities

3.10.1 Introduction

This section describes the regulatory setting, environmental setting, and potential impacts of the Proposed Project related to public services and utilities. These public services and utilities include police and fire services, emergency services, schools, solid waste, and underground and overhead utilities. The Proposed Project would not have any effect on water supply or wastewater demands or capacity; therefore, they are not discussed further in this section. Potential impacts associated with SMP Update maintenance activities on parks and other recreational areas available for public use are discussed in Section 3.11, *Recreation*.

Data used in the preparation of this section were primarily gathered from Santa Clara County, the City of San Jose, and the California Department of Resources Recycling and Recovery (CalRecycle).

3.10.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

No federal plans, policies, regulations, or laws related to public services and utilities are applicable to the Proposed Project.

State Plans, Policies, Regulations, and Laws

The only state regulations pertinent to public services and utilities pertain to the management of solid waste.

California Integrated Waste Management Act

To conserve water, energy and other natural resources, and to protect the environment by reducing the incineration or landfill disposal of waste, the California Integrated Waste Management Act of 1989 requires cities and counties to reduce, reuse, and recycle (including composting) solid waste generated in the state to the maximum extent feasible. The Act requires development of countywide integrated waste management plans (CIWMP). The CIWMP must include source reduction and recycling elements, household hazardous waste elements, and non-disposal facility elements for the county and each city within the county.

The California Integrated Waste Management Act is overseen by the California Integrated Waste Management Board (CIWMB) and managed by CalRecycle. CalRecycle oversees partnerships with local governments, industries, and the public to reduce waste, decrease greenhouse gas emissions, promote the highest and best use of materials, and regulate the handling, processing, and disposal of solid waste.

The CIWMB's 2001 Strategic Plan (CIWMB 2001) included a goal of a "zero-waste" California, and strategic directives were established in 2007 to incorporate efforts to implement the California Global Warming Solutions Act of 2006.

Regional and Local Plans, Policies, Regulations, and Ordinances

Santa Clara County Integrated Waste Management Plan

The Santa Clara County CIWMP was completed and approved by the CIWMB in 1996. Each of the jurisdictions (cities and towns) in the county has completed implementation of the requirements of the CIWMP.

The jurisdictions and the County established the following countywide policies for reducing waste and implementing the programs identified in the CIWMP:

1. Similar programs selected by neighboring jurisdictions should be combined when and if this will result in the achievement of economies of scale in capitalizing and operating programs, and as long as such consolidation does not conflict with the interests of the jurisdictions.

2. The cities of the county will work together to ensure that new disposal and non-disposal facilities are appropriately sized, designed, and sited, in order to avoid duplication of effort, unnecessary expenditure of funds, and environmental degradation, and so that the specific integrated waste management needs of each jurisdiction are met.

3. In order to avoid confusion and duplication of effort, the Solid Waste Commission of Santa Clara County, advised by the Technical Advisory Committee, shall coordinate and oversee implementation of new countywide integrated waste management programs, administer programs selected for countywide implementation, and address issues of regional or countywide concern, as these arise. State and local legislation dealing with integrated waste management issues affecting Santa Clara County shall be monitored and countywide compliance with State and Federal requirements shall be encouraged.

As of 2000, the County and all jurisdictional cities successfully diverted and continue to divert 50 percent or more of the waste stream from landfill disposal.

Santa Clara County Zero Waste 2020 Vision

Santa Clara County developed the "Zero Waste 2020 Vision" to encourage local governments to adopt policies and develop plans that motivate community members to eliminate waste. This vision statement and action plan were developed to provide Santa Clara County jurisdictions with a working document that can be used to guide decision making policies and programs toward achieving zero waste by 2020. (Santa Clara County Integrated Waste Management Division 2010)

Santa Clara County's vision is that by 2020, all discarded materials in the county will be recovered for their highest and best use, and no materials will be sent to landfills or incinerators.

As stated in the vision statement, Santa Clara County is working to:

1. Educate and engage businesses, organizations, public agencies and residents.
2. Adopt and implement supporting policies and Zero Waste Action Plans.
3. Support legislation and adopt policies that require minimizing environmental impacts through improved product design.
4. Ensure that facilities and infrastructure are in place to properly manage all recovered materials.

Implementation of Zero Waste 2020 Vision actions to achieve the County's mission is based on the following guiding principle regarding recycling and composting:

1. Recycling and Composting: Manage Materials to Minimize Environmental Impacts Downstream
    1. All organic materials shall be recovered and productively used.
    2. Recovered materials shall be directed to their highest and best use.
    3. Materials sent to landfill shall be minimized.

Cities throughout the county have developed and are implementing Zero Waste plans, following the County's guidance. For example, the City of San Jose adopted a Zero Waste Strategic Plan in 2008 (City of San Jose 2008). More information on the specific zero waste plans for each of the cities and towns within the County are available through their respective Web sites.

3.10.3 Environmental Setting

Police and Fire Services

Law enforcement and public safety services in the Project Area are provided by a combination of County and City departments. The Santa Clara County Sheriff's Department employs over 1,400 staff and is the primary law enforcement agency in unincorporated areas of the County and the communities of Cupertino, Los Altos Hills, and Saratoga. The County Sheriff's Department also provides law enforcement services for the Valley Transportation Authority and the Santa Clara County Parks Department (Santa Clara County Sheriff's Department 2010). Incorporated cities, such as San Jose, Gilroy, and Mountain View, operate independent police departments, which enforce local, state, and federal laws within their city limits. The California Highway Patrol also lends law enforcement and emergency assistance in the Project Area.

The Santa Clara County Fire Department provides fire, safety, and hazardous materials services for the County and the communities of Campbell, Cupertino, Los Altos, Los Altos Hills, Los Gatos, Monte Sereno, Morgan Hill, Saratoga, and unincorporated county areas. The County operates 16 fire stations, 100 emergency response vehicles, and employs over 265 fire prevention, suppression, investigation, administration, and maintenance personnel (Santa Clara County Fire Department 2010.) Other incorporated cities within the County, such as San Jose, Mountain View, and Santa Clara, operate independent fire departments.

Schools

In Santa Clara County, 36 school districts and 347 public schools provide educational services to over 261,000 students (Santa Clara County Office of Education 2010). All of these schools are in session during a traditional school calendar, starting in August and ending in May or June, and some are open year-round. Therefore, children may be present during SMP Update activities implemented near schools.

Solid Waste

Five permitted and active Class III landfills are located in Santa Clara County. The current status of each to receive waste materials is shown in Table 3.10-1. The current status of landfills permitted to receive hazardous waste is discussed in Section 3.6, *Hazards and Hazardous Materials*.

Table 3.10-1: Status of Landfills in Santa Clara County

Landfill	**Maximum Permitted Throughput** (tons per day)	**Maximum Permitted Capacity** (cubic yards)	**Remaining Capacity** (cubic yards)	**Estimated Closure Date** (when maximum capacity may be reached)
Newby Island Sanitary Landfill (43-AN-0003-01)	4,000	50,800,000	18,274,953	June 2025
Kirby Canyon Recycling and Disposal Facility (43-AN-0008-01)	2,600	36,400,000	57,271,507	December 2022
Guadalupe Sanitary Landfill (43-AN-0015-01)	1,300	28,600,000	14,600,000	November 2025
Zanker Road Class III Landfill (43-AN-0007-01)	1,300	1,300,000	700,000	Not available
Zanker Material Processing Facility (43-AN-0001-01)	350	540,100	540,100	December 2018

Source: CalRecycle 2010

Underground and Overhead Utilities

Underground and overhead utilities in the Project Area include natural gas, water, and oil pipelines (including raw water and treated water pipelines owned by SCVWD), sewer and storm drains, and communication lines (i.e., telephone, cable, power, and Internet services). If not visibly apparent, the location of these lines within work sites can be obtained through coordination within SCVWD, with County and municipal utility departments, and with the managing utility company.

3.10.4 Impact Analysis

Methodology

Impacts of the Proposed Project were evaluated qualitatively, based on the potential for the proposed maintenance activities to disrupt existing public services and utilities systems. These activities were identified and evaluated as temporary, short-term impacts; no long-term impacts of the Proposed Project on public services and utilities were identified.

Criteria for Determining Significance

For the purposes of this analysis, the Proposed Project would result in a significant impact on public services and utilities if it would:

A. result in the need for additional, or physically altered, public services or facilities, the provision of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for any public service: fire protection, police protection, schools, parks, or other public facilities;

B. result in a need for new, relocated, upgraded, or expanded utilities and service system facilities that could cause significant environmental impacts to maintain acceptable service levels or other performance objectives for: water, wastewater/reclaimed water, stormwater, solid waste, streets and roadways, power systems (e.g., electricity, natural gas), other utility systems;

C. have insufficient water supplies available to serve the project from existing entitlements;

D. be served by a landfill with insufficient permitted capacity to accommodate the Proposed Project's solid waste disposal needs; or

E. fail to comply with federal, state, and local statues and regulation related to solid waste.

Environmental Impacts

Impact PSU-1: Effects on Public Facilities and Services (Significance Criterion A, Less than Significant)

The Proposed Project would not involve the construction of any development or involve any long-term activities that would result in an increased demand for public facilities, such as police, fire, or schools. The proposed maintenance activities would have no effect on the potential need for school facilities or services. However, the Proposed Project may have short-term effects on fire or police services during maintenance activities, as described below.

Vegetation Maintenance

Vegetation maintenance activities may include the use of flamers that, if used improperly, could result in an increased risk of starting a wildfire and the subsequent need for fire protection services. The Proposed Project includes BMPs that would dictate for flamers to be used cautiously by trained personnel and only during appropriate weather and seasonal conditions. As described in Section 3.6, *Hazards and Hazardous Materials*, the potential risk of starting a wildfire would be less than significant. In addition, the removal of debris and excess vegetation may actually reduce the potential for a wildfire and the need for fire protection services.

Vehicles and equipment associated with the proposed vegetation management activities, including the mechanical removal of trees, could require temporary local lane or road closures. In addition, these activities could generate additional management-related traffic. Although temporary, these closures and additional traffic could potentially impact the emergency response times of police or fire services during the maintenance activities.

Bank Stabilization, Sediment Removal, and Minor Maintenance

Bank stabilization and sediment removal activities would require the use of and/or temporary storage of heavy equipment, vehicles, sediments, and other materials. Minor maintenance also may require the use of heavy equipment (e.g., for grading activities) and/or storage of materials (e.g., plants and other landscaping materials). Similar to the vegetation management activities, these activities may require temporary lane or road closures of adjacent roads and may generate additional project-related traffic, resulting in temporary potential impacts on emergency response times.

Management of Animal Conflicts

Management of animal conflicts, particularly physical alteration activities such as surface compaction of levee surfaces or reconstruction of levee side slopes, also may require potential closures of adjacent roads. These closures could temporarily affect emergency response times.

Canal Maintenance

Because routine canal maintenance activities would include all general work activities, effects would be the same as described above for other routine maintenance work.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to prevent maintenance activities from resulting in significant effects on public facilities and services. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-36: Public Outreach
BMP GEN-37: Implement Public Safety Measures
BMP GEN-39: Planning for Pedestrians, Traffic Flow, and Safety Measures

Conclusion

The impact on public facilities and services resulting from the Proposed Project would be less than significant and would not require mitigation.

Mitigation Measures: No mitigation is required.

Impact PSU-2: Disruption to Utilities and Service System Facilities (Significance Criterion B, Less than Significant)

Buried and aboveground pipes, cables, or other utility delivery systems, for utilities including wastewater, stormwater, water, and power systems, are present within the Project Area. Stormwater pipelines and outfalls, in particular, commonly are located within or near stream channels and canals. Any of these utilities could potentially experience a disruption in service if the Proposed Project's maintenance activities accidentally damaged the utilities' distribution or transmission systems. In addition, the Proposed Project could potentially cause new environmental impacts if it would result in a need for new, relocated, upgraded, or expanded utilities and service system facilities. The Proposed Project's potential to affect utilities is further described below. The Proposed Project's potential to affect the acceptable service levels of streets and roadways is described in Section 3.12, *Traffic and Transportation*.

Vegetation Maintenance

Vegetation maintenance activities would have the potential to affect overhead utility lines during the removal or pruning of vegetation, particularly trees, and to potentially affect underlying utilities during discing activities. A beneficial impact of the vegetation maintenance activities would be vegetation removal from stream channels, which would restore the conveyance capacities of the channels during storm-flows. In addition, vegetation maintenance activities also would reduce fire hazards for adjacent properties.

Sediment Removal/Bank Stabilization Activities/Minor Maintenance

Grading, digging, and other ground-disturbing activities related to sediment removal, bank stabilization, and minor maintenance activities would potentially affect buried utilities that cross or are adjacent to Project Area water bodies. However, a beneficial effect of the sediment removal and minor maintenance activities would be the clearing of sediment or debris from stormwater outfalls and/or the replacement of these outfalls where needed.

Management of Animal Conflicts

Animal conflicts management would not be conducted in locations of underground utilities, and would be conducted without equipment that could interfere with any buried utilities. In particular, physical facility alterations, such as surface compaction of levees after filling of burrows, would avoid buried utilities at maintenance work sites.

Canal Maintenance

Because routine canal maintenance activities would include all general work activities, effects would be the same as described above for other routine maintenance work.

Applicable Best Management Practices

SCVWD would implement the following BMPs as part of the SMP Update to prevent maintenance activities from disrupting utilities and service system facilities. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-23: Stream Access
BMP GEN-36: Public Outreach
BMP GEN-42: Investigation of Utility Line Locations

These BMPs would minimize the potential disturbed areas and the potential to affect buried utilities in part by utilizing existing access ramps and roads to the extent feasible. In addition, these BMPs would provide for all public works departments in the Project Area to be notified of the annual work plan and proposed maintenance locations, thereby giving the departments the opportunity to provide input regarding the locations of utilities near the maintenance work sites.

Conclusion

By implementing the BMPs listed above, the impact on utilities and service system facilities resulting from the Proposed Project would be less than significant and would not require mitigation.

Mitigation Measures: No mitigation is required.

Impact PSU-3: Insufficient Available Water Supplies resulting in the Need for New or Additional Water Supply or Distribution Facilities (Significance Criteria B and C, Less than Significant)

Potential construction-related impacts could result if new water distribution or supply facilities were needed to supply Proposed Project activities. The Proposed Project would require water for various maintenance activities, as described next.

Bank Stabilization Activities

Potential activities related to bank stabilization that may require water include vehicle cleaning, sediment/soil watering related to dust control activities, and irrigation of mitigation sites. As described in BMP GEN-31 (Chapter 2, *Project Description*), on-site vehicle cleaning may occur but only as needed to prevent the spread of sediment, pathogens, or exotic/invasive species. In addition, as detailed in BMP GEN-29, active maintenance areas and/or stockpiled soils would be watered following required dust control measures set by the Bay Area Air Quality Management District.

On-site mitigation may be performed, if necessary, as part of bank stabilization activities, depending on the results of each site's Mitigation Feasibility Assessment (MFA) (as described in the 2012 SMP Manual, Appendix A). Newly planted vegetation at the on-site mitigation sites may require irrigation until the plants became established. The amount of water needed for irrigation of these sites cannot be quantified at this time because bank stabilization activities are not projected activities and the MFAs would determine the specific vegetation types and quantities to be planted at each site. However, the MFAs would recommend planting species appropriate to the site conditions to minimize the use of natural resources (e.g., water). In general, SCVWD water trucks and supplies would be used to meet the limited water demands related to bank stabilization activities. Other methods of meeting water demands may include tie-ins to SCVWD water meters or, at irrigation sites with limited access, use of a technology that would release water to a plant's roots over an extended period of time. These activities would not require the construction of any long-term water distribution or supply facilities.

Sediment Removal Activities

Dust control-related watering and vehicle cleaning could be performed as part of sediment removal activities, similar to that described for bank stabilization.

Minor Maintenance Activities

Water may be used as part of minor maintenance activities for the irrigation of mitigation and landscaping sites, similar to the activities described for bank stabilization. In addition, watering may be performed to control dust occurring from any soils exposed during minor grading activities. The water quantity necessary for these activities would not require the construction of long-term water distribution or supply facilities.

Management of Animal Conflicts

Animal conflicts management generally would not result in any water demands. Limited water demands related to vehicle cleaning or dust control-related watering would result if any physical alterations of levee slopes, including surface compaction of levee slopes with heavy construction equipment, were performed.

Vegetation Management

Vegetation management activities (e.g., mowing, pruning, tree removals, or herbicide applications) generally would not result in any water demands. Flaming and grazing activities may require some water, to wet dry vegetation before and during flaming activities or to supply water for grazing animals. Both flaming and grazing are not projected activities under the Proposed Project. Discing for the Proposed Project may require the water for dust control. Because flaming and grazing activities are not projected and water for discing would be limited to dust control, these activities are anticipated to have limited water demands that would be met by trucked-in SCVWD water supplies.

Canal Maintenance

Because routine canal maintenance activities would include all general work activities, effects would be the same as described above for other routine maintenance work.

Applicable Best Management Practices

To minimize the potential water needed for dust-control, SCVWD would implement the following BMP as part of maintenance activities. A description of this BMP is provided in Chapter 2, *Project Description*.

BMP GEN-4: Minimize the Area of Disturbance

Conclusions

Proposed maintenance activities would require limited quantities of water for dust control, irrigation, or vehicle cleaning. Water demands would be met with SCVWD supplies and generally trucked into work sites, as necessary. Therefore, sufficient water supplies would be available for the Proposed Project. Thus, this impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact PSU-4: Disposal of Excavated Sediment and Other Materials at Off-Site Locations, Including Landfills (Significance Criteria B, E, and F, Less than Significant)

Although the SCVWD does not have a projection for the volume of sediment and other materials (e.g., vegetation) to be removed under the SMP Update, historical data indicates that an average of 46,500 cubic yards of material was removed per year from 2002–2009 (Table 2-1). Furthermore, although the overall projected work area for sediment has increased since implementation of the 2002 SMP, sediment removal volumes would likely remain similar because the overall effort in terms of equipment and staff would not be significantly higher under the Proposed Project than the historic level of effort. Based on the historical trends, the Proposed Project likely would involve the removal of between 8,900 and 97,000 cubic yards of sediment (approximately 13,350 to 145,500 tons[1]) per year. In addition, the Proposed Project likely would involve the removal of approximately 11,378

[1] Estimate of tons is approximate and variable (basis for estimate is 1.5 tons per cubic yard). Sediment weight in a given volume is dependent on several factors including moisture content, particle size, and density.

tons per year of other materials. On average, 46,500 cubic yards (approximately 69,750 tons) of sediment and other materials was removed per year from 2002–2009.

The SCVWD would test samples from all material to be dredged to determine its appropriate reuse or disposal. As described in Section 3.13, Water Quality, sediments of sufficient quality could be used for wetland restoration projects; sediments of insufficient quality to be used for wetland restoration could be used as cover material at landfills (i.e., spread in layers over solid waste debris to contain gases and assist in the decomposition process). As described in Section 3.10.3, Environmental Setting, three landfills have closure dates near or within the time horizon of the SMP Update. Sediment that exceeded hazardous waste criteria would be disposed at sites designated to receive hazardous waste (e.g., Buttonwillow, a hazardous waste landfill).

Maintenance activities could generate up to 970,000 cubic yards of material waste over the 10-year lifetime of the Proposed Project. For sediment meeting the wetland reuse criteria, SCVWD has identified several wetland restoration areas that would be available to accept such sediment. Of these, Pond A8 has sufficient capacity for sediment reuse for the next 2–5 years. As described in Chapter 2, *Project Description*, additional ponds have been identified as potentially other suitable long-term sediment reuse locations. No other specific sites for the beneficial reuse of sediments for pond, upland, or aquatic restoration projects have been identified. For sediment that did not meet the wetland reuse criteria but was not considered hazardous, the SCVWD could dispose it at a local landfill, either to be disposed as waste or used for beneficial purposes (i.e., cover material). The overall capacities and daily/yearly constraints of existing landfills would be sufficient to serve the needs of the Proposed Project.

As described further in Section 3.6, Hazards and Hazardous Materials, three hazardous waste disposal sites are located in California: Chemical Waste Management's Kettleman Hills facility (Kettleman Hills); Clean Harbors' Buttonwillow facility (Buttonwillow); and Clean Harbors' Westmorland facility (Westmorland). These facilities would be capable of treating, storing, and/or disposing virtually all solid, semi-solid, and liquid hazardous, extremely hazardous, and non-hazardous wastes, including contaminated sediments and other materials. The Kettleman Hills hazardous waste landfill has a capacity of approximately 10.7 million cubic yards but could only accept very small quantities of hazardous waste (Brady, pers. comm., 2011) because it has nearly reached capacity. Buttonwillow, located west of Bakersfield, has a permitted capacity of 13,325,000 cubic yards and its constructed landfill capacity is 950,000 cubic yards. That facility would be capable of accepting large quantities of waste, including the amounts potentially generated by the Proposed Project (Winwood, pers. comm., 2011). The Westmorland facility, located near the Salton Sea, has a design capacity of 5,000,000 cubic yards (Clean Harbors 2010b). Sediment or materials classified as hazardous that would be excavated as part of the proposed maintenance activities likely would be disposed at Buttonwillow because it would have sufficient capacity and would be the second closest facility (after Kettleman Hills) to Santa Clara County. Sufficient capacity would be available at the three existing hazardous waste disposal sites to meet SCVWD's needs over the life of the Proposed Project.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update so that the quantity of excavated or disturbed sediments, particularly hazardous sediments, would be minimized through the use of existing access ramps/roads, avoidance of hazardous sediments or sites, and minimization of the area of soils disturbed. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-3: Avoid Exposing Soils with High Mercury Levels
BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-23: Stream Access
BMP GEN-27: Existing Hazardous Sites

Conclusion

Known disposal sites generally would be able to accommodate the volume of sediment and other materials generated by the Proposed Project. In addition, new disposal sites may be identified over time, which would provide additional disposal capacity. The Proposed Project would comply with state and local statutes applicable to solid waste by reusing sediments as much as possible, depending on the sediment quality. Therefore, this impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Chapter 3.11

RECREATION

3.11 Recreation

3.11.1 Introduction

This section describes the environmental setting and potential impacts of the Proposed Project related to recreational resources.

3.11.2 Environmental Setting

With regards to current recreational resources in the Project Area, SCVWD has a policy to work with local jurisdictions and recreational users to allow public access to many SCVWD-owned facilities, including creek easements and reservoirs.

Creek-Side Trails

Access roads that parallel most proposed maintenance channels (and some canals) also may provide creek-side recreational access. Some of these access roads already are formalized as recreational trails, with signage and other amenities such as benches. Where accessible, these roads and trails are used for a variety of recreational activities, including walking, jogging, biking, dog walking, and bird watching. These trails provide an important recreational resource, particularly in the urban environments of San Jose. Creek-side trails typically are made of consolidated earth or gravel, or they are fully paved.

Santa Clara County Trails

Santa Clara County's regional park system has 28 regional parks that span approximately 45,000 acres. Numerous trails are located throughout these parks, providing views of the local mountains and Santa Clara Valley. The County administers approximately 300 miles of trails, of which approximately 35 miles are paved (Falkowski, pers. comm., 2010). In addition to funds received from SCVWD under the District's Trail and Open Space Grant Program, the County supports new trail development and construction from a variety of other funding sources.

City of San Jose Trails

In 2000, the City of San Jose implemented a trail program with a mission of constructing a 100-mile trail network along 32 trails, to enhance, strengthen, and connect neighborhoods. As of July 1, 2010, approximately 54 miles of 24 unique trails had been constructed. Many of the constructed (and planned) trails are located along and/or offer views of local streams. Constructed and planned trails along surface water bodies include, but are not limited to: the Guadalupe River trail and trails along Coyote, Fowler, Guadalupe, Los Gatos, Los Alamitos, Penitencia, Saratoga, Upper and Lower Silver, Silver Creek Valley, Thompson, Yerba Buena, Berryessa, Canoas, Fisher, and Calero creeks. A trail-use survey that was conducted on September 23, 2009, counted over 1,300 people utilizing the City's trails on that day. Trail usage increased approximately 9.6 percent from 2008 to 2010, and 51.2 percent of trail uses were for commuting or running errands. (City of San Jose 2010)

Some City trails have been funded through the SCVWD Trail and Open Space Grant Program, including funding granted in 2010, for the design and construction of 2,000 linear feet of trail along the Penitencia Creek Trail system (SCVWD 2011).

3.11.3 Impact Analysis

Methodology

This section describes the Proposed Project's potential impacts on recreation. Impacts were evaluated qualitatively, based on the potential for the Proposed Project to disrupt access to and use of existing recreational facilities. Generally, construction activities may result in a short-term loss of recreational opportunities by disrupting use of or access to recreation areas or facilities. A long-term effect could occur if a recreational opportunity was eliminated as a result of long-term maintenance activities.

Criteria for Determining Significance

For the purposed of this analysis, the Proposed Project would result in a significant impact on recreational resources if it would:

A. result in the loss or deterioration of available public recreational opportunities.

Environmental Impacts

Impact REC–1: Temporary Disturbance of Recreational Quality (Significance Criterion A; Less than Significant)

The Proposed Project could affect the recreational quality of local recreational areas if it created nuisance effects (i.e., air quality, noise, traffic, and aesthetics).

Sediment Removal/Bank Stabilization

Sediment removal and bank stabilization activities would involve the movement of heavy equipment, truck traffic, maintenance noise, and air emissions in the vicinity of recreational areas (mainly trails), which could affect recreational quality in the immediate vicinity of work sites. Maintenance projects would be short term and typically would be completed in approximately 10 days. Larger sediment removal projects may last up to 8 weeks. The nuisance effects of maintenance (i.e., air quality, noise, traffic, and aesthetics) are discussed here specifically as they relate to recreational quality, but they are addressed in more detail in the relevant resource sections of this chapter.

Although the location and quality of existing trails adjacent to SCVWD-maintained facilities vary throughout the County, the relative sensitivity of users and potential adverse effects associated with temporary maintenance activities are expected to be similar throughout the Project Area. Although temporary, maintenance-related nuisance effects associated with the implementation of the proposed activities could affect recreational resources by temporarily degrading the quality of the recreational experience in the vicinity of the work site.

Vegetation Management

Vegetation management activities could create similar temporary nuisances on recreational quality as those described above, related to the use of hand-held equipment and vehicles. Vegetation management activities would occur on an ongoing basis, but they typically would not occur in any one location for longer than a few days at a time. These activities could temporarily degrade the quality of the recreational experience in the vicinity of the work site.

Minor Maintenance

Minor maintenance activities may involve the use of heavy equipment for grading or sediment removal. Minor maintenance activities would last for a shorter period of time than sediment removal or bank stabilization activities, but because of the use of similar types of equipment, they would have similar temporary effects on the recreational quality.

Management of Animal Conflicts

Animal conflicts management generally would not be anticipated to generate substantial sources of noise that could affect recreational quality. However, these activities could utilize heavy equipment for the physical alteration of animal habitats. Potential effects on recreational quality related to the use of heavy equipment for management of animal conflicts would be similar to those described for bank stabilization/sediment removal activities.

Canal Maintenance

Because routine canal maintenance activities would include all general work activities, effects would be the same as described above for other routine maintenance work.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to prevent maintenance activities from substantially affecting the quality of recreational use. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-19: Work Site Housekeeping
BMP GEN-21: Staging and Stockpiling of Materials
BMP GEN-36: Public Outreach
BMP GEN-37: Implement Public Safety Measures
BMP GEN-38: Minimize Noise Disturbances to Residential Areas
BMP GEN-39: Planning for Pedestrians, Traffic Flow, and Safety Measures

Conclusion

By implementing these BMPs, general site cleanliness, noise control, and appropriate access and safety controls would be in place to minimize the potential temporary disturbance impact on recreational quality. This impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact REC–2: Permanent Changes to Recreation Quality (Significance Criterion A; Beneficial)

The Proposed Project could permanently affect recreational quality if it resulted in adverse permanent impacts on the quality of recreational areas in the vicinity of proposed maintenance activities.

Vegetation Management

As discussed in Section 3.1, *Aesthetics*, vegetation management activities would have an overall long-term beneficial impact on visual quality in the Project Area. Vegetation management activities would keep vegetation from becoming overgrown, which could otherwise affect access to roads and trails. In addition, the on-site revegetation activities conducted as part of the Proposed Project would encourage the development of healthy riparian corridors with fewer nonnative and invasive species, and would create the appearance of a more "natural" stream corridor.

Sediment Removal and Bank Stabilization

Removal of sediment from SCVWD channels and facilities would remove silt, vegetation, and other blockages, which would allow the creek to function more naturally, resulting in a benefit to the recreational quality. Sediment reuse that improves ecological condition or functioning would be anticipated to have positive effects, to the extent that the reuse sites would support recreation. Stabilization and repair of eroding banks would reduce sediment loss and in-channel build-up. Although the use of certain materials (i.e., rock, riprap) to repair banks could appear visually different, on-site revegetation would minimize long-term visual impacts.

Minor Maintenance

Minor maintenance activities, including installation/maintenance of mitigation and landscape sites, debris removal, fence maintenance, and graffiti removal activities, would result in an improvement to the visual quality and character of SCVWD-maintained channels. Therefore, permanent effects on recreational quality from these activities would be beneficial.

Management of Animal Conflicts

Long-term effects of animal conflicts management could benefit the recreational quality of treated areas. By discouraging damage caused by animal activity (i.e., burrowing), the integrity of SCVWD facilities would be preserved and visual damage would be minimized. Therefore, management of animal conflicts under the Proposed Project would result in a beneficial impact.

Canal Maintenance

Because routine canal maintenance activities would include all general work activities, effects would be the same as described above for other routine maintenance work.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to prevent permanent changes to recreation quality. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-19: Work Site Housekeeping
BMP SED-3: Restore Channel Features
BMP REVEG-1: Seeding
BMP REVEG-2: Planting Material

Conclusion

By implementing these BMPs, good housekeeping practices would be followed at work sites and provide for revegetation activities to be implemented shortly after completing vegetation management, sediment removal, or bank stabilization activities that would remove vegetation. This impact would be beneficial and no impacts would occur.

Mitigation Measures: No mitigation is required.

Impact REC–3: Temporary Disruption of the Use of, or Access to, Recreational Facilities (Significance Criterion A; Less than Significant)

As described in Section 3.11.2, *Environmental Setting,* a number of channels and canals in the Project Area support public recreation (e.g., creekside trails). Sediment reuse sites also may support recreation, depending on their location. Users of public trails and associated recreational facilities could experience temporary disruptions during active maintenance activities.

Sediment Removal/Bank Stabilization

When sediment removal and bank stabilization activities are conducted, portions of nearby trails or trail parking areas may have to be temporarily closed for the duration of the maintenance activity (from less than a day to up to several weeks, in limited instances) to maximize public safety while they are used as access corridors or staging areas for vehicles, supplies, and equipment. Depending on the extent of area needed to conduct the activities,

such closures could temporarily impede recreational use. However, closures would be localized to a specific maintenance or sediment reuse site, and alternative recreational opportunities would continue to be available along other streamside trails and recreational facilities in the overall Project Area (e.g., city and county parks). Over the long term, the improvement to stream conditions would improve the quality of many of the trails as recreational amenities.

Vegetation Management

Upland activities for vegetation management, such as mowing or discing, maymay require temporary closure of portions or entire segments of creekside trails in the vicinity of work sites. In-channel vegetation management activities may result in temporary disruption of recreational facilities for use as access corridors or staging areas for vehicles, supplies, and equipment. Potential short-term effects on the recreational facilities would be similar to those described for sediment removal and bank stabilization activities.

Other Maintenance Activities

Minor maintenance activities could involve both upland activities (i.e., fence repairs), similar to that described for vegetation management, and in-channel activities (e.g., debris removal). Management of animal conflicts may require the temporary closure of areas for the application of fumigants, and physical alterations to habitats. Effects of minor maintenance and animal conflict management activities would be similar to those described for sediment removal, bank stabilization and vegetation management. Because routine canal maintenance activities would include all general work activities, effects would be the same as described above.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to address any temporary disruptions on recreational facilities. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-36: Public Outreach
BMP GEN-37: Implement Public Safety Measures

Conclusion

The Proposed Project would provide advanced public notification of closures and the placement of warning signs, barriers, and detours so that temporary access disruption or safety hazards along public trails or other recreational facilities caused by the proposed activities would be minimized. This impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact REC–4: Permanent Use or Access Disruption of Recreational Facilities (Significance Criterion A; No Impact)

The Proposed Project could result in permanent impacts on recreational facilities if access or use of the facilities were permanently disrupted by proposed maintenance activities.

Sediment Removal

Sediment removal activities typically would last approximately 10 days but could last up to 8 weeks for larger sediment removal projects. Access to and use of recreational facilities would be disrupted during these maintenance activities. As previously described, once maintenance was completed, all affected paths, trails, and parking areas would be reopened for public use, and the sediment removal activities would not result in a permanent disruption of these facilities.

Other Maintenance Activities

As described above, other proposed maintenance activities (bank stabilization, vegetation management, minor maintenance, management of animal conflicts, canal maintenance) in any given location would be short-term in any given location, typically lasting no more than 10 days at a time. As described for sediment removal, access to and use of recreational facilities would be restored following the completion of maintenance activities and would not result in a permanent disruption.

Conclusion

Maintenance activities associated with the Proposed Project would not result in the permanent disruption of access to trails or any other recreation facilities, or in degradation of the recreational experience at these facilities. No impact would occur, and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Chapter 3.12

TRAFFIC AND TRANSPORTATION

3.12 Traffic and Transportation

3.12.1 Introduction

This section describes the regulatory setting, environmental setting, and potential impacts of the Proposed Project related to traffic and transportation.

3.12.2 Regulatory Setting

Various levels of government or regulatory authority are responsible for some or all aspects of the planning, implementation, operations, and maintenance of transportation facilities and services in the Project Area. Several state, regional, and local agencies have jurisdiction over transportation planning in Santa Clara County.

Federal Plans, Policies, Regulations, and Laws

Federal Highways Administration

Federal statutes specify the procedures the U.S. Department of Transportation (DOT) must follow in setting policy regarding the placement of utility facilities within the rights-of-way of highways that receive federal assistance. These include expressways, most state highways, and certain local roads. The Federal Highway Administration (FHWA) regulations require each state to develop its own policy regarding the accommodation of utility facilities within the rights-of-way of such highways. Once FHWA has approved a state's policy, the state can approve any proposed utility installation without referral to FHWA, unless it does not conform to the policy.

Federal law does not directly control how states accommodate utilities within highway rights-of-way. However, in determining where a right-of-way on a federally aided highway should be used for accommodating a utility facility, the U.S. Secretary of Transportation must: (1) ascertain the effect accommodation of utilities will have on highway and traffic safety, because no such use may be authorized or permitted that would adversely affect safety; (2) evaluate the direct and indirect environmental and economic effects of any loss of productive agricultural land or any impairment of its productivity that would result from disapproving accommodation of the utility facility; and (3) consider the environmental and economic effects together with any interference with or impairment of the use of the highway that would result from accommodation of the utility facility (23 U.S. Code [USC] Section 109[1]). In addition, 23 USC Section 116 requires state highway agencies to ensure proper maintenance of highway facilities, which implies adequate control over non-highway facilities such as utility facilities. Furthermore, 23 USC Section 123 specifies when federal funds can be used to pay for the costs of relocating utility facilities in connection with highway construction projects.

The Hazardous Materials Act

The Hazardous Materials Act of 1974, directed by DOT, governs the transportation of hazardous materials. The main objective of this policy is to improve regulations and enforcement efforts that deal with the transportation of hazardous materials in commerce.

Title 49, Code of Federal Regulations

Title 49, Code of Federal Regulations (CFR), Sections 171-173 and 177 include general information, regulations, and definitions pertaining to the transportation of hazardous materials, the types of materials defined as hazardous, shipping requirements, marking of transportation vehicles, training requirements, and carriage by public highway. Title 49, CFR Sections 350-399 and Appendices A-G address safety issues for transport of goods, materials, and substances over public highways.

State Plans, Policies, Regulations, and Laws

California Department of Transportation

Caltrans has jurisdiction over state facilities including freeways and state highways. Caltrans also has jurisdiction over on- and off-ramp intersections at the interchanges between Caltrans facilities and local roadways. Improvements to freeways and state highways must meet Caltrans standards. Caltrans recommends a target level of service (LOS) at the threshold between LOS C and LOS D for their facilities. If the location under existing conditions operates worse than the appropriate target LOS, then the existing LOS should be maintained. LOS of intersections or roadway segments are not evaluated for this analysis.

Any encroachment within the right-of-way of a state highway or route is subject to Caltrans regulations, including issuance of an encroachment permit and the provisions of temporary traffic control systems. An encroachment, as defined in Section 660 of the Streets and Highways Coded, can be any tower, pole, pole line, pipe, pipe line, fence, billboard, stand, or building, or any structure or object of any kind or character that is within the right-of-way but not a part of the Caltrans facility. Authority for Caltrans to control encroachment within the state highway is contained in the Streets and Highways Code, starting with Section 660. Encroachment permits are intended to safeguard the affected jurisdictions' properties, either by providing preventive measures to be implemented during project construction or providing corrective measures if damage occurs. Traffic control systems can include traffic control warning signs, lights, and/or safety devices to ensure the safety of the traveling public.

See Section 3.1, *Aesthetics*, for further discussion of the Caltrans State Scenic Highway System.

California Vehicle Code

The California Vehicle Code (CVC) Section 353 defines hazardous materials. CVC Sections 31303-31309 include regulations for the transportation of hazardous materials, routes used, and any applicable restrictions. CVC Section 34500 et seq. regulates the safe operation of vehicles and includes those that are used for the transportation of hazardous materials. CVC Sections 2500-2505 authorize the issuances of licenses by the Commissioner of California Highway Patrol for the transportation of hazardous materials, including explosives. CVC Division 15, Size, Weight, and Load, Chapter 5, Article 6 contains transported load regulations. Approvals from Caltrans are required for transportation of oversized or excessive loads over state highways, including limitations based on axles and wheel base lengths. (Also see discussion Section 3.6, *Hazards and Hazardous Materials*.

California Streets and Highway Code

California Streets and Highway Code, Sections 117 and 660-672 and CVC 35780 et seq. require permits for the transportation of oversized loads on county roads.

Regional and Local Plans, Policies, Regulations, and Ordinances

Metropolitan Transportation Commission/Transportation 2035

The Metropolitan Transportation Commission (MTC) is the transportation planning, coordinating, and financing agency for the nine-county Bay Area. The current regional transportation plan, known as Transportation 2035, was adopted by MTC on April 22, 2009. Transportation 2035 specifies a detailed set of investments and strategies throughout the region from 2009 through 2035 to maintain, manage, and improve the surface transportation system.

Santa Clara Valley Transportation Authority/Congestion Management Program

The Santa Clara Valley Transportation Authority (VTA) serves three roles in the county: primary transit operator, Congestion Management Agency, and regional transportation planning agency. In its role as transit operator, the VTA is responsible for the development, operation, and maintenance of the bus and light rail system within the county. The VTA operates over 70 bus lines, three light rail lines (in addition to shuttle and paratransit service), and provides transit service to major regional destinations and transfer centers in adjoining counties.

VTA oversees the Congestion Management Program (CMP). State legislation requires that all urbanized counties in California prepare a CMP to obtain each county's share of gas tax revenues. The CMP legislation requires that each CMP contain five mandatory elements: 1) a system definition and traffic LOS standard element; 2) a transit service and standards element; 3) a trip reduction and transportation demand management element; 4) a land use impact analysis program element; and 5) a capital improvement element. The county's program includes the five mandated elements and three additional elements: a countywide transportation model and data base element; a bi-annual monitoring and conformance element; and a deficiency plan element. Preparation of a deficiency plan is required by cities

for CMP facilities that operate at unacceptable levels based on the CMP's standard. The purpose of a deficiency plan is to improve system-wide traffic flow and air quality. According to the VTA's Requirements for Deficiency Plans (1992), plans "allow local jurisdictions to adopt innovative and comprehensive transportation strategies for improving system-wide [operations] rather than adhering to strict traffic level of service standard that may contradict other community goals."

VTA requires that proposed development project impacts on the CMP system be addressed. The CMP system in San Jose includes the freeway and expressway systems, and a number of major regional roadways. For the purpose of this study, LOS on individual roadway segments is not evaluated. Instead, because this study is a program-level evaluation of proposed maintenance activities, vehicle miles traveled are estimated to evaluate the level of maintenance activity.

Santa Clara County Roads and Airports Department

Streets in unincorporated areas as well as all of the county expressways are managed under the auspices of the County Roads and Airports Department. Several larger, developed unincorporated areas exist near some of the work areas, including those in the Burbank area (east of the I-280/I-880-SR 17 interchange) and in the Cambrian area (between Jackson Drive and Leigh Avenue south of Camden Avenue). The County also is responsible for maintaining and operations of all of expressways and streets on its property.

Local Regulations/City Policies

Local municipalities in the county (Campbell, Cupertino, Gilroy, Los Altos, Los Altos Hills, Los Gatos, Milpitas, Monte Sereno, Morgan Hill, Mountain View, Palo Alto, San Jose, Santa Clara, Saratoga, and Sunnyvale) all have plans, policies, codes, ordinances, and/or guidelines (referred to hereafter as city policies) that regulate transportation activities within their jurisdictions. These city policies generally require LOS to remain at or above LOS C, D, or E, depending on the jurisdiction and the intersection (high volume versus low volume). Truck access is generally limited to truck routes that are defined by each jurisdiction. If a location is not along a truck route, municipalities encourage (for example) "trucks making local deliveries [to] proceed by the shortest route to the nearest truck route for travel." (City of Los Altos 2002) Stated another way, municipalities encourage trucks to stay "off local streets except for deliveries." (City of Santa Clara 2002) Local municipalities also have jurisdiction over all city/town streets and city-/town-operated traffic signals.

3.12.3 Environmental Setting

This section discusses the physical transportation system that provides access to SCVWD facilities.

Roadway Network

The county's transportation network is comprised of freeways, expressways, arterial roadways, collector roadways, and local streets. Freeways are designed for low accessibility (limited connections to other facilities provided by grade-separate interchanges) and high mobility (throughput of traffic movement). Conversely, local streets are designed for high

accessibility (access to adjacent properties) and low mobility. Other roadways fall in between these two roadway types. The county's main vehicular roadway types are described next.

Freeways

U.S. 101 is a north-south freeway in the county. The freeway includes four mixed-flow lanes per direction, including high occupancy vehicles (HOV) lanes during peak periods. HOV lanes, also known as diamond or carpool lanes, restrict use to vehicles with two or more persons (carpools, vanpools, and buses) or motorcycles during the peak morning (5:00 a.m. to 9:00 a.m.) and evening (3:00 p.m. to 7:00 p.m.) commute periods. Northbound U.S. 101 is generally the peak morning commute direction, and southbound U.S. 101 is the peak evening commute direction. U.S. 101 extends through the county, from south of Gilroy to north of Palo Alto via downtown San Jose and Mountain View.

I-280 is a north-south freeway extending from the U.S. 101 interchange in San Jose north to San Francisco. East of the U.S. 101 interchange, I-280 is designated as I-680. The freeway includes four to five mixed-flow lanes per direction, including HOV lanes north of the I-280/I-880/SR 17 interchange. The peak commute directions on I-280 are northbound in the morning and southbound in the evening. I-280 extends through the county, between approximately Alpine Road in Palo Alto and U.S. 101 in San Jose via Cupertino.

I-680 is a north-south freeway extending from the I-280/I-680/U.S. 101 interchange in San Jose north to Solano County. Within the county, the freeway includes four mixed-flow lanes per direction. Peak commute directions on I-680 are southbound in the morning and northbound in the evening. From the north, I-680 enters the county at the northern Milpitas city limit.

I-880 is a north-south freeway extending from San Jose at the I-280/I-880/SR 17 interchange to Oakland. This facility includes three to four mixed-flow lanes per direction. Northbound I-880 is the peak commute direction in the morning, and southbound I-880 is the peak commute direction in the evening. I-880 enters the county from the north at the northern Milpitas city limit.

SR 17 is a north-south freeway extending from San Jose at the I-280/I-880/SR 17 interchange to Santa Cruz. The facility includes two to three mixed-flow lanes per direction. Northbound is the peak direction in the morning, and southbound is the peak direction in the evening. SR 17 exits the county at Skyline Boulevard in the Santa Cruz Mountains south of Los Gatos.

SR 85 is a north-south freeway extending through the county from the SR 85/U.S. 101 interchange in Mountain View to the SR 85/U.S. 101 interchange in south San Jose via Los Gatos and Saratoga. This facility includes three to four mixed-flow lanes per direction, including HOV lanes during peak periods. Northbound SR 85 is the commute direction in the morning, and southbound SR 85 is the commute direction in the evening. The freeway is located entirely within the county.

SR 87 is a north-south freeway extending from the SR 85/SR 87 interchange in south San Jose to the U.S. 101/SR 87 interchange north of downtown San Jose. This facility includes three mixed-flow lanes per direction, including HOV lanes during peak periods. Northbound SR 87 is the commute direction in the morning, and southbound SR 87 is the commute direction in the evening. SR 87 is located entirely within San Jose.

SR 237 is an east-west freeway extending between Mountain View and Milpitas. This freeway includes three mixed-flow lanes per direction, including HOV lanes during peak periods. Traffic is evenly split between the eastbound and westbound commute directions during both the morning and evening commute times. The freeway is located entirely within the county.

Conventional State Highways

This type of roadway facility is operated and maintained by Caltrans. SR 9 (Saratoga-Los Gatos Road/Big Basin Way/Congress Springs Road), SR 82 (Monterey Road/The Alameda/ El Camino Real), SR 130 (Alum Rock Avenue/Mt. Hamilton Road), SR 152 (Pacheco Pass Road/1st Street/Leavesley Road/Hecker Pass Highway), SR 25 (Hollister Road), and SR 237 (Calaveras Boulevard) east of I-880 are the designated state highways in the county. In general, state highways have a primary function of traffic movement. However, some locations have a reduced emphasis on vehicle mobility, such as The Alameda, because its characteristics include numerous access points and fronting uses for the neighborhood business district.

Expressways

Expressways are facilities designed primarily for traffic movement, and they provide limited access to abutting properties. These facilities generally include median areas dividing traffic directions, some intersecting streets allowing only right-turn access, some grade-separated interchanges, and some signalized intersections allowing full access. Expressways are maintained and operated by the County Roads and Airports Department. The Department controls access to and operation of traffic signals on each of these facilities. The expressways located in the county include: Almaden Expressway, Capitol Expressway, Central Expressway, Foothill Expressway, Lawrence Expressway, Montague Expressway, Oregon Expressway, San Tomas Expressway, and Southwest Expressway.

Arterial Roadways

Arterial roadways are facilities that accommodate major movements of traffic not served by freeways, expressways, or state highways. They are designed mainly for the movement of through traffic and the provision of access to abutting properties is a secondary function. Although abutting properties have access to the facilities, parking and loading may be restricted or prohibited to improve the capacity for moving traffic. The number of lanes on this type of facility depends on its function, its location, and the volume of traffic it is expected to handle; however, arterials generally are planned to have four or more travel lanes. Selected arterial roadways in the county include, but are not limited to: Blossom Hill Road, De Anza Boulevard, Mathilda Avenue, Middlefield Road, San Antonio Road, Santa Teresa Boulevard, and Stevens Creek Boulevard.

Collector Roadways

Collector roadways are facilities that serve internal traffic movements within a specific area or neighborhood and provide connections to the arterial street system. Collectors typically do not serve through trips but provide access to abutting properties and connections to local streets. Traffic control devices may be installed to protect or facilitate traffic on a collector street. Some examples of collectors in the county include: Foxworthy Avenue, Llagas Road, Miramonte Avenue, Monroe Street, Pierce Road, Ruby Avenue, and Stelling Road.

Local Streets

Local streets are facilities having the primary function of providing access to immediately adjacent properties. The majority of streets in the county are local streets that provide access to residential and commercial properties.

Public Transit

Existing public transit service within the county is provided by VTA and consists of bus, light rail transit, and paratransit service. Commuter rail service is provided by Caltrain, the Altamont Commuter Express, and the Capitol Corridor. These services are described in Table 3.12-1.

Table 3.12-1. Transit Service within Santa Clara County

Provider (Operator)	Service	Rail Stop Examples	Extent of Service	Frequency
Santa Clara Valley Transportation Authority (VTA)	Local, limited-stop, express, and rapid bus; Light rail transit	Santa Teresa, Alum Rock, Winchester, Convention Center, Mountain View	Santa Clara County	Varies for bus service; Light rail headways range from 15 to 45 minutes
OUTREACH	Paratransit	Not available	Not available	Not available
Caltrain (Peninsula Joint Powers Board)	Commuter Rail	Sunnyvale, San Jose Diridon, Tamien, Gilroy	San Francisco to San Jose, select trains to Gilroy	Weekday headways 30 to 60 minutes; Weekend headways 60 minutes
Altamont Commuter Express (San Joaquin Regional Rail Commission)	Commuter Rail	Great America, San Jose Diridon	Stockton to San Jose	Four eastbound and four westbound trains, 60 minute headways, commute periods only
Capitol Corridor (Capitol Corridor Joint Powers Authority)	Commuter Rail	Great America, San Jose Diridon	Auburn to San Jose	Seven southbound and seven northbound trains

Sources: VTA 2010, Outreach 2010, Caltrain 2010, ACE 2010, Capitol Corridor 2010

Pedestrian Circulation

Pedestrian facilities improve safety for pedestrians and also can encourage the use of alternative modes of transportation. These facilities include sidewalks, paths, pedestrian bridges, crosswalks, and pedestrian signals with crosswalks at signalized intersections to accommodate pedestrian circulation. In California, it is legal for pedestrians to cross any street, except at unmarked locations between immediately adjacent signalized crossings or where crossing is expressly prohibited. Marked crossings reinforce the location and legitimacy of a crossing. The county's pedestrian network consists of sidewalks, multi-use paths/trails, and both grade-separated and at-grade crossings. The county has many areas that are especially conducive to walking for recreation and transportation, particularly in downtown areas and along off-street paths.

Bicycle Circulation

The typical California standards for bikeways, described in Chapter 1000, "Bikeway Planning and Design" in the Caltrans *Highway Design Manual* (2006), include three distinct types of bikeway facilities:

Bike paths (Class I) are paved pathways separated from roadways that are designated for the exclusive use of bicycles, pedestrians, and other non-motorized means of transport. In general, bike paths serve corridors that are not served by streets and highways or where sufficient right-of-way exists to allow such facilities to be constructed away from the influence of parallel streets and numerous vehicle conflicts. Examples include the Coyote Creek Trail, Los Gatos Creek Trail, San Tomas Aquino Creek Trail, and the Stevens Creek Trail, all of which have asphalt or concrete surfaces.

Bike lanes (Class II) are lanes for bicyclists adjacent to the outer vehicle travel lanes. These lanes have special lane markings, pavement legends, and signage. Bike lanes are usually constructed to better accommodate bicyclists through corridors where insufficient room exists for safe bicycling on existing streets. Example bike lanes include those on Campbell Avenue, Curtner Avenue, De Anza Boulevard, Dunne Avenue, Fremont Avenue, Los Gatos Boulevard, Milpitas Boulevard, Reed Avenue, Saratoga Avenue, Page Mill Road, and Santa Teresa Boulevard.

Bike routes (Class III) in general are located on low traffic volume streets that provide alternate routes for recreational users, and in some cases, for commuter and school-age cyclists. These facilities are signed for bike use but have no separated bike right-of-way or lane striping. Bike routes serve either to provide continuity to other bicycle facilities or designate preferred routes through high-demand corridors. Examples include bike routes on Benton Street, Covington Road, Mary Avenue, and Meridian Avenue. Some routes, such as San Fernando Street between SR 87 and San Jose Diridon Station (where additional width for bike lanes was not available), feature "sharrow" symbols, installed on the pavement to designate the appropriate travel path for cyclists and increase driver awareness of bicycles. Other routes, such as Bryant Street in Palo Alto, are designated as "Bicycle Boulevards" that employ traffic calming measures to encourage bicycle use of the street but discourage automobile through trips.

Existing Daily Vehicle Trips Generated and Miles Traveled

The following discussion presents estimates regarding the existing SMP. The amount of vehicle trips generated and vehicle miles traveled (VMT) can be obtained through historical maintenance activity records and estimates of average trip lengths, or through the use of a validated travel demand model that estimates vehicle demand. The former was used for this analysis.

Traffic Estimates

The estimate for maintenance vehicle trips that would be generated by the existing SMP activities were developed using SCVWD data, including estimated annual gross sediment removal totals, defined dry season maintenance window, typical off-haul truck capacity, and typical loading rates and procedures.

The multi-step process for estimating the Proposed Project maintenance trips is described below and included the following steps:

- Processed historical data
- Made assumptions to supplement historical data
- Estimated average daily trips generated
- Estimated annual trips generated

Trips would be made by four types of vehicles: light duty vehicles, medium duty vehicles, heavy duty vehicles, and other large trucks. For the purposes of this analysis, light duty vehicles include vehicle types such as minivans and sedans. Medium duty vehicles include vehicles such as Ford F-150s and Rangers. Heavy duty vehicles include vehicles such as Ford F-350s, F-450s, crane trucks, water trucks, cargo vans, and Bobtail dump trucks. Other large trucks include vehicle types such as large 10-cy sediment removal dump trucks, 20-cy vegetation removal compactors, and other large semi-trucks that are used to haul equipment or similar amounts of materials. A full list of vehicles included in each vehicle type is provided in Table K8 of Appendix K in this document.

1) Process Historical Data

The SCVWD's historical data included the number and hours that light, medium, and heavy duty vehicles have been used for each stream maintenance activity (e.g., sediment removal, vegetation removal, animal conflicts management, minor maintenance, and bank stabilization) (Williams and Smith, pers. comm., 2010). Historical data for contract vehicles was not available because such vehicles are not owned by SCVWD (Williams and Smith, pers. comm., 2010). The historical data is shown in Tables K11 through K15 of Appendix K in this document. The historical number and hours that SCVWD vehicles used for each stream maintenance activity was processed, and the average number of trips per day was determined, based on this data.

2) Assumptions to Supplement Historical Data

Assumptions were made to estimate the remaining vehicle trips because not all vehicle types were included in the historical data provided by SCVWD. This analysis includes the following assumptions to estimate existing SMP vehicle trip generation:

- Sediment removal dump trucks have an 8-cy capacity.
- The dry season work period is 85 work days, although some activities such as minor maintenance and vegetation removal occur year-round (see Chapter 2, *Project Description*, pages 2-35 through 2-40). (The calculation for dry season work days is shown in Table K18 of Appendix K in this document.)
- Seasonal trips are calculated by multiplying the average daily trips by the number of work days in the season.
- A daily work period is 8 work hours.
- Two trucks are used to deliver materials or equipment to each job site.
- Eight deliveries of materials are made from quarries to SCVWD headquarters per year.
- One delivery of materials is made from SCVWD headquarters to each work site.
- Each light, medium, and heavy duty vehicle makes more than two trips per day. Some trips may be from one work site to another and other trips may be made to pick up supplies from either the corporate yard or from a local hardware store. Therefore, these vehicles do not necessarily make one trip to the work site and one return trip.
- Activities are performed at 8–28 work sites per day.
- The number of bank stabilization work sites, sediment removal volumes, deliveries per basin or subbasin, and some light duty vehicle usage are based on percentages of waterbody miles in each basin or subbasin.
- The number of trips generated by other large trucks for sediment removal activities was calculated by dividing the average historic sediment removal amounts (see Chapter 2, *Project Description*, page 2-5) by the truck hauling capacity of 8-cy.
- Two truck trips are generated for each bank stabilization work site and the number of work sites was provided by SCVWD.

3) Estimated Average Daily Trips Generated

The average daily vehicle trips of light, medium, and heavy duty vehicles were added to average daily other large truck trips to calculate the average number of trips per day that is estimated to occur under the SMP.

4) Estimated Average Annual Trips Generated

Seasonal trips during the dry season were calculated by multiplying the average daily dry season trips by the number of work days in the dry season. Similarly, the trips during the remainder of the year were calculated by multiplying the average daily remainder of the year trips by the number of work days in the remainder of the year. The annual trips generated were calculated by adding the dry season trips to the trips generated during the remainder of the year.

The existing SMP generates 1,114 daily one-way maintenance trips during the dry season and 544 one-way daily maintenance trips during the remainder of the year (all references to trips in the remainder of this section refer to one-way trips). This is equivalent to 94,690 dry season maintenance trips and 92,480 maintenance trips during the remainder of the year, resulting in 187,170 annual maintenance trips. Table 3.12-2 shows the trip generation estimates for each SCVWD basin per day; Table 3.12-3 shows the trip generation estimates per year.

Table 3.12-2. Existing SMP Trip Generation Estimates per day

Basin	Sub-Basin	Average Vehicle Trips per Day	
		Dry Season[1]	**Remainder of Year**
Santa Clara Valley	Lower Peninsula	188	122
	West Valley	254	160
	Guadalupe	202	70
	Coyote	327	142
	Subtotal (A)	***971***	***494***
Pajaro River (B)	-	143	50
Total (A+B)		**1,114**	**544**

Notes:
[1] The dry season generally is from June 15 through October 15.
Source: Fehr & Peers 2011

Table 3.12-3. Existing SMP Trip Generation Estimates per year

Basin	Sub-Basin	Average Vehicle Trips per Year		
		Dry Season[1]	Remainder of Year	Total
Santa Clara Valley	Lower Peninsula	18,577	18,143	**36,720**
	West Valley	24,683	24,107	**48,790**
	Guadalupe	14,707	14,363	**29,070**
	Coyote	26,274	25,661	**51,935**
	Subtotal (A)	***84,241***	***82,274***	***166,515***
Pajaro River (B)	-	10,449	10,206	20,655
Total (A+B)		**94,690**	**92,480**	**187,170**

Notes:
[1] The dry season generally is from June 15 through October 15.
Source: Fehr & Peers 2011

Vehicle Miles Traveled Estimates

Transportation is a major contributor to greenhouse gas emissions. According to the U.S. Environmental Protection Agency, the transportation sector was responsible for nearly 28 percent of all greenhouse gas (GHG) emissions in the United States in 2006 (USEPA 2008), and transportation in California was responsible for about 38 percent of GHG emissions in 2004 (CARB 2008). Transportation is the direct result of population and employment growth, which generates vehicle trips to move goods, provide public services, and connect people with work, school, shopping, and other activities such as construction (see Section 3.5, Global Climate change).

A performance measure used to quantify the amount of travel is VMT. VMT is a useful performance measure because the amount of travel and conditions under which the travel occurs directly relate to how much fuel vehicles burn. As a result, increases in VMT directly cause increases in greenhouse gas emissions and air pollution (see also Section 3.5, *Global Climate Change*).

The multi-step process for estimating the SMP VMT is described below and included the following steps.

- Processed historical VMT data
- Estimated average trip length
- Estimated trip distribution
- Estimated average daily VMT
- Estimated annual VMT

1) Historical VMT Data Review

As mentioned previously, the historical number of miles for some district vehicles was provided by SCVWD (Williams and Smith, pers. comm., 2010), and this data was used to determine average miles traveled per year. The historical data provided by SCVWD is included in Table K9 of Appendix K in this document.

2) Estimate Average Trip Length

Average trip lengths were determined by calculating the length between each basin/subbasin and disposal locations, SCVWD headquarters, and the animal control offices, and the length between SCVWD headquarters and the quarries. Because basins/subbasins do not have an address per se but cover a wide area of land, for the purposes of this VMT analysis, the following assumptions were made:

- Each basin/subbasin was generalized to a point location near the center of the basin/subbasin to more easily calculate trip length distances (Williams and Smith, pers. comm., 2010). (The list of point locations are shown in Table K14 of Appendix K and the trip distances are shown in Table K19 of Appendix K in this document.)

- Only the areas below 1,000 feet in elevation were used to determine the centers of each basin/subbasin (see Chapter 2, *Project Description*, page 2-6).

3) Estimate Trip Distribution

Trips are made to and from multiple sites: multiple project sites in each basin/subbasin, disposal locations, SCVWD headquarters, quarries, and the animal control offices. Therefore, the following assumptions were made to determine what percentage of traffic went to and from each site:

- The directions of approach and departure for work activity-related traffic were estimated based on historical data of work sites provided by SCVWD (Williams and Smith, pers. comm., 2010), possible work site locations, the sediment disposal/reuse locations, SCVWD headquarters, and other locations including, but not limited to, rock quarries and the animal control offices.

- The distribution of trips from each basin/subbasin to each disposal/reuse site was based on the percentage of the basin/subbasin nearest to each disposal/reuse site (Williams and Smith, pers. comm., 2010).

These assumptions also are included in Tables K16 and K17 of Appendix K in this document.

4) Estimate Average Daily VMT

The VMT for the SMP was estimated as the trips generated resulting from the SMP (presented in Tables 3.12-4 and 3.12-5) multiplied by the estimated distance those trips would travel. Also, the VMT estimated in this step was compared to the historical VMT, calculated in the first step.

5) Estimate Annual VMT

Seasonal VMT during the dry season was calculated by multiplying the average daily dry season VMT by the number of work days in the dry season. Similarly, the VMT during the remainder of the year was calculated by multiplying the average daily remainder of the year VMT by the number of work days in the remainder of the year. The annual VMT was calculated by adding the dry season VMT to the VMT generated during the remainder of the year.

The SMP generates 13,273 daily VMT during the dry season and 7,192 daily VMT during the remainder of the year. This is equivalent to 1,128,205 dry season VMT and 1,222,641 VMT during the remainder of the year, resulting in 2,350,846 annual VMT.

Table 3.12-4. Existing SMP Vehicle Miles Traveled Estimates per day

Basin	Sub-Basin	Average Vehicle Miles Traveled per Day	
		Dry Season[1]	Remainder of Year
Santa Clara Valley	Lower Peninsula	2,643	2,023
	West Valley	2,880	2,029
	Guadalupe	1,894	635
	Coyote	3,965	1,686
	Subtotal (A)	***11,382***	***6,373***
Pajaro River (B)	-	1,892	819
Total (A+B)		**13,273**	**7,192**

Notes:
[1] The dry season generally is from June 15 through October 15.
Source: Fehr & Peers 2011

Table 3.12-5. Existing SMP Vehicle Miles Traveled Estimates per year

Basin	Sub-Basin	Average Vehicle Miles Traveled per Year		
		Dry Season[1]	Remainder of Year	Total
Santa Clara Valley	Lower Peninsula	272,846	295,684	568,530
	West Valley	282,988	306,676	589,664
	Guadalupe	129,067	139,871	268,938
	Coyote	299,277	324,327	623,604
	Subtotal (A)	***984,178***	***1,066,558***	***2,050,736***
Pajaro River (B)	-	144,027	156,083	300,110
Total (A+B)		**1,128,205**	**1,222,641**	**2,350,846**

Notes:
[1] The dry season generally is from June 15 through October 15.
Source: Fehr & Peers 2011

3.12.4 Impact Analysis

Methodology

Proposed Daily Vehicle Trips Generated and Miles Traveled

The methods and process used to estimate existing SMP maintenance vehicle trips generated and VMT also were used to estimate the trips and VMT that would be generated by the Proposed Project.

The Proposed Project generally would extend the dry season work period from October 15 to the first rainfall or December 31, whichever was earlier. Adjusting for rain variation and work activity needs, it is estimated that approximately 25 percent more dry season maintenance activities could be completed in this time period (Williams and Smith, pers. comm., 2010). Therefore, the current work window of 85 days would be extended so that the proposed dry season work window would be 106 days (85 days times 1.25). Some current maintenance activities that occur outside of the typical dry season would shift into the dry season work window. Therefore, some of the trips and VMT generated in the dry season of the Proposed Project would be trips and VMT formerly generated outside of the typical dry season, under the existing SMP.

Traffic Estimates

As mentioned previously, the process used to estimate the maintenance vehicle trips that are generated by the existing SMP activities also was used to estimate trips to be generated by the Proposed Project. The results of these trip estimates are described next.

The Proposed Project is estimated to generate 1,114 daily maintenance trips during the dry season and 544 daily maintenance trips during the remainder of the year, which are the same as under the existing SMP. Unlike the existing SMP and because the dry season work window would be extended under the Proposed Project, this would be equivalent to 118,084 dry season maintenance trips and 81,056 maintenance trips during the remainder of the year, resulting in 199,140 annual maintenance trips, an increase of 11,960 annual trips (which would be the same as an increase of approximately 70 trips per hour or between two and ten trips per hour per work site). Table 3.12-6 shows the annual Proposed Project trip generation estimates for each SCVWD basin. Proposed Project maintenance activity would occur year-round, truck traffic would be spread out over the day, the individual activities would be temporary in nature, the individual activities would vary in location, and the amount of peak-hour trips generated by the Proposed Project would be an average of approximately 140 hourly trips. Furthermore, at each work site, the level of peak-hour trips generated by the Proposed Project generally would be low (e.g., an average of approximately 20 hourly trips). Therefore, an intersection and roadway LOS analysis was not conducted.

Table 3.12-6. Proposed Project Trip Generation Estimates per year

Basin	Sub-Basin	Average Vehicle Trips Per Year		
		Dry Season[1]	Remainder of Year	Total
Santa Clara Valley	Lower Peninsula	19,928	18,178	38,106
	West Valley	26,924	23,840	50,764
	Guadalupe	21,412	10,430	31,842
	Coyote	34,662	21,158	55,820
	Subtotal (A)	***102,926***	***73,606***	***176,532***
Pajaro River (B)	-	15,158	7,450	22,608
Total (A+B)		**118,084**	**81,056**	**199,140**

Notes:

[1] The dry season generally would be from June 15 through the first significant rainfall after October 15 or December 31, whichever was earlier. The dry season would be extended by 21 days to 106 days under the Proposed Project.

Source: Fehr & Peers 2011

Vehicle Miles Traveled Estimates

As mentioned previously, the method used to estimate the VMT that would be generated by the existing SMP activities also was used to estimate the VMT that would be generated by the Proposed Project. The results of the VMT estimates are described next.

The Proposed Project would generate 13,273 daily VMT during the dry season and 7,192 daily VMT during the remainder of the year, which would be the same as the existing SMP. Unlike the existing SMP and because the dry season work window would be extended under the Proposed Project, this would be equivalent to 1,406,938 dry season VMT and 1,071,609 VMT during the remainder of the year, resulting in 2,478,547, an increase of 127,701 annual VMT. Table 3.12-7 shows the annual VMT estimates for each SCVWD basin under the Proposed Project.

Table 3.12-7. Proposed Project Vehicle Miles Traveled Estimates per year

Basin	Sub-Basin	Average Vehicle Miles Traveled Per Year		
		Dry Season[1]	Remainder of Year	Total
Santa Clara Valley	Lower Peninsula	329,806	251,200	581,006
	West Valley	345,208	262,931	608,139
	Guadalupe	167,660	127,700	295,360
	Coyote	381,132	290,293	671,425
	Subtotal (A)	***1,223,806***	***932,124***	***2,155,930***
Pajaro River (B)	-	183,132	139,485	322,617
Total (A+B)		**1,406,938**	**1,071,609**	**2,478,547**

Notes:

[1] The dry season generally would be from June 15 through the first significant rainfall after October 15 or December 31, whichever was earlier. The dry season would be extended by 21 days to 106 days under the Proposed Project.

Source: Fehr & Peers 2011

Criteria for Determining Significance

For the purposes of this analysis, the Proposed Project would result in a significant impact on traffic and transportation if it would:

A. exceed, either individually or cumulatively, level of service standards established by local or regional agencies for designated roads or highways, or otherwise cause a substantial increase in traffic in relation to the planned or designated traffic load and capacity of the circulation system;

B. substantially increase hazards or result in substantial safety risks due to a design feature (e.g., sharp curves, inadequate emergency service access, or dangerous intersections) or incompatible uses (e.g., haul routes through residential neighborhoods or by schools);

C. result in inadequate emergency access or interfere with adopted emergency evacuation plan;

D. result in incompatible land uses through inadequate parking capacity or parking/staging activities on residential streets; or

E. conflict with adopted policies, plans or programs supporting alternative transportation (e.g. bus turnouts, bicycle lanes, bicycle racks).

To evaluate the Proposed Project, these guidelines are interpreted as follows in the sections below.

Design Review Considerations Criteria

A design impact from a transportation improvement would be considered significant if the Proposed Project would introduce a design feature from a transportation improvement or incompatible use that substantially increased safety hazards.

Emergency Response Time Impact Criteria

An emergency response time impact would be considered significant if implementation of the Proposed Project would provide inadequate access to accommodate emergency vehicles.

Alternative Transportation Impact Criteria

An alternative transportation impact would be considered significant if implementation of the Proposed Project would:

- Disrupt ongoing, or interfere with planned transit services or facilities;
- Disrupt existing bicycle facilities; interfere with planned bicycle facilities; conflict or create inconsistencies with adopted bicycle system plans, guidelines, policies or standards; or not provide secure and safe bicycle parking in adequate proportion to anticipated demand; or

- Disrupt existing pedestrian facilities; interfere with planned pedestrian facilities; not provide accessible pedestrian facilities that meet current Americans with Disabilities Act (ADA) best practices; or would create inconsistencies with adopted pedestrian system plans, guidelines, policies or standards.

Structure of Impact Discussion

Because traffic and transportation impacts would be the result of maintenance activities as a whole, specific discussions by work activity are not included in the impact analysis below.

Environmental Impacts

Impact TR-1: Increase in Vehicle Miles Traveled (Significance Criterion A; Less than Significant)

The current SMP results in 13,273 daily maintenance VMT during the dry season and 2,350,846 annual VMT. Due to the extension in the number of days of operation, the Proposed Project would continue to produce 13,273 daily maintenance VMT during the dry season, but would result in 2,478,547 annual VMT, an increase of 127,701 annual VMT. This could result in a substantial increase in traffic in relation to the planned or designated traffic load and capacity of the circulation system.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to reduce impacts on emergency access. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-36: Public Outreach
BMP GEN-39: Planning for Pedestrians, Traffic Flow, and Safety Measures

Conclusion

Because of the temporary nature of proposed maintenance activities at any given location, the fact that Proposed Project-generated traffic would be distributed across the county, and with implementation of these BMPs, the increases in traffic are not anticipated to be substantial. For these reasons, impacts would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact TR-2: Substantial Increase in Safety Hazards (Significance Criteria B, C; Less than Significant)

The Proposed Project's maintenance activities may require temporary lane closures, and these closures may increase safety risks by forcing lane changes that would not be made otherwise.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to reduce impacts on emergency access. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-36: Public Outreach
BMP GEN-37: Implement Public Safety Measures
BMP GEN-39: Planning for Pedestrians, Traffic Flow, and Safety Measures

Conclusion

Because of the temporary nature of proposed maintenance activities, and with implementation of these BMPs, impacts would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact TR-3: Inadequate Emergency Access (Significance Criteria A, B, C; Less than Significant)

The Proposed Project may require temporary lane closures which could hinder emergency response times.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to reduce impacts on emergency access. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-36: Public Outreach
BMP GEN-37: Implement Public Safety Measures
BMP GEN-39: Planning for Pedestrians, Traffic Flow, and Safety Measures

Conclusion

Because of the temporary nature of proposed maintenance activities, and with implementation of these BMPs, impacts would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact TR-4: Disruption of Alternative Transportation Facilities or Services (Significance Criteria A, D, E; Less than Significant)

The Proposed Project could interfere with level of service standards established by local or regional agencies for designated roads or highways, or with planned transit services or facilities. Proposed maintenance activities could require temporary road or lane closures.

The Proposed Project could interfere with planned bicycle facilities or conflict with/create inconsistencies with adopted bicycle system plans, guidelines, policies, or standards. Furthermore, secure and safe bicycle parking could become temporarily unavailable at

specific work sites. In addition, work activities may affect bicycle facilities and require temporary lane closures.

Temporary sidewalk closures related to proposed maintenance work activities could cause short-term interference with planned pedestrian facilities, change accessible pedestrian facilities that meet current ADA best practices, or create inconsistencies with adopted pedestrian system plans, guidelines, policies, and standards.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to reduce impacts on level of service standards, transit services and facilities, bicycle facilities, and pedestrian facilities. Descriptions of each BMP are provided in Chapter 2, *Project Description.*

BMP GEN-36: Public Outreach
BMP GEN-37: Implement Public Safety Measures
BMP GEN-39: Planning for Pedestrians, Traffic Flow, and Safety Measures

Conclusion

Because of the temporary nature of proposed maintenance activities, and with implementation of these BMPs, impacts would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact TR-5: Insufficient Parking Capacity (Significance Criterion D; Less than Significant)

In general, Proposed Program-related parking would occur within SCVWD rights-of-way. For parking which is not able to be kept within these locations, it is generally anticipated that parking space in the Project Area would be sufficient to accommodate work staging and worker vehicle parking. Consequently, impacts related to parking would be less than significant.

Occasionally, maintenance work activities may occur within areas that contain limited parking spaces for worker vehicles. In this case, workers may need to park outside the immediate area affected. Although the increased walking distance from a parking space to the work site would be an inconvenience, this would be a temporary and less-than-significant impact.

Consequently, maintenance activity impacts related to parking would be less than significant.

Mitigation Measures: No mitigation is required.

Chapter 3.13

WATER QUALITY

3.13 Water Quality

3.13.1 Introduction

This section describes the regulatory setting, environmental setting, and potential impacts of the Proposed Project as related to water quality.

Data sources used to prepare this section include sediment and water quality monitoring reports by SCVWD (2008, 2009, 2010); the basin plans of the San Francisco Bay Regional Water Quality Control Board (San Francisco Bay RWQCB 2007) and the Central Coast RWQCB (2006b); the Santa Clara Basin Watershed Management Initiative's watershed management plan (2000); and the California Department of Water Resources' (DWR) Bulletin 118, California's Groundwater Bulletin (2003). Other applicable regulations and background documents also were reviewed.

The Proposed Project activities focus on managing streams, flood protection channels, and other flood management-related facilities. Several Proposed Project activities are directly related to and influenced by hydrologic and water quality processes. The following define the key hydrologic and water quality concepts and terminology used in this section.

Dissolved Oxygen

Dissolved oxygen (DO) is a measure of the amount of oxygen dissolved in water. DO is an important water quality parameter for aquatic invertebrates and fish, which depend on such oxygen to survive. DO levels depend on various factors, such as temperature, aeration factors (i.e., inflow, wind, waves), salinity, and the relative amount of oxygen generation (caused by photosynthesis by plants) and oxygen use (caused by respiration by animals and biodegradation of organic matter) that takes place in the water. Low DO levels also can occur during low flow conditions because water temperatures are higher and because of the absence of aeration caused by mixing during higher flows. Hypersaturated conditions (DO that is well above 100 percent saturation) can be indicative of excessive plant growth and eutrophic conditions. Large daily fluctuations in DO also can be an indicator of eutrophication because DO levels can drop to toxic levels at night as aquatic plants respire.

Mercury

Mercury (Hg) is a toxic constituent that bioaccumulates in the food chain of aquatic organisms and terrestrial wildlife, and is ultimately a human health concern primarily through the consumption of Hg-contaminated fish. Methylmercury (MeHg) is a more bioavailable form of Hg that is produced from inorganic Hg by specific types of bacteria in the sediments of rivers and reservoirs. The major pathway for human exposure to methylmercury (MeHg) is consumption of Hg-contaminated fish. Dietary MeHg is almost completely absorbed into the blood and is distributed to all tissues including the brain. In pregnant women, it also readily passes through the placenta to the fetus and fetal brain. MeHg is a highly toxic substance with a number of adverse health effects associated with its exposure in humans and animals. High-dose human exposure results in mental retardation,

cerebral palsy, deafness, blindness, dysarthria (a motor speech disorder) in utero, and in sensory and motor impairment in adults.

Nutrients

Nutrients, specifically nitrogen and phosphorus, are essential for life and play, having a primary role in ecosystem functions. Nitrogen and phosphorus are naturally occurring inorganic ions present within the atmosphere and in fixed forms within organic matter, such as plants and soils. In addition to naturally present concentrations, nutrients are introduced to water bodies through human or animal waste disposal or agricultural application of fertilizers.

Nutrients are commonly the limiting factor for growth in aquatic systems. Nutrient concentrations change seasonally, as aquatic plants respond to changes in the amount and duration of sunlight and either sequester or release nutrients as they grow or decompose. Agricultural fertilizers, domestic and native animal waste (e.g., manure), and human waste (e.g., leaky septic systems) can lead to elevated nutrients above background levels and stimulate plant growth. Rainfall, stream flow, and air and water temperature all influence nutrient concentrations in the watershed.

Pathogens

Pathogens are microorganisms that cause diseases in other organisms. Bacteria are the primary indicator organisms of pathogens, particularly for the detection of waterborne diseases. Waterborne diseases threaten the health of recreational users of waters and wildlife. Pathogenic bacteria contained within fecal waste are the most common source of waterborne diseases. Fecal contamination can be detected by bacterial indicators, such as total coliforms, fecal coliforms, *Escherichia coli* (*E. coli*), and fecal *enterococci*. High concentrations of these indicator bacteria—resulting from poor waste management and disposal, agricultural activities (i.e., grazing), and sometimes from homeless encampments along the creek banks—can degrade water quality for human consumption, recreation, and wildlife use.

Pesticides

Pesticides are chemicals designed to control, destroy, repel, or attract a target pest and are purposely introduced into the environment to manage insects, bacteria, weeds, rodents, or other pests. Pesticides may enter surface waters through direct application (i.e., aquatic pesticides) or through surface runoff. Farmers use pesticides to control the pests that can destroy or damage food and other crops. Aquatic pesticides typically are used to combat insects and other organisms known to carry disease (like West Nile virus) or for aquatic vegetation management. (CDPR 2010)

Salinity

Salinity typically is measured by the concentration of anions (salts) dissolved in water. This is determined by measuring total dissolved solids in water and the electrical conductivity of water. Changes in salinity levels can adversely affect beneficial uses, such as agricultural water supply, fish migration, and estuarine habitat.

Sediment

The concentration of suspended sediment in the water column is influenced by stream inflows, bank erosion, and the re-suspension of sediments by wind or tidal mixing. Water quality contaminants, such as metals or toxic chemicals, sequestered in bottom sediments or adjacent upland areas can adsorb (attach) to suspended sediments in the water column. Where contaminants can be adsorbed to suspended sediments, higher concentrations of suspended sediments can lead to higher concentrations of contaminants in the water. Because suspended sediments are highly mobile, they provide a transport mechanism that can cause the spreading and deposition of water quality contaminants.

Temperature

Temperature affects aquatic organisms and their biological processes. Extreme water temperatures can have deleterious effects on organism life history and reproduction, especially for sensitive species such as salmonids. Parameters that influence stream temperature include ambient air temperature, humidity, riparian vegetation, topography, surrounding land uses, and the amount of flow. Additionally, inflows from cold water seeps and from groundwater can moderate stream water temperatures. Water temperature influences a number of chemical processes within water bodies. Dissolved oxygen capacity is inversely related to water temperature.

3.13.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

Clean Water Act

The Clean Water Act (CWA) is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The key sections of the CWA that pertain to water quality regulation are Section 303, 401, and 402 (discussed hereunder). Section 404 of the CWA regulates the discharge of dredged and fill materials into waters of the United States, and is overseen by the U.S. Environmental Protection Agency (USEPA) and the U.S. Army Corps of Engineers. Section 404 requirements are discussed further in Section 3.3, *Biological Resources*.

Section 303

Under CWA Section 303[d], states are required to identify "impaired water bodies" (those that do not meet established water quality standards), identify the pollutants causing the impairment, establish priority rankings for waters on the list, and develop a schedule for development of control plans to improve water quality. Following listing, USEPA then approves the state's recommended list of impaired waters or adds and/or removes water bodies to the list. Each Regional Water Quality Control Board (RWQCB) must update the Section 303[d] list every 2 years. Water bodies on the list have no further assimilative capacity for the identified pollutant, and the Section 303[d] List identifies priorities for development of pollution control plans for each listed water body and pollutant.

The pollution control plans triggered by the CWA Section 303[d] List are called Total Maximum Daily Loads (TMDL). The TMDL is a "pollution budget" designed to restore the

health of a polluted body of water. A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, thereby ensuring the protection of beneficial uses. A TMDL also contains the target reductions needed to meet water quality standards and allocates those reductions among the pollutant sources in the watershed (point sources, non-point sources, and natural sources). The TMDL process quantifies water quality problems, identifies pollutant sources, and recommends pollutant load reductions or control actions needed to restore and protect the beneficial uses of the impaired water body. The calculation of a TMDL includes a margin of safety and considers seasonal variations. (40 CFR Section 130.2)

CWA Section 303 is overseen by USEPA and administered by the State Water Resources Control Board (SWRCB) and its nine RWQCBs. Once a TMDL is developed and approved by the RWQCB, SWRCB, and USEPA, the implementation plan (if included in the TMDL) can be enacted. The TMDL implementation plan includes: pollution prevention, control, and restoration actions; responsible parties; and schedules necessary to attain water quality standards. The implementation plan also identifies enforceable measures (e.g., prohibitions) and triggers for RWQCB action (e.g., performance standards). One method of TMDL enforcement utilized by states and RWQCBs is to require responsible parties to comply with pollution control actions as part of permits issued under the National Pollutant Discharge Elimination System (NPDES) program (see the CWA Section 402 discussion below). If an NPDES permit signatory, or third party covered under a signatory, is found to be out of compliance with the permit requirements, including TMDL compliance requirements, penalties may be assessed by the signatory (in the case of third party lapses) or by the state (in a case where a signatory is out of compliance, as determined by USEPA). At the state level (in California), once a TMDL is incorporated into an RWQCB's basin plan as an amendment, the California Porter-Cologne Water Quality Control Act (Porter-Cologne Act) authorizes the agency to issue Waste Discharge Requirements (WDRs) to responsible parties named in the TMDL. Discharge requirements, whether issued under CWA or Porter-Cologne Act authority, may include implementation of BMPs to meet performance standards. The current effective, USEPA-approved 303(d) list is from 2006. The SWRCB and the RWQCBs have prepared a 2008 303(d) list, but this list is not effective until USEPA approves it. Impaired water bodies identified on the current 303(d) list within the Project Area are discussed in *Surface Water Quality* under Section 3.13.3 below.

The San Francisco Bay RWQCB and the Central Coast RWQCB have prepared or are in the process of preparing TMDLs applicable to water bodies in Santa Clara County. USEPA has approved the following TMDLs that are currently implemented by the San Francisco Bay RWQCB: Guadalupe River Watershed Mercury, San Francisco Bay Mercury, San Francisco Bay polychlorinated biphenyls (PCBs), and Urban Creeks Pesticide Toxicity. USEPA-approved TMDLs within those portions of Santa Clara County under the jurisdiction of the Central Coast RWQCB include: Pajaro River Fecal Coliform (including Pajaro River, San Benito River, Llagas Creek, and Tequisquita Slough); Pajaro River Sediment (including San Benito River, Llagas Creek, and Rider Creek); and the Pajaro River Nitrate (including Llagas Creek) (Central Coast RWQCB 2010a). Additional details regarding these USEPA-approved TMDLs in the Project Area are provided below under the *State Plans, Policies, Regulations, and Laws* section. Additionally, the San Francisco Bay RWQCB is currently developing a TMDL for sediment impairment in San Francisquito Creek.

Section 401, Water Quality Certification

The goal of CWA Section 401 is to allow for evaluation of water quality when considering activities associated with dredging or placement of fill materials into waters of the United States. In California, the SWRCB and its nine RWQCBs issue water quality certifications. Each RWQCB is responsible for implementing Section 401 in compliance with the CWA and with its water quality control plan (also known as a basin plan).

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of dredged and fill materials into surface waters of the United States (including wetlands) must obtain a water quality certification (or Section 401 certification) to ensure that any such discharge will comply with the applicable provisions of the CWA, including Sections 301, 302, 303, 306, and 307, and state water quality standards. The water quality certification is issued by the state in which the discharge would originate; or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, compliance with CWA Section 401 is required for all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a CWA Section 404 permit).

Section 402, National Pollutant Discharge Elimination System

CWA Section 402 regulates discharges to surface waters (other than dredge or fill material) through the NPDES, administered by USEPA. The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits for discharges to waters of the U.S. This regulation is implemented at the state level and is further described below.

State Plans, Policies, Regulations, and Laws

California's Porter-Cologne Water Quality Control Act is the primary state regulation governing water quality. The water quality control plans (or basin plans) and policies established by the two RWQCBs with jurisdiction in the Project Area (the Central Coast and San Francisco Bay RWQCBs) are discussed below. In addition, the SWRCB also has responsibility for implementing CWA Section 402 and has established general NPDES permits for the regulation of discharges from construction, municipal, and herbicide application activities, which are also discussed below. The General NPDES Aquatic Pesticide Use permit is described in Section 3.6, *Hazards and Hazardous Materials*.

California Porter-Cologne Water Quality Act

The Porter-Cologne Act was passed in 1969, and together with the CWA, provides regulatory guidance to protect water quality and water resources. The Porter-Cologne Act established the SWRCB and divided California into nine regions, each overseen by an RWQCB. The Porter-Cologne Act established regulatory authority over "waters of the state," which are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (California Water Code, Division 7, Section 13050). More specifically, the SWRCB and its nine RWQCBs have jurisdiction over the beds and banks of stream channels, their riparian corridors, and their beneficial uses. The Porter-Cologne Act also assigned responsibility for implementing CWA Sections 303, 401, and 402 to the SWRCB and RWQCBs.

The Porter-Cologne Act requires the development and periodic review of water quality control plans (basin plans) for the protection of water quality in each of the state's nine regions. A basin plan is unique to each region and must identify beneficial uses, establish water quality objectives for the reasonable protection of the beneficial uses, and establish a program of implementation for achieving the water quality objectives. To ensure currency, basin plans must be updated every 3 years. Basin plans must also comply with Section 303 of the CWA, which requires states to establish their own water quality standards. Basin plans provide the technical basis for the RWQCBs to determine waste discharge requirements, take enforcement actions, and evaluate grant proposals. Santa Clara County is within the jurisdiction of the San Francisco Bay Basin Plan (2007) and the Central Coast Region Basin Plan (2006a). The beneficial uses established for each surface water body and groundwater basin in the Project Area, as established in these basin plans, are provided in Table 3.13-1, located on page 3.13-13.

NPDES Construction General Permit

Construction-related stormwater discharges to waters of the U.S. are regulated under the SWRCB's General Permit for Discharges of Storm Water Associated with Construction and Land Disturbance Activities (Construction General Permit) (2009). Projects disturbing more than 1 acre of land during construction, including linear projects, are required to file a Notice of Intent and submit a Storm Water Pollution Prevention Plan to the SWRCB to be covered by the Construction General Permit before the onset of construction. Construction activities resulting in soil disturbances of less than 1 acre also are subject to the Construction General Permit, if the construction activity is part of a larger common plan of development that encompasses 1 or more acres of soil disturbance, or if significant water quality impairment will occur from the activity.

This permit does not cover linear routine maintenance projects. As defined in the permit, routine maintenance projects are projects associated with operations and maintenance activities to maintain the purpose of the facility or hydraulic capacity and that are conducted on existing lines and facilities and within existing right-of-way, easements, franchise agreements, or other legally binding agreements of the discharger. Thus, this permit does not apply to SCVWD's stream maintenance activities.

Municipal Regional Stormwater NPDES Permit

The Municipal Regional Stormwater NPDES permit (Order R2-2009-0074, NPDES Permit No. CAS612008) covers municipal stormwater discharges from the majority of Bay Area counties and cities. The permit is applicable to Santa Clara County and the following cities and agencies within the county which have joined together to form the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP): the cities of Campbell, Cupertino, Los Altos, Milpitas, Monte Sereno, Mountain View, Palo Alto, San Jose, Santa Clara, Saratoga, and Sunnyvale; the towns of Los Altos Hills and Los Gatos; and SCVWD. Multiple provisions in the permit address the urban runoff requirements of existing TMDLs, such as the San Francisco Bay Mercury and the Bay's PCBs TMDLs. The Municipal Regional Stormwater NPDES permit establishes discharge prohibitions, annual reporting requirements, construction site controls, water quality monitoring, pesticides toxicity control, and trash load reductions. The purposes of these measures are to: control and reduce the levels of pollution in both stormwater and non-stormwater discharges to storm drains and

watercourses; gather concentration and loading information for a number of pollutants of concern for which TMDLs are planned or are in the early stages of development; and ensure the implementation of appropriate source control, site design, and stormwater treatment measures in new development and redevelopment projects (San Francisco Bay RWQCB 2009).

The SCVURPPP incorporates regulatory, monitoring, and outreach measures aimed at reducing pollution in urban runoff to the "maximum extent practicable" to improve the water quality of South San Francisco Bay and the streams of Santa Clara Valley (SCVURPPP 2010). An Urban Runoff Management Plan (URMP), prepared by the SCVURPPP, includes both an area-wide plan and individual plans that detail the actions the fifteen co-permittees will take, collectively and individually, to reduce urban runoff pollution. In addition, the URMP describes the goals, objectives, and elements of the plan so that agencies may implement them in accordance with the Municipal Regional Stormwater NPDES permit (SCVURPPP 2010). The SCVWD's SMP Update would continue to comply with the requirements detailed in the URMP, including water quality monitoring and pesticide toxicity control.

Guadalupe River Mercury TMDL

On June 1, 2010, USEPA approved a basin plan amendment to incorporate into the San Francisco Bay Basin Plan, the Guadalupe River Mercury TMDL and the implementation plan for mercury. The basin plan amendment for mercury also establishes new water quality objectives for mercury. Elevated mercury concentrations in the tissue of Guadalupe River fish pose a human health threat and a threat to wildlife. Thus, the TMDL will examine this water quality problem and provide a watershed-wide mercury management strategy. The New Almaden Mining District, the largest-producing mercury mine in North America, is the primary source of mercury in the river's watershed. Other sources include atmospheric deposition from global and local sources, soil erosion from areas not known to contain mines, urban stormwater runoff, seepage from landfills, and Central Valley Project water stored in Calero Reservoir. Implementation of the Guadalupe River Mercury TMDL also will reduce the amount of mercury in the Bay, in accordance with the San Francisco Bay Mercury TMDL's proposed requirements. (San Francisco Bay RWQCB 2010a).

The Guadalupe River Mercury TMDL requires that SCVWD conduct technical studies related to MeHg production and control. SCVWD will continue to operate, maintain, and improve the performance of, or replace with newer technology, existing MeHg controls already in place on Lake Almaden, Almaden Reservoir, and Guadalupe Reservoir. In addition, SCVWD will evaluate and test additional methods of controlling MeHg production and bioaccumulation in shallow impoundments, if implementation actions in the reservoirs and lakes do not result in attaining targets downstream. The SMP Update activities, particularly sediment removal and disposal, generally would support the MeHg control activities. (San Francisco Bay RWQCB 2010a)

San Francisco Bay Mercury TMDL

A TMDL for mercury in San Francisco Bay and an implementation plan to achieve the TMDL were incorporated as an amendment into the San Francisco Bay Basin Plan on February 12, 2008, by USEPA. The purpose of the San Francisco Bay Mercury TMDL and implementation plan is to examine the mercury water quality situation in the Bay and identify sources of mercury. Mercury sources include runoff from historic mines, urban runoff, wastewater discharges, atmospheric deposition, and resuspension of historic deposits of mercury-laden sediment already in San Francisco Bay. Most of the historic mercury deposits date back to the Gold Rush of the 1800s, when mercury was mined throughout the Coastal Range and used in the Sierra Nevada to extract gold. A mercury load allocation has been assigned to the SCVURPPP and its related urban stormwater discharges. A load allocation is applicable to SCVWD and may be applicable to the SMP Update. (San Francisco Bay RWQCB 2008)

San Francisco Bay PCB TMDL

USEPA approved a TMDL and an implementation plan for PCBs in San Francisco Bay, to be incorporated as a basin plan amendment on March 29, 2010. PCBs were manufactured in the U.S. and widely used from the late 1920s through the 1970s. Because PCBs degrade very slowly in the environment, their toxic effects are still of concern, particularly because they are toxic, persist in the environment, and accumulate in the tissue of fish, wildlife, and humans. Since 1994, the State has advised that consumption of fish from the San Francisco Bay should be limited because its fish have accumulated high levels of several pollutants, including PCBs. Implementation of the San Francisco Bay PCBs TMDL will most likely involve a phased approach to pollutant reduction and cleanup to restore the beneficial uses of the Bay (San Francisco Bay RWQCB 2010b). The SMP Update would be in compliance with the TMDL because it would not contribute any new sources of PCBs to San Francisco Bay and could remove PCBs sequestered in the stream sediment during sediment removal activities.

Urban Creeks Pesticide TMDL

Stormwater runoff, particularly of the common insecticide diazinon, has impaired the water quality of San Francisco Bay area urban creeks such that the creeks exceed water quality standards for aquatic toxicity. Diazinon is a common insecticide used throughout the Bay Area to manage a broad spectrum of pests, such as ants and grubs. A small fraction of the diazinon applied reaches surface waters, but that fraction is sufficient to result in diazinon concentrations that are toxic to test organisms. Thus, an amendment incorporating a TMDL and implementation plan for Diazinon and pesticide-related toxicity in the Bay Area's urban creeks have been incorporated into the San Francisco Bay Basin Plan. The TMDL and its implementation plan will examine this water quality problem, identify sources of diazinon, and determine and implement actions that will lead to a solution (San Francisco Bay RWQCB 2006). The Proposed Project would not use pesticides, such as diazinon, that are covered by the Urban Creeks Pesticide TMDL and, therefore, would not contribute to the TMDL.

Pajaro River Fecal Coliform TMDL

On August 3, 2010, USEPA approved the incorporation of a Pajaro River Fecal Coliform TMDL and its implementation plan as an amendment to the Central Coast Region Basin Plan (2006a). The fecal coliform TMDL applies to the Pajaro River watershed, including the Pajaro River, San Benito River, Llagas Creek, Tequisquita Slough, San Juan Creek, Carnadero/Uvas Creek, Bird Creek, Pescadero Creek, Tres Pinos Creek, Furlong (Jones) Creek, Santa Ana Creek, and Pacheco Creek. As part of the basin plan amendment, a Domestic Animal Waste Discharge Prohibition applicable to the Pajaro River watershed, and a Human Fecal Material Discharge Prohibition applicable to the Pajaro River watershed will be incorporated. The purpose of this TMDL is to protect water contact recreation in the watershed, which the current levels of fecal coliform do not support (Central Coast RWQCB 2010b). The SMP Update would be in compliance with this TMDL because the Proposed Project would not introduce new sources of fecal coliform to the Pajaro River and could remove existing sources of fecal coliform during sediment removal.

Pajaro River Sediment TMDL

The Pajaro River watershed has experienced acute erosion and sedimentation problems as a result of urban and agricultural encroachment on streams, the poor condition of drainage infrastructure (i.e., ditches, culverts, and roads), streambank instability caused by the removal and/or loss of riparian vegetation. The sediment problems were affecting the watershed's ability to support the fisheries-related beneficial uses of its water bodies, including cold, fresh water habitat, migration, and spawning. Therefore, a Pajaro River Sediment TMDL and implementation plan, applicable to the Pajaro River, Llagas Creek, Rider Creek, and San Benito River, were incorporated by USEPA as an amendment to the Central Coast Region Basin Plan in May 2007. In addition to the adoption of a Pajaro River Sediment TMDL, a Pajaro River watershed Land Disturbance Prohibition applicable to pasture and range lands, roads, animal and livestock facilities, and hydromodification-related activities that result in streambank erosion was incorporated as a basin plan amendment. The Central Coast RWQCB also will use the following mechanisms to implement the TMDLs: the existing Conditional Waiver for Discharges from Irrigated Agricultural Lands and renewal of existing Waste Discharge Requirements for sand and gravel mining operations (Central Coast RWQCB 2007). The SMP Update would not contribute additional sources of sediment and would be beneficial to the implementation of this TMDL through sediment removal.

Pajaro River Nitrate TMDL

The Pajaro River and Llagas Creek have consistent nitrate violations that impair the ability of these water bodies to support their beneficial uses for municipal and domestic water supply. The primary source of these impairments is croplands. On October 13, 2006, USEPA approved a Pajaro River Nitrate TMDL and a corresponding implementation plan to be incorporated as an amendment to the Central Coast Region Basin Plan. The Nitrate TMDL is applicable to both the Pajaro River and Llagas Creek, and sets a maximum nitrate concentration of 10 milligrams per liter as nitrogen (mg/l-N) for each receiving water body. In addition, load allocations of 10 mg/l-N have been assigned to each source, including background and all watershed land uses, such as cropland and rangeland (Central Coast

RWQCB 2006b). The SMP Update would have no effect on the Pajaro River Nitrate TMDL because it would not introduce any new nitrate sources.

Regional and Local Plans, Policies, Regulations, and Ordinances

As described above, the Santa Clara County 15 co-permittees of the Municipal Regional Stormwater NPDES permit have developed an URMP. The URMP is a San Francisco Bay area-wide permit that lists 77 co-permittees. In addition, the southern portion of Santa Clara County's jurisdiction and the cities of Gilroy and Morgan Hill have obtained their own Phase II NPDES permit coverage for municipal stormwater activities. Implementation of the Phase II permit is guided by a Stormwater Management Plan, which describes pollution prevention activities for the communities to enforce. The Proposed Project would not be directly required to comply with these permits.

3.13.3 Environmental Setting

An overview of water quality and groundwater resources in the Project Area is presented next. Descriptions of watersheds and streams in the Project Area are provided in Section 3.7, *Hydrology and Geomorphology*. A discussion of climate in the Project Area also is provided in Section 3.7.

Surface Water Quality

Ambient water quality in the Santa Clara and Pajaro River basins is influenced by numerous natural and artificial sources, including soil erosion, stormwater runoff, agriculture, recreation activities, municipal point sources, mining, and agriculture. Land uses within the Santa Clara Basin range from residential, commercial, and industrial uses in the northern portion of the basin to a primarily rural southern portion, with cattle ranching, water-supply catchments, and scattered low-density residential development uses (SCBWMI 2000). Historically, agriculture was the dominant land use in the Pajaro River Basin and a major source of nutrient and sediment loading into the Pajaro River (SWRCB 2002). However, in recent years, substantial portions of the upper Pajaro River Basin have been developed into residential subdivisions. In addition to the residential and agricultural uses, historic mercury mining activities occurred near the Hernandez Lake area and gravel mining occurred along the Pajaro River (SWRCB 2002).

According to the 2006 303(d) list of Water Quality Impaired Water Bodies, 12 water bodies in the Santa Clara Basin and three in the Pajaro River Basin have water quality impairments (see Table 3.13-2, on page 3.13-15). The most common impairments in the Santa Clara Basin are mercury and diazinon. Both of these impairments are currently being addressed by adopted TMDLs for the San Francisco Bay and for urban creeks in the Bay Area. In the Pajaro River Basin, the primary impairments are nutrients, fecal coliform, and sediments, which also are currently being addressed by adopted TMDLs.

SMP Water Quality Monitoring

As part of its implementation of the existing SMP, SCVWD removed sediment from approximately 37 creeks, rivers, canals, or channels in the Project Area from 2007 through 2009, the most recent years for which data are available. SCVWD has been conducting water quality monitoring as required by permits (Order R2-2002-0028 and Order R3-2002-0008) issued by the San Francisco ~~Bay~~ and Central Coast Regional Water Quality Boards for the multi-year sediment removal program. As part of the SMP Update, these permits are in the process of being revised along with the associated Water Quality Monitoring Plans. Once updated and approved, these Water Quality Monitoring Plans will be incorporated into the final 2012–2022 SMP Update. In general, turbidity, water temperature, dissolved oxygen, and pH were monitored upstream and downstream of any in-channel water diversions before, during, and following sediment removal activities in creeks. During 2007, the removal of approximately 33,523 cubic yards of sediment from 17 project sites on 15 creeks did not result in any water quality exceedances, unplanned releases, or episodes of noncompliance with permits (SCVWD 2008). The 2008 sediment removal activities removed 8,845 cubic yards of sediment from 14 project sites on 13 water bodies and did not result in any water quality exceedances, unplanned releases, or episodes of non-compliance (SCVWD 2009).

Approximately 13,163 cubic yards of sediment and other material were removed during the 2009 sampling activities from 17 sites on 9 surface water bodies. In 2009, four water quality exceedances related to pH (fluctuations that occurred because of influences beyond the SMP) or turbidity occurred during the sediment removal and streamflow diversion activities. The pH exceedances did not require intervention because they were observed upstream of the work area and, therefore, were not related to SMP activities. The turbidity exceedances occurred as a result of a bypass pump shut down and adjustment of a stream bypass. However, subsequent protocol sampling indicated that the exceedances were resolved. No other unplanned or noncompliance issues occurred during 2009. (SCVWD 2010)

SMP Sediment Sampling

In addition to its water quality monitoring, SCVWD has sampled the sediments removed as part of its SMP implementation. Similar to the Water Quality Monitoring Plans discussed above, the existing Sediment Characterization Plans associated with the RWQCB permits are being revised, and once approved, will be incorporated into the final 2012–2022 SMP Update. Sediment sampling is undertaken to: comply with SCVWD's current WDRs; characterize the sediments to establish if they are suitable for reuse as a construction material ("foundation limit"), a topsoil or soil amendment ("surface limit"); and determine what type of disposal may be required (e.g. reuse, landfill, hazardous waste collection site). An exceedance of a "hazardous limit" indicates that the soil should be considered hazardous waste.

In 2009 and 2010, SCVWD analyzed sediments that were removed as part of the SMP for total and dissolved metals, dissolved and total mercury, PCBs, polycyclic aromatic hydrocarbons (PAHs), and pesticides. Criteria to determine if a soil was considered a hazardous waste were established for Total PCBs; dissolved and total metals, including mercury; and nine pesticides. Soil samples were analyzed to determine if constituents

exceeded the "surface limit," "foundation limit," and hazardous waste limits. No hazardous waste criteria have yet been established for the PAHs, or for most of the PCBs and pesticides analyzed. Dissolved and total metals included analysis for: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc. Twenty-six PAHs were analyzed by SCVWD. The nine analyzed pesticides with hazardous waste threshold criteria included: aldrin, dieldrin, endrin, methoxychlor, total chlordane, total "DDTs" total heptachlor, toxaphene, and gamma-BHC (lindane). Total "DDTs" analyzes the total quantity of the chemicals dichloro-diphenyl-trichloroethane (DDT), dichlorodiphenyldichloroethylene (DDE), and dichlorodiphenyldichloroethane (DDD). DDE and DDD can enter the environment as breakdown products of DDT (ATSDR 2002).

As shown in Table 3.13-3 on page 3.13-19, the results of the 2009 and 2010 monitoring indicate that most surface water bodies had at least one impairment that would generally make the sediments unsuitable for topsoil or soil amendment use. Numerous surface waters also had sediments with constituents that exceeded the foundation limit thresholds. Hazardous waste impairments were only recorded once each year (for the Coyote-Alamitos Canal and the Guadalupe River) and both for chromium impairments. The most common impairments were for the pesticides Total Chlordane and Total DDTs and/or for total metals, including mercury.

Table 3.13-1. Beneficial Uses for Surface Water Bodies and Groundwater Basins in the Project Area

Water Body	Beneficial Uses[1]																		
	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC1	REC2	NAV
Santa Clara Basin																			
Calabazas Creek	E			E					E						E	E	E	E	
Coyote Creek				E					E			E	E	E	E	E	P	E	
Guadalupe Reservoir		E		E					E					E	E	E	E	E	
Los Gatos Creek		E	E	E					E			P		P	E	E		P	
Matadero Creek									E			E		E	E	E	E	E	
Permanente Creek									E					E		E	E	E	
San Francisquito Creek									E			E		E	E	E	P	P	
San Francisco Bay (South)					E		E	E		E		E	E	P		E	E	E	E
Saratoga Creek	E		E	E					E						E	E	E	E	
Smith Creek		E	E						E					E	E	E	E	E	
Stevens Creek			E						E			E		P	E	E	E	E	
Pajaro River Basin																			
Carnadero Creek		E		E			E		E			E	E		E	E	E	E	
Llagas Creek (above Chesbro Reservoir)	E	E	E	E			E		E				E		E	E	E	E	
Llagas Creek (below Chesbro Reservoir)	E	E		E	E		E		E			E	E	E	E	E	E	E	
Little Llagas Creek	E	E		E			E								E	E	E	E	
Pajaro River	E	E	E	E	E		E		E			E		E	E	E	E	E	
Uvas Creek, downstream	E	E		E	E		E		E			E	E	E	E	E	E	E	

Table 3.13-1. Beneficial Uses for Surface Water Bodies and Groundwater Basins in the Project Area

Water Body	Beneficial Uses[1]																		
	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC1	REC2	NAV
Groundwater Basins (Sub-Basin)																			
Santa Clara Valley (Santa Clara)	E	E			E	E													
Gilroy-Hollister Valley (Llagas Area)	E	E			E														

1 Beneficial uses are defined as:
Agr = Agricultural Supply; COLD = Cold Freshwater Habitat; COMM = Ocean, Commercial, and Sport Fishing; EST = Estuarine Habitat;
FRSH = Freshwater Replenishment; GWR = Groundwater Recharge; IND = Industrial Service Supply; MAR = Marine Habitat;
MIGR= Fish Migration; MUN = Municipal and Domestic Supply; NAV = Navigation; PRO = Industrial Process Supply;
RARE = Preservation of Rare and Endangered Species; REC1 = Water Contact Recreation; REC2 = Non-contact Water Recreation;
SHELL = Shellfish Harvesting; SPWN = Fish Spawning; WARM = Warm Freshwater Habitat; WILD = Wildlife Habitat;
E = existing beneficial use; P = potential beneficial use
Note: The basin plans do not include beneficial uses for all water bodies included in the Project Area. In addition, the Guadalupe Reservoir and San Francisco Bay (South) have been included for clarity although no activities would be performed in these water bodies under the Proposed Project..

Sources: San Francisco Bay RWQCB 2007, Central Coast RWQCB 2006a

Table 3.13-2. 303(d) List of Impaired Water Bodies and their Impairments in the Project Area

Water Body	TMDL Requirement Status[1]	Estimated Stream Length Affected (miles)	Pollutant	Pollutant Category	Potential Sources
Santa Clara Basin					
South San Francisco Bay	B (Mercury, PCBs), R[2]	9,204[3]	1. Chlordane 2. DDT 3. Dieldrin 4. Dioxin Compounds 5. Exotic Species 6. Furan Compounds 7. Mercury 8. PCBs 9. Selenium	1. Pesticides 2. Pesticides 3. Pesticides 4. Other Organics 5. Misc. 6. Other Organics 7. Metals/Metalloids 8. Other Organics 9. Metals/Metalloids	1. Nonpoint Source 2. Nonpoint Source 3. Nonpoint Source 4. Atmospheric Deposition 5. Ballast Water 6. Atmospheric Deposition 7. Atmospheric Deposition, Industrial, Municipal, and Natural Point Sources, Nonpoint Sources, Resource Extraction 8. Unknown Nonpoint Source 9. Agriculture, Domestic Use of Groundwater
Lower Peninsula Watershed					
Matadero Creek	B	7.3	Diazinon	Pesticides	Urban Runoff, Storm Sewers
Permanente Creek	B	13	Diazinon	Pesticides	Urban Runoff, Storm Sewers
San Francisquito Creek	B (Diazinon), R (Sediment)	12	1. Diazinon 2. Sedimentation/Siltation	1. Pesticides 2. Sediment	1. Urban Runoff, Storm Sewers 2. Nonpoint Source
Stevens Creek	B (Diazinon), R (Toxicity)	20	1. Diazinon 2. Toxicity	1. Pesticides 2. Toxicity	1. Urban Runoff, Storm Sewers 2. Source Unknown

Table 3.13-2. 303(d) List of Impaired Water Bodies and their Impairments in the Project Area

Water Body	TMDL Requirement Status[1]	Estimated Stream Length Affected (miles)	Pollutant	Pollutant Category	Potential Sources
Coyote Watershed					
Coyote Creek (Santa Clara Co.)	B	55	Diazinon	Pesticides	Urban Runoff, Storm Sewers
West Valley Watershed					
Calabazas Creek	B	4.7	Diazinon	Pesticides	Urban Runoff, Storm Sewers
Saratoga Creek	B	18	Diazinon	Pesticides	Urban Runoff, Storm Sewers
Guadalupe Watershed					
Alamitos Creek	R	7.1	Mercury	Metals/Metalloids	Mine Tailings
Guadalupe Creek	R	8.1	Mercury	Metals/Metalloids	Mine Tailings
Guadalupe River	B[2]	18	1. Diazinon 2. Mercury	1. Pesticides 2. Metals/Metalloids	1. Urban Runoff, Storm Sewers 2. Mine Tailings
Los Gatos Creek	B	19	Diazinon	Pesticides	Urban Runoff, Storm Sewers
Pajaro River Basin					
Corralitos Creek	R	13	Fecal Coliform	Pathogens	Source Unknown

Table 3.13-2. 303(d) List of Impaired Water Bodies and their Impairments in the Project Area

Water Body	TMDL Requirement Status[1]	Estimated Stream Length Affected (miles)	Pollutant	Pollutant Category	Potential Sources
Llagas Creek	R (Chloride, Fecal Coliform, Dissolved Oxygen, pH, Sodium, TDS[4], B (Nitrate, Nutrients, Sedimentation/Siltation)	16	1. Nitrate 2. Nutrients 3. pH 4. Sedimentation/Siltation 5. Sodium 6. TDS[4]	1. Nutrients 2. Nutrients 3. Misc. 4. Sediment 5. Salinity 6. Salinity	1. Source Unknown 2. Agriculture (Agricultural Return Flows, Irrigation tailwater), Habitat Modification, Irrigated Crop Production, Municipal Point Sources, Nonpoint Source, Pasture Grazing, Unknown point source, Urban Runoff, Storm Sewers 3. Source Unknown 4. Agriculture, Habitat Modification, Hydromodification 5. Nonpoint Source 6. Nonpoint Source, Point Source

Table 3.13-2. 303(d) List of Impaired Water Bodies and their Impairments in the Project Area

Water Body	TMDL Requirement Status[1]	Estimated Stream Length Affected (miles)	Pollutant	Pollutant Category	Potential Sources
Pajaro River	B	32	1. Fecal Coliform 2. Nitrate 3. Nutrients 4. Sedimentation/Siltation	1. Pathogens 2. Nutrients 3. Nutrients 4. Sediment	1. Natural and Nonpoint Sources, Pasture Grazing 2. Source Unknown 3. Agriculture (Agricultural Return Flows, Irrigation Tailwater, Storm Runoff), Channelization, Irrigated Crop Production, Nonpoint Source, Removal of Riparian Vegetation, Urban Runoff, Storm Sewers, Wastewater land disposal 4. Agriculture (Storm Runoff), Channel Erosion, Channelization, Habitat Modification, Hydromodification, Irrigated Crop Production, Range Grazing, Removal of Riparian Vegetation, Resource Extraction, Streambank Modification or Destabilization, Surface Mining.

[1] TMDL status abbreviations are: B = Being Addressed by a USEPA-approved TMDL, R = a TMDL is still required.
[2] The 2006 303(d) list indicates that a TMDL is still required for Mercury. However, a TMDL has been developed since the publication of the list in 2007.
[3] Units are in acres instead of miles.
[4] TDS=total dissolved solids

Sources: SWRCB 2007; San Francisco Bay RWQCB 2006, 2008, 2010a, 2010b

Table 3.13-3. Exceedances of Sediment Constituent Thresholds by Surface Water Body for Sediments Removed as part of the SMP in 2009 and 2010

Surface Water from which Sediment was Collected	Threshold Types[1,2]		
	Surface Limit	**Foundation Limit**	**Hazard Limit**
2009[3]			
Alamitos Creek	Total Mercury, Total Metals (Chromium, Nickel)	Total Mercury, Total Metals (Nickel)	NR
Almaden-Calero Canal	Total Mercury, Total Metals (Chromium, Nickel)	Total Mercury, Total Metals (Chromium, Nickel)	NR
Calera Creek	Pesticides (Total Chlordane), Total Metals (Selenium)	NR	NR
Canoas Creek	Pesticides (Total Chlordane, Total DDTs), Total Mercury, Total Metals (Nickel, Selenium, Zinc), Polyaromatic hydrocarbons (PAHs) (Acenaphthene, Anthracine, Benzo(a)anthracine, Benzo(a)fluoranthene, Benzo(a)pyrene, Benzoperylene, Chrysene, Dibenzanthracene, Fluoranthene, Fluorene, Pyrene, Total PAH)	Pesticides (Total Chlordane), Total Mercury, Total Metals (Nickel)	NR
Guadalupe Creek	Total Mercury, Total Metals (Cadmium, Chromium, Nickel)	Total Metals (Nickel)	NR
Guadalupe River	Pesticides (Total Chlordane, Total DDTs), Total Mercury, Total Metals (Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Zinc), Total PCB	Pesticides (Total Chlordane), Total Mercury, Total Metals (Nickel, Zinc)	Dissolved Metals (Chromium)
Los Coches Creek	PAHs (Acenaphthene, Dibenzanthracene, Fluorene, Phenanthrene), Pesticides (Total Chlordane, Total DDTs)	Pesticides (Total Chlordane)	NR
Lower Penitencia Creek	Total Metals (Cadmium, Silver, Zinc)	NR	NR
Lower Silver Creek	Pesticides (Total Chlordane)	NR	NR
Matadero Creek	Pesticides (Total Chlordane, Total DDTs), Total Metals (Selenium)	Pesticides (Total Chlordane)	NR
North Morey Channel	Total Mercury	Total Mercury	NR

Table 3.13-3. Exceedances of Sediment Constituent Thresholds by Surface Water Body for Sediments Removed as part of the SMP in 2009 and 2010

Surface Water from which Sediment was Collected	Threshold Types[1,2]		
	Surface Limit	**Foundation Limit**	**Hazard Limit**
Penitencia East Channel	Pesticides (Total Chlordane), Total Metals (Selenium)	Pesticides (Total Chlordane)	NR
Permanente Creek	Total Metals (Cadmium, Selenium)	NR	NR
San Tomas Aquino Creek	PAH (Naphthalene), Pesticides (Total Chlordane, Total DDTs), Total Metals (Cadmium, Selenium)	PAH (Naphthalene), Pesticides (Total Chlordane)	NR
Saratoga Creek	Total Metals (Cadmium)	NR	NR
Sierra Creek	Pesticides (Total Chlordane, Total DDTs), Total Metals (Cadmium, Lead)	Pesticides (Total Chlordane, Total DDTs)	NR
Tennant Creek	Total Metals (Nickel)	Total Metals (Nickel)	NR
Tularcitos Creek	Pesticides (Total Chlordane, Total DDTs), Total Metals (Cadmium)	Pesticides (Total Chlordane)	NR
Upper Penitencia Creek	Pesticides (Total DDTs), Total Metals (Selenium)	NR	NR
2010[4]			
Adobe Creek	Pesticides (Dieldrin), Total Metals, (Cadmium)	NR	NR
Almaden-Calero Canal	Pesticides (Dieldrin, Hexachlorobenzene, Total DDTs), Total Mercury, Total Metals (Chromium, Nickel)	Total Mercury, Total Metals (Chromium, Nickel)	NR
Berryessa Creek	Pesticides (Dieldrin, Total Chlordane, Total DDTs), Total Metals (Nickel)	Pesticides (Total Chlordane), Total Metals (Nickel)	NR
Calera Creek	Pesticides (Total DDTs), Total Metals (Cadmium)	NR	NR
Canoas Creek	PAHs (Dibenz(a,h)anthracene, Phenanthrene), Pesticides (Total Chlordane, Total DDTs), Total Metals (Cadmium, Chromium, Nickel, Selenium)	Pesticides (Total Chlordane), Total Metals (Nickel)	NR
Coyote-Alamitos Canal	Total Metals (Cadmium, Chromium, Copper, Nickel, Selenium, Zinc), Total PCBs	Total Metals (Chromium, Nickel)	Total Metals (Chromium)
Coyote Bypass	Pesticides (Total DDTs)	NR	NR
Guadalupe Creek	Pesticides (Hexachlorocyclohexane, Total Chlordane),	Pesticides (Total Chlordane), Total	NR

Table 3.13-3. Exceedances of Sediment Constituent Thresholds by Surface Water Body for Sediments Removed as part of the SMP in 2009 and 2010

Surface Water from which Sediment was Collected	Threshold Types[1,2]		
	Surface Limit	**Foundation Limit**	**Hazard Limit**
	Total Mercury, Total Metals (Zinc)	Mercury	
Guadalupe River	PAHs (1-Methylnaphthalene, 1-methylphenanthrene, 2,6-Dimethylnaphthalene, Acenaphthene, Anthracene, Benzo(a)pyrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Benzo(e)pyrene, Biphenyl, Chrysene, Dibenz(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphthalene, Perylene, Phenanthrene, Pyrene, Total PAHs), Pesticides (Total Chlordane, Total DDTs), Total Mercury, Total Metals (Cadmium, Selenium)	PAHs (Acenaphthene, Anthracene, Benzo(a)pyrene, Benzo(a)anthracene, Chrysene, Dibenz(a,h)anthracene, Fluoranthene, Fluorene, Phenanthrene, Pyrene, Total PAHs), Pesticides (Total Chlordane), Total Mercury,	NR
Los Coches Creek	Total Metals (Selenium)	NR	NR
Matadero Creek	Total Metals (Cadmium, Selenium)	NR	NR
Miguelita Creek	Pesticides (Total Chlordane, Total DDTs), Total Metals (Zinc)	NR	NR
Norwood Creek	Pesticides (Dieldrin, Hexachlorobenzene, Total Chlordane, Total DDTs), Total Metals (Cadmium, Zinc)	NR	NR
Permanente Diversion Channel	PAHs (1-Methylnaphthalene, 2,3,5-Trimethylnaphthalene, 2,6-Dimethylnaphthalene, 2-Methylnaphthalene), Pesticides (Total Chlordane, Dieldrin, Total DDTs), Total Metals (Cadmium, Selenium)	Pesticides (Total Chlordane)	NR
Quimby Creek	PAHs (2,3,5-Trimethylnaphthalene), Pesticides (Total Chlordane, Dieldrin, Total DDTs, Hexachlorobenzene, Hexachlorocyclohexane), Total Mercury, Total Metals (Cadmium, Copper, Selenium, Zinc), Total PCB	Pesticides (Total Chlordane)	NR
Ross Creek	Pesticides (Total Chlordane, Dieldrin, Total DDTs, Hexachlorobenzene), Total Mercury, Total Metals	Pesticides (Total Chlordane), Total Metals (Nickel)	NR

Table 3.13-3. Exceedances of Sediment Constituent Thresholds by Surface Water Body for Sediments Removed as part of the SMP in 2009 and 2010

Surface Water from which Sediment was Collected	Threshold Types[1,2]		
	Surface Limit	Foundation Limit	Hazard Limit
	(Cadmium, Chromium, Nickel, Selenium)		
San Tomas Aquino Creek	PAHs (Benzo(a)pyrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(e)pyrene, Chrysene, Dibenz(a,h)anthracene, Total PAH), Pesticides (Dieldrin, Total DDTs), Total Metals (Selenium)	NR	NR
Sierra Creek	Pesticides (Total Chlordane, Total DDTs), Total Metals (Selenium)	Pesticides (Total Chlordane)	NR
South East Santa Teresa Creek	Total Metals (Cadmium, Chromium, Nickel, Selenium)	Total Metals (Nickel)	NR
Stevens Creek	PCBs (Total PCBs), Pesticides (Total Chlordane), Total Metals (Selenium)	NR	NR
West Little Llagas Creek	Pesticides (Hexachlorocyclohexane, Total Chlordane), Total Metals (Zinc)	Pesticides (Total Chlordane)	NR

NR = no exceedances were recorded.
1 = A constituent is listed above if at least one exceedance occurred for its designated threshold in that limit category.
2 = Not all constituents analyzed have designated limits in each threshold category. Some pesticide and PCB constituents do not have any limits.
3 = Madrone Creek's sediments also were analyzed in 2009 but did not exceed any thresholds.
4 = Saratoga Creek's sediments also were analyzed in 2010 but did not exceed any thresholds.

Sources: SCVWD 2009, 2010

Groundwater Quality

Two groundwater subbasins underlie the Project Area: the Santa Clara subbasin (Santa Clara Valley groundwater basin) and the Llagas subbasin (part of the Gilroy-Hollister groundwater basin).

The Santa Clara subbasin has an area of 153,600 acres (240 square miles) and is located within a structural trough parallel to the northwest-trending Coast Ranges. The subbasin extends from the Santa Clara County northern border to the groundwater divide near the town of Morgan Hill and is bound on the east by the Diablo Range and on the west by the Santa Cruz Mountains. Groundwater flows in the subbasin generally are to the north to San Francisco Bay. Groundwater levels within the subbasin declined by as much as 200 feet during the early 1900s through the mid-1960s, as a result of groundwater pumping. However, artificial recharge programs and decreases in pumping since 1965 generally have resulted in increases in groundwater levels. (DWR 2004)

In the Santa Clara subbasin, the groundwater is generally of a bicarbonate type, with sodium and calcium being the principal cations. Although hard, the water quality in the subbasin has good to excellent mineral composition and is suitable for most uses. Some areas within the northern portion of the subbasin have somewhat elevated mineral levels that may be associated with historical saltwater intrusion. Some areas in the southern portion of the subbasin have nitrate impairments. Other impairments in the Santa Clara subbasin include primary and secondary inorganics, nitrates, volatile organic compounds, semi-volatile organic compounds, radiological constituents, and pesticides. Most wells in the subbasin are not impaired. The most frequently observed impairment in wells in the subbasin was for secondary inorganics, which exceeded its maximum contaminant level standard in 29 out of 257 wells (approximately 11 percent). (DWR 2004)

The Llagas subbasin extends from the groundwater divide at Cochran Road near the town of Morgan Hill in the north to the Pajaro River in the south and is bounded by the Diablo Range on the east and Santa Cruz Mountains on the west. The total area of the subbasin is approximately 56,000 acres (87 square miles). The Llagas subbasin drains to the south and ultimately to the Pajaro River through the river's tributaries, including Uvas and Llagas creeks. From 1969 through 2001, groundwater elevations in the Llagas subbasin remained fairly stable, except for declines and subsequent recoveries associated with the 1976–1977 and 1987–1992 drought periods. (DWR 2004)

Groundwater quality in the Llagas subbasin is generally hard[1] but of sufficient quality to support most beneficial uses. However, nitrate concentrations have been increasing and exceed the federal water quality standards in numerous private wells. Public wells have not been impaired by nitrates. Other impairments in the Llagas subbasin include primary and secondary inorganics, and pesticides. (DWR 2004)

[1] Hardness is caused by calcium and magnesium compounds and a variety of other metals. Hardness classifications are generally based on the following guidelines: 0 to 60 mg/L (milligrams per liter) as calcium carbonate is classified as soft; 61 to 120 mg/L as moderately hard; 121 to 180 mg/L as hard; and more than 180 mg/L as very hard. Hard water may be less desirable for domestic or industrial water supply beneficial uses because it requires more soap and synthetic detergents for laundry and washing, and contributes to scaling in boilers and industrial equipment. (U.S. Geological Survey 2009)

3.13.4 Impact Analysis

Methodology

The methodology used to assess possible water quality impacts that could be caused by the Proposed Project utilized the following water quality standards and requirements:

1. Beneficial uses and water quality objectives established by the San Francisco and Central Coast RWQCBs
2. Approved TMDLs
3. Local discharge requirements as issued in NPDES permits (municipal and aquatic pesticide use general permit)

Potential impacts to water quality were assessed qualitatively, based on the degree to which the proposed maintenance activities could result in violations of water quality standards, impairment of beneficial uses, or water quality conditions that could be harmful to aquatic life or human health. Each of these potential impacts (and beneficial outcomes, as applicable) is discussed below. Potential temporary and permanent impacts from the primary maintenance activities (sediment removal, vegetation maintenance, and bank stabilization) were evaluated based on the beneficial uses and existing impairments established by the San Francisco Bay and Central Coast RWQCBs, as shown in Tables 3.13-1 and 3.13-2.

Criteria for Determining Significance

For the purposes of this analysis, the Proposed Project would result in a significant impact on water quality if it would:

A. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality; or

B. Create or contribute substantial additional sources of polluted runoff.

Environmental Impacts

Impact WQ-1: Water Quality Degradation Resulting in Violation of Water Quality Standards or Waste Discharge Requirements Caused by Ground–Disturbing Activities (Significance Criterion A; Less than Significant)

Disturbing soil on the banks and within the beds of surface water bodies could cause sediment to be eroded and transported downstream. Adverse effects of accidental sediment releases could include increased turbidity, which could cause an increase in water temperature and a corresponding decrease in dissolved oxygen levels. Increased turbidity and water temperatures, and lower dissolved oxygen levels could potentially exceed water quality standards and impair beneficial uses. Where required, the applicable Water Quality Monitoring and/or Sediment Characterization plans will be implemented as specified by the RWQCB permits.

Bank Stabilization

Bank stabilization activities would disturb bank soils and streambeds through the implementation of "hard" (e.g., concrete) or "soft" structures (e.g., pole-plantings), and through the potential creation of temporary access roads or ramps for these activities. In the long term, bank stabilization activities would reduce potential erosion and sediment transport to streams by rectifying active sources of erosion. However, during the rainy season following the bank stabilization activities, sediment inputs to surface waters could occur in pulses during and after storm events. During these events, higher levels of turbidity in the water column could result from exposed bare soils on channel banks where vegetation had not yet become established, or caused by material eroded from the recently maintained channel. Increased turbidity from storm events following maintenance activities may impair beneficial uses in the Project Area, resulting in an adverse impact.

Sediment Removal

Sediment removal activities would disturb streambeds or bank soils by the use of heavy equipment to remove sediments. Sediment removal activities would result in similar effects as those described above for bank stabilization activities and would potentially result in short-term adverse impacts on stream channel water quality.

Vegetation Management

Grazing activities, vegetation removal, and discing for vegetation management also would potentially create erosion and be a potential source for sediment transport to streams.

Management of Animal Conflicts

Management of animal conflicts generally would not involve activities that would disturb soils except for minor physical alterations to the water bodies, such as levee compaction or reconstruction, and habitat modification activities (i.e., discing).

Minor Maintenance Activities

Minor maintenance activities would potentially include grading activities or sediment removal activities that could cause sediments to be transported downstream. The potential effects would be similar to those described for sediment removal and bank stabilization activities but on a much smaller scale because of the limited acreages and sediment volumes of minor maintenance activities.

Canal Maintenance

Because routine canal maintenance activities would include all general work activities, effects would be the same as described above for other routine maintenance work.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to minimize the potential for water quality degradation resulting in violation of water quality standards or waste discharge requirements caused by ground-disturbing activities. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-1: In-Channel Work Window
BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-16: In-Channel Minor Activities
BMP GEN-20: Erosion and Sediment Control Measures
BMP GEN-23: Stream Access
BMP GEN-30: Vehicle and Equipment Maintenance
BMP SED-1: Groundwater Management
BMP SED-2: Prevent Scour Downstream of Sediment Removal
BMP SED-3: Restore Channel Features
BMP SED-4: Berm Bypass
BMP VEG-1: Minimize Local Erosion Increase from In-Channel Vegetation Removal
BMP VEG-3: Use Appropriate Equipment for Instream Removal
BMP BANK-1: Bank Stabilization Design to Prevent Erosion Downstream
BMP BANK-3: Bank Stabilization Post-Construction Maintenance
BMP REVEG-1: Seeding
BMP REVEG-2: Planting Material

Conclusion

With the implementation of these BMPs, impacts related to water quality degradation caused by ground–disturbing Proposed Project activities would be less than significant and would not require mitigation.

Mitigation Measures: No mitigation is required.

Impact WQ-2: Water Quality Degradation Resulting in Violation of Water Quality Standards or Waste Discharge Requirements Caused by Instream Maintenance Activities (Significance Criterion A; Less than Significant)

The Proposed Project activities may be located in waters subject to tidal flows or water bodies with flowing water. As a result, SCVWD may need to prevent inundation by tidal flows and divert flowing water around the proposed maintenance activities by placement of dewatering systems and cofferdams. Where required, the applicable Water Quality Monitoring and/or Sediment Characterization plans will be implemented as specified by the RWQCB permits. The use and potential effects of these systems for each of the Proposed Project's maintenance activities are described below.

Sediment Removal/Bank Stabilization Activities

Sediment removal and bank stabilization activities would be performed within stream channels and may require the use of dewatering systems and cofferdams. Several water

quality impacts could occur during the installation, operation, and removal of dewatering systems. Installation and removal of flow diversion structures would involve streambed and bank disturbance that could cause increased turbidity in the water column surrounding a work site and could cause migration of sediment downstream. In very unlikely cases, temporary instream cofferdams constructed in the channel could fail and release sediment, sand, gravel, and water into the work site and downstream. If flow bypass mechanisms were not properly maintained, they could displace sediment at the intake and increase turbidity locally from the discharged water. If the outlet discharge from the bypass pipe was not secured properly or energy dissipaters were not used at the discharge point, erosion at the work site could occur. If pollutants from maintenance equipment were spilled into temporarily stored water or within the work site, water quality also could be degraded.

Vegetation Management/Minor Maintenance Activities/Management of Animal Conflicts

Vegetation management activities, including mowing or pruning activities, could be performed instream and may require the use of dewatering systems and cofferdams, particularly in tidally-influenced areas. Streamflow diversions also may be necessary for the minor in-channel sediment or debris removal as part of minor maintenance activities. Management of animal conflicts generally would not require the use of streamflow diversions except for any activities related to physical facility alterations, such as reconstruction of levee side slopes or levee face compaction. Potential effects of the use of dewatering systems for any of these activities would be similar to those described for sediment removal/bank stabilization activities.

Canal Maintenance

Because routine canal maintenance activities would include all general work activities, effects would be the same as described above for other routine maintenance work.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to minimize the potential for water quality degradation. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-33: Dewatering for Non-Tidal Sites
BMP GEN-34: Dewatering in Tidal Work Areas
BMP GEN-35: Pump/Generator Operations and Maintenance
BMP SED-1: Groundwater Management

Conclusion

With the implementation of these BMPs, impacts related to water quality degradation caused by instream maintenance activities would be less than significant and would not require mitigation.

Mitigation Measures: No mitigation is required.

Impact WQ-3: Water Quality Degradation Resulting in Violation of Water Quality Standards or Waste Discharge Requirements Caused by the Accidental Release of Hazardous Materials (Significance Criterion A; Less than Significant)

The Proposed Project includes activities that would require the use of heavy equipment, which could result in accidental releases of hazardous materials and subsequent effects on stream water quality as described below. Where required, the applicable Water Quality Monitoring and/or Sediment Characterization plans will be implemented as specified by the RWQCB permits.

Vegetation Management/Bank Stabilization/Sediment Removal Activities

Vegetation removal activities using machinery, including mechanical removal and flaming, sediment removal and bank stabilization activities, and sediment disposal/reuse activities would require the use of heavy machinery at the top of channel banks or within the stream channel. During these maintenance activities, equipment and worker vehicles would be stored and refueled in staging areas adjacent to the stream channel unless equipment stationed in these locations could not be readily relocated. The storage and refueling of equipment and vehicles could release hazardous materials, such as petroleum products. If accidentally released directly or indirectly into the stream channel, the sediment and water nearby the work site could be significantly degraded. Fine sediments within stream channels could readily absorb pollutants and be transported downstream. In addition, some bank stabilization activities would involve the use of concrete products that, if released, would affect downstream water quality.

Minor Maintenance/Management of Animal Conflicts

Minor maintenance activities may include grading or minor sediment removal activities that would require the use of heavy equipment. Similarly, management of animal conflicts could require the use of heavy equipment for any physical facility alterations, such as levee face compaction or levee side slope reconstruction. The use of heavy equipment and vehicles for these activities would result in potential effects on water quality, similar to those described for bank stabilization, vegetation management, and sediment removal activities.

Canal Maintenance

Because routine canal maintenance activities would include all general work activities, effects would be the same as described above for other routine maintenance work.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to minimize the potential for water quality degradation. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-24: On-Site Hazardous Materials Management
BMP GEN-25: Existing Hazardous Materials
BMP GEN-26: Spill Prevention and Response

BMP GEN-30: Vehicle and Equipment Maintenance
BMP GEN-31: Vehicle Cleaning
BMP GEN-32: Vehicle and Equipment Fueling
BMP BANK-2: Concrete Use near Waterways

Conclusion

Impacts related to water quality degradation resulting in violation of water quality standards or waste discharge requirements caused by the accidental release of hazardous materials resulting from the Proposed Project would be less than significant and would not require mitigation.

Mitigation Measures: No mitigation is required.

Impact WQ-4: Water Quality Degradation Resulting in Violation of Water Quality Standards or Waste Discharge Requirements Caused by the Use of Pesticides, including Herbicides (Significance Criterion A; Less than Significant)

The use of pesticides, including herbicides, by the Proposed Project could result in potential violations of water quality standards or waste discharge requirements, if the pesticides were improperly applied, spilled into local water bodies, or transported to groundwater. Where required, the applicable Water Quality Monitoring and/or Sediment Characterization plans will be implemented as specified by the RWQCB permits.

Vegetation Management/Canal Maintenance

SCVWD's application of herbicides directly to water, particularly in canals managed under the Proposed Project, would continue to comply with requirements of the NPDES General Permit for Aquatic Pesticide Use (see Section 3.6, *Hazards and Hazardous Materials*). This permit would require compliance with effluent limitations, including developing and implementing an Aquatic Pesticide Application Plan, as well as compliance with applicable receiving water limitations (SWRCB 2006). Compliance also would include following specific monitoring requirements, and SCVWD would follow all pesticide label instructions and any terms contained in use permits issued by the County Agricultural Commissioner. In addition, SCVWD would follow the requirement that applicators of a pesticide designated as a restricted material would need to be licensed by CDPR or work under the supervision of someone who was licensed (SWRCB 2006). Compliance with the provisions of this permit would adequately prevent against water quality degradation.

Furthermore, other pesticides, including herbicides used for vegetation maintenance, would be used as part of proposed maintenance activities. These pesticides could be accidentally released into channels and canals through spills and could be washed into the stream during storm events, impacting stream water quality. Pesticides also could cause impacts on groundwater quality if they were dissolved in water and filtered through the soil into the groundwater table. However, the majority of harmful constituents sorb onto soil particles would be broken down by organic matter into non-toxic forms and would not reach the groundwater table.

Only pesticides approved by USEPA and registered for use by the California Department of Pesticide Regulation would be used for proposed maintenance activities.

Minor Maintenance Activities

Minor maintenance activities may require the use of herbicides as part of efforts to control weeds during on-going maintenance of landscaping sites. Potential effects of these herbicide applications would be similar to those described above for vegetation management.

Management of Animal Conflicts

Animal conflicts management could include the use of bait traps, which would utilize rodenticides. These activities could potentially affect the water quality of the local creeks and channels if they were transported from the trap and application areas.

Sediment Removal/Bank Stabilization Activities

These activities would not involve the use of pesticides and would have no effect on channel or canal water quality.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to minimize the potential for water quality degradation. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-2: Instream Herbicide Application Work Window
BMP GEN-24: On-Site Hazardous Materials Management
BMP GEN-26: Spill Prevention and Response
BMP ANI-1: Avoid Redistribution of Rodenticides

Conclusion

By implementing these BMPs, impacts related to water quality degradation caused by the use of pesticides in Proposed Project activities would be less than significant and would not require mitigation.

Mitigation Measures: No mitigation is required.

Impact WQ-5: Water Quality Degradation Resulting in Violation of Water Quality Standards or Waste Discharge Requirements Caused by the Disturbance of Existing Contamination (Significance Criterion A; Less than Significant)

SCVWD-maintained channels (and to a lesser extent, canals) would receive and convey stormwater runoff from surrounding developed areas. Contaminants from stormwater runoff, such as metals and petroleum residues, could adhere to fine sediments that settled and accumulated in the stream or canal bottom. Large quantities of organic matter mingled with fine sediments would encourage sorption of urban contaminants. Sediments near storm drain outfalls may contain high concentrations of urban contaminants. The transport

of contaminated soils downstream could result in a violation of water quality standards or waste discharge requirements. Where required, the applicable Water Quality Monitoring and/or Sediment Characterization plans will be implemented as specified by the RWQCB permits.

Sediment Removal

As discussed in Section 3.6.3, Environmental Setting (Section 3.6, *Hazards and Hazardous Materials*), numerous sites in Santa Clara County are contaminated with hazardous materials. In addition, contaminants have been identified and measured in the Project Area, (as identified in Table 3.13-3, which summarizes sediment constituent threshold exceedances in surface water bodies for sediments removed as part of the SMP in 2009 and 2010). The Guadalupe River watershed has experienced mercury contamination, which has been addressed through a TMDL for mercury that was approved in 2010.

The proposed sediment removal activities could potentially adversely affect water quality, if contaminated sediments were transported downstream, or improve water quality by removing contaminated sediments from the watersheds. Disturbances of contaminated sediments as part of the sediment removal activities could potentially affect the water quality standards or waste discharge requirements if these sediments were transported downstream. However, in general, the removal of contaminated sediments in the Project Area, including mercury-contaminated sediment in the Guadalupe River watershed, would reduce the amount of contamination in water bodies, meeting the applicable TMDLs.

Other Maintenance Activities

Disturbances of contaminated soils could occur as part of the vegetation management's discing activities, minor maintenance grading, minor levee alterations to manage animal conflicts, or as part of bank stabilization activities. Potential effects of contaminated soil disturbances would be similar to those described above for sediment removal activities. The removal of trash and debris, a minor maintenance activity of the Proposed Project, would benefit water quality by removing potentially contaminating waste from stream channels. Because routine canal maintenance activities would include all general work activities, effects would be the same as described above for other routine maintenance work.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to minimize the potential for water quality degradation. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-3: Avoid Exposing Soils with High Mercury Levels
BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-27: Existing Hazardous Sites

Conclusion

By implementing these BMPs, the District would minimize the disturbance of existing contaminated soils and encourage proper handling of any contaminated soils encountered during maintenance activities. Impacts related to water quality degradation caused by the disturbance of existing contamination would be less than significant and would not require mitigation.

Mitigation Measures: No mitigation is required.

Impact WQ-6: Compliance with CWA Section 303(d) Total Maximum Daily Loads (Significance Criterion A; Less than Significant)

Table 3.13-2 lists impaired water bodies and the corresponding TMDLs for each one as identified by the RWQCBs and USEPA. Only TMDLs approved by USEPA are enforceable. No additional contributions of 303(d) listed constituents are allowed until a TMDL has been approved. Currently, TMDLs established to control and reduce mercury and PCB contamination within the Project Area would apply to the SMP Update. As part of the TMDL enforcement procedure, the RWQCBs could add TMDL conditions to municipal permits and WDRs. Where required, the applicable Water Quality Monitoring and/or Sediment Characterization plans will be implemented as specified by the RWQCB permits.

Sediment Removal

Proposed sediment removal activities would involve ground disturbance and could potentially mobilize contaminated sediments, such as mercury and PCB-contaminated sediment, which would already be present within stream channels. However, these activities would not contribute to new contamination in stream channels. In fact, over the period of implementation, the Proposed Project would remove significant quantities of sediment contaminated with mercury and PCBs from the system. This action would align with TMDL plans established by USEPA to alleviate water and sediment contamination in the Project Area.

Furthermore, SCVWD would comply with its municipal permit requirements; the Proposed Project would be reviewed and approved by the RWQCBs before being implemented by SCVWD. Also, SCVWD would implement a water and sediment quality monitoring program as part of the SMP Update and comply with permits issued by the RWQCBs. The water quality and sediment characterization monitoring programs would additionally support maintenance activities that would minimally disturb contamination and encourage proper handling of contaminated sediment to prevent mobilization and distribution of that contaminated sediment during and after maintenance activities.

Other Maintenance Activities

Other proposed maintenance activities (i.e., vegetation management, management of animal conflicts, bank stabilization, minor maintenance, and canal maintenance) also would potentially involve ground disturbance or sediment removal. Effects of sediment removal or ground disturbances would be similar to those described above for the proposed sediment

removal activities. In addition, as described above, SCVWD would comply with its permits and perform sediment and water quality monitoring programs.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to support compliance with CWA Section 303(d) TMDLs. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-3: Avoid Exposing Soils with High Mercury Levels
BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-20: Erosion and Sediment Control Measures
BMP SED-1: Groundwater Management
BMP SED-2: Prevent Scour Downstream of Sediment Removal

Conclusion

The Proposed Project would be designed to minimize ground disturbance and the potential disruption of contaminated sediments. In addition, the Proposed Project would adhere to its permit requirements and would implement water quality and sediment monitoring programs. This impact would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact WQ-7: Water Quality Degradation Resulting in Violation of Water Quality Standards or Waste Discharge Requirements Caused by Sediment Handling and Disposal (Significance Criterion A; Less than Significant)

Sediment removed from stream channels during stream maintenance could contain contaminants. Improper handling and disposal of contaminated sediment could impact the beneficial uses of a stream. Also, sediment transport and disposal activities could result in sediment spills, which could impact water quality if sediments were spilled into the storm drain network or directly into water bodies. Where required, the applicable Water Quality Monitoring and/or Sediment Characterization plans will be implemented as specified by the RWQCB permits. The potential of the Proposed Project's activities to involve sediment handling and disposal is further described below.

Sediment Removal/Bank Stabilization

Sediment removal and bank stabilization activities would involve grading activities and sediment handling and disposal. As described above, these activities could potentially degrade channel water quality if the sediments were improperly handled, disposed, or accidentally spilled. The RWQCB with jurisdiction over each stream would review and approve sediment test results before the onset of sediment removal activities on any stream. The RWQCB also would approve sediment disposal sites. However, the potential would exist for the handling of these sediments to affect the water quality of local water bodies.

Vegetation Management

Vegetation management activities may involve some discing of sediments but would not require the disposal or testing of sediments. The potential effects of sediment handling would be similar to those described above for sediment removal/bank stabilization.

Other Maintenance Activities

Minor maintenance, management of animal conflicts, and canal maintenance activities could involve grading, levee slope alterations, or sediment removal activities that would involve the handling and/or disposal of sediments. The potential effects of sediment handling or disposal activities would be similar to those described above for sediment removal/bank stabilization, although they would not require testing because of the limited amount of sediment.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to minimize the potential for water quality degradation. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-21: Staging and Stockpiling of Materials
BMP GEN-22: Sediment Transport
BMP GEN-29: Dust Management
BMP GEN-31: Vehicle Cleaning

Conclusion

Sediment handling and disposal during Proposed Project activities would not degrade water quality so that violations of water quality standards or waste discharge requirements would occur. Potential impacts related to the Proposed Project's activities would be less than significant and would not require mitigation.

Mitigation Measures: No mitigation is required.

Impact WQ-8: Create or Contribute Runoff Water that Would Provide Substantial Additional Sources of Polluted Runoff (Significance Criterion B; Beneficial)

The Proposed Project would not involve the construction of large areas of impermeable surfaces that would contribute substantial additional sources of polluted runoff. In addition, implementing the Proposed Project would not require expansion of existing channels within the Project Area and would not alter the quantity of stormwater runoff conveyed from adjacent lands and received in stream channels. However, the Proposed Project would improve the quality of stormwater runoff received in streams and conveyed downstream.

Vegetation Management

Revegetation management activities would improve the functioning of instream and riparian vegetation, which in turn would promote filtration of pollutants from stormwater runoff and improve instream habitat.

Sediment Removal/Bank Stabilization/Minor Maintenance/Canal Maintenance

Proposed Project activities, including sediment removal, also could improve water quality in a channel by removing existing contamination from the stream (both trash and contaminated sediments). Bank stabilization activities would improve stormwater quality by reducing the potential for sediment transport from unstable banks. Minor maintenance activities could involve trash or sediment removal, which would result in similar potential effects as those described for sediment removal. Because routine canal maintenance activities would include all general work activities, effects would be the same as described above for other routine maintenance work.

Management of Animal Conflicts

Animal conflict management activities generally would not involve any activities that would affect stormwater quality. However, rodenticides used in SCVWD bait traps could potentially affect stormwater quality, if spilled and released into a waterway. This is anticipated to be an extremely unlikely event.

Applicable Best Management Practices

The following BMP would be implemented as part of the SMP Update to minimize the potential for creating or contributing runoff water that would provide substantial additional sources of polluted runoff. A description of this BMP is provided in Chapter 2, *Project Description*.

BMP ANI-1: Avoid Redistribution of Rodenticides

Conclusion

By implementing BMP ANI-1, the Proposed Project would have an overall beneficial impact on the stormwater runoff quality received in channels and would not require mitigation.

Mitigation Measures: No mitigation is required.

Impact WQ-9: Alterations to the Quality of Groundwater (Significance Criterion A; Beneficial)

The Proposed Project would have the potential to affect the quality of groundwater as discussed below.

Bank Stabilization/Sediment Removal/Vegetation Management

Proposed maintenance activities would include stabilizing failing stream banks and supporting the growth of riparian vegetation along channel banks, which would assist in reducing fine sediment inputs to channels. Annual sediment removal activities and reshaping of a channel in some locations to prevent sediment deposition in the channel bed would improve groundwater percolation and filtration functioning. Use of pesticides and herbicides would not occur before rainy conditions that could cause them to percolate to groundwater.

Minor Maintenance

Minor maintenance activities could include the removal of sediments, which would result in beneficial effects on groundwater quality, as described above.

Management of Animal Conflicts

These activities would not alter the groundwater quality. In particular, use of rodenticides would not occur before rainy conditions that could cause them to percolate to groundwater.

Canal Maintenance

Because routine canal maintenance activities would include all general work activities, effects would be the same as described above for other routine maintenance work.

Applicable Best Management Practices

No BMPs would be applicable for this impact.

Conclusion

The Proposed Project would have beneficial effects on the quality of groundwater and would not require mitigation.

Mitigation Measures: No mitigation is required.