Applicable Best Management Practices

BMP GEN-1: In-Channel Work Window
BMP GEN-2: Instream Herbicide Application Work Window
BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-8: Protection of Sensitive Fauna Species from Herbicide Use
BMP GEN-15: Salvage Native Aquatic Vertebrates from Dewatered Channels
BMP GEN-20: Erosion and Sediment Control Measures
BMP GEN-23: Stream Access
BMP GEN-26: Spill Prevention and Response
BMP GEN-30: Vehicle and Equipment Maintenance
BMP GEN-32: Vehicle and Equipment Fueling
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-2: Prevent Scour Downstream of Sediment Removal
BMP SED-3: Restore Channel Features
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-2: Concrete Use near Waterways

Conclusion

By implementing these BMPs, SCVWD is expected to be able to reduce impacts to steelhead. Nevertheless, the Proposed Project would result in residual impacts to this species and its habitats because complete avoidance could not be accomplished while still meeting the project goals for public health and safety directives. This impact would be significant because of the regional rarity of this species and the importance of Santa Clara County creeks to the species (Significance Criteria A, B, and E). Implementation of Mitigation Measure BIO-8 would reduce this residual impact to a less-than-significant level.

As discussed under Impacts BIO-1 and BIO-2, Mitigation Measure BIO-1 and Mitigation Measure BIO-2 would require SCVWD to provide compensatory mitigation for impacts to wetland, aquatic, and riparian habitats. This mitigation may take a variety of forms, and not all of this mitigation would occur along steelhead streams. However, Mitigation Measure BIO-1 and Mitigation Measure BIO-2 would result in benefits to steelhead through wetland, aquatic, and riparian habitat restoration, enhancement, and protection, which would help to maintain water quality, cover, and instream habitat complexity for steelhead. In addition, Mitigation Measure BIO-8 and Mitigation Measure BIO-9 would be implemented to compensate more specifically for Proposed Project impacts to steelhead. Mitigation Measure BIO-8 and Mitigation Measure BIO-9 would be implemented to reduce the impacts on steelhead to a less-than-significant level.

Mitigation Measure BIO-8: Augmentation of Spawning Gravel

SCVWD will implement gravel augmentation as mitigation for SMP impacts to CCC and SCCC steelhead spawning habitat. If more than ~~500~~ 100 square feet of sediment removal is proposed along steelhead streams, an SCVWD fisheries ecologist will assess the sediment removal site for spawning and rearing habitat quality before the initiation of work. The biologist will determine the extent of sediment that is proposed for removal and that is considered to be "high-quality" spawning gravel, based on the following criteria:

- Less than 25-30 percent fines less than 6.35 mm (Kondolf 2000, Kondolf and Wolman 1993)
- Less than 12-14 percent fines less than 0.85 mm (Kondolf 2000)
- D50 (median particle size) of 12.5 to 22.0 mm, based on D50 of rainbow trout and steelhead from 30 to 65 cm length (Kondolf and Wolman 1993), corresponding to a range of 275 to 640 cm of steelhead adults recovered in streams of the San Francisco estuary (Leidy et al. 2005)
- Minimum patch size greater than 1.1 m^2 (Trush 1991)

The habitat needs to be accessible under typical flows for when the appropriate life stages are present. Suitable depths and velocities must be available during flows typical of spawning season. Factors related to accessibility include depth and velocity criteria, which for spawning, are:

- Depth: 10–150 cm (Moyle 2002)
- Velocity: 20–155 cm/s (Moyle 2002)

If more than ~~500~~ 100 square feet of high-quality gravel will be removed along steelhead streams, compensatory mitigation will be provided by the installation of suitable spawning gravel along the affected creek at a 1:1 (mitigation:impact) ratio on a square footage or acreage basis. Locations where sediment removal is performed at fish ladders will not require gravel augmentation. The mitigation site will be as close to the impacted reach as is feasible, and will be located within a steelhead-accessible reach of the same creek. The site will be selected with input from the fisheries ecologist, taking channel capacity and other SMP-related factors into account. The fisheries ecologist will prepare specifications for the mitigation, including size, type, depth, and configuration of gravel. The mitigation will be implemented within 1 year following the impact.

Mitigation Measure BIO-9: Augmentation of Instream Complexity for Non-Tidal Stream Fish

SCVWD will provide mitigation for loss of instream complexity, which provides habitat heterogeneity, cover, and refugia during high flows, by in-kind installation of structures that provide such complexity. Before sediment removal, bank stabilization, or large woody debris removal activities, the affected area will be surveyed by an SCVWD fisheries ecologist to identify any features that provide high-quality instream complexity for fish. The ecologist will determine that such features are of "high quality" based on ~~a combination~~the presence of one or more of the following criteria:

- Large woody debris providing cover and refugia from high flow velocities
- Deep pools providing rearing habitat and refugia from high flow velocities
- Cobble/boulder features providing cover, refugia from high flow velocities, and velocities suitable for good invertebrate drift

If such high-quality features must be removed during Proposed Project activities, compensatory mitigation will be provided by the installation of instream complexity features on a 0.~~5~~1:1 (impact:mitigation~~:impact~~) basis, on the basis of either the number of complexity features or the area that is affected hydraulically by the features that are removed; the fisheries ecologist will determine which of these two metrics is appropriate based on the values to fish provided by the impacted features. Thus, one instream complexity feature will be installed for every ~~two~~ one that ~~are~~ is removed, or an instream complexity feature hydraulically affecting roughly ~~half~~ the same area of the feature(s) removed will be installed. ~~This ratio is less than 1:1 under the understanding that erosion, deposition, tree falls, and debris mobilization within a few years following the removal of instream complexity will naturally reintroduce some complexity to the stream.~~

As examples, enhancing instream complexity may involve:

- enlarging an existing large woody debris feature;
- anchoring a large woody debris feature;
- geomorphically shaping an instream bar or bed feature for improved habitat;
- enhancing a pool feature threatened by sedimentation; or
- enhancing streambed conditions to increase the range of flow velocity and habitat conditions.

Priority for these mitigation activities will be given to SMP sites where instream features cannot be retained during construction because of conflicting objectives. For example, if a channel pool configuration cannot be retained during a bank protection job and the area is devoid of other complex pool features, then this area will be evaluated for the addition of an instream complexity feature.

In addition to enhancing existing features, new instream features may be developed to achieve several habitat objectives, including: increasing pool habitat in homogenized stream reaches, providing escape cover for rearing and spawning fish, deepening feeding areas in riffle habitat, creating a variety of stream flow velocities for cover, sorting gravel, and providing resting areas for upstream migration. Additionally, improving instream function can benefit other aquatic flora and fauna by improving the overall stream complexity for which these species depend on for survival. If effective, such new instream complexity features (particularly in highly modified, urban streams) can augment or replace existing structural features required for successful reproduction and rearing of native fish and amphibians in the freshwater environment.

Newly developed instream habitat improvements may use log structures, boulder structures, or a combination of both log and boulder structures to achieve more complex habitats. Possible configurations of boulders or logs include weirs, clusters, single and

opposing wing deflectors, spider logs, and digger logs. The construction materials selected for each instream complexity feature will depend on the target objective and site conditions.

The selected mitigation site will be as close to the impacted reach as is technically feasible. For instream complexity features that are removed by sediment removal or bank stabilization activities, mitigation will be incorporated into the same reach where complexity was removed to the extent feasible. The site will be selected with input from the fisheries ecologist, taking channel capacity and other SMP-related factors into account. The fisheries ecologist will prepare specifications for the mitigation, including size, type, and configuration of the feature. The mitigation will be implemented within 1 year following the impact. The fisheries ecologist will then inspect the completed complexity feature to assure that it meets the criteria for "high quality" instream complexity listed above.

It is possible that MM BIO-8 and MM BIO-9 may be refined during the Section 7 consultation process with the NMFS (e.g., in the Biological Opinion covering Project effects on steelhead) or by the USACE, CDFG, or RWQCB in permits issued by these agencies, in which case the refinements required by these agencies would be implemented.

MM BIO-8 and BIO-9 together will mitigate impacts to steelhead to less-than-significant levels by enhancing habitat for this species so as to protect its populations, thereby ensuring that the SMP does not substantially reduce the number or restrict the range of this threatened species, have a substantial adverse effect on this special-status species, or impede the use of its nursery sites.

Mitigation activities such as gravel augmentation (Mitigation Measure BIO-8) and installation of instream complexity (Mitigation Measure BIO-9) could result in impacts to aquatic species during installation; however, the net effect of these measures on fish and amphibians would be beneficial.

Impact BIO-9: Impacts on the Pacific Lamprey and Monterey Roach (Significance Criteria A, B, and E; Less than Significant with Mitigation)

The Pacific lamprey is not on any special-status species list. However, this anadromous species likely has been impacted by many of the factors that threaten the steelhead, and it occurs in a number of SCVWD-maintained creeks. Thus, the potential effects of Proposed Project activities on this fish have been assessed. It is currently known to occur in the Project Area in the Guadalupe River and San Francisquito, Coyote, Upper Penitencia, Lower Silver, Guadalupe, Alamitos, Stevens, and Uvas Creeks. The Monterey roach (a California species of special concern) is a small minnow that occurs in the Project Area in streams within the Pajaro River watershed. Specifically, it is known to occur in Llagas and Uvas Creeks, and it likely is present in other Project Area creeks within the Pajaro River Basin.

As described under *Determination of Impacts to Wildlife and Fisheries*, proposed maintenance activities may result in adverse effects to habitat used by both of these fish through dewatering, fish relocation, increased turbidity, changes in habitat structure, effects of heavy equipment use on these species, their prey, and their habitat, and other impact pathways. Permanent habitat impacts to these species' habitats are expected to be

very limited but could potentially occur if bank stabilization activities replaced their habitat with hardscape. Electrofishing for fish relocation, stranding, herbicide and surfactant use, and increased turbidity may result in the direct injury or mortality of individual fish.

The distribution of these fish in the Project Area is not as well known as that of steelhead, and thus no detailed impact estimates are provided. However, Table 3.3-~~10~~11 for steelhead provides an estimate of the potential extent of sediment removal and vegetation management activities along creeks that could support the Pacific lamprey, and Tables 3.3-~~11~~12 through 3.3-~~13~~14 provide an estimate of the potential extent of projected instream herbicide, non-instream herbicide, and manual vegetation management activities, respectively, along creeks that could support the lamprey. Similarly, the projected activities along creeks within the Pajaro Basin, as listed in those tables, provide an estimate of the potential impacts of Proposed Project activities along creeks that could support the Monterey Roach.

When performing any type of maintenance activity that would necessitate work within or adjacent to the active channel, SCVWD would implement BMPs to reduce impacts to water quality (e.g., erosion and sediment control, spill prevention, standard herbicide requirements). In addition, implementation of BMPs related to dewatering of work sites would assure that, before dewatering, the best means to bypass flow through a work site would be determined, to minimize disturbance to the channel and avoid direct mortality of fish. Sediment removal BMPs would assure that low-flow channels within non-tidal streams were returned as closely as possible to their original location and configured with the appropriate depth for fish passage. These BMPs are as follows, and a description of each is provided in Table 2-12.

Applicable Best Management Practices

BMP GEN-1: In-Channel Work Window
BMP GEN-2: Instream Herbicide Application Work Window
BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-8: Protection of Sensitive Fauna Species from Herbicide Use
BMP GEN-15: Salvage Native Aquatic Vertebrates from Dewatered Channels
BMP GEN-20: Erosion and Sediment Control Measures
BMP GEN-23: Stream Access
BMP GEN-26: Spill Prevention and Response
BMP GEN-30: Vehicle and Equipment Maintenance
BMP GEN-32: Vehicle and Equipment Fueling
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-2: Prevent Scour Downstream of Sediment Removal
BMP SED-3: Restore Channel Features
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-2: Concrete Use near Waterways

Conclusion

Implementation of BMPs would reduce impacts on the Pacific lamprey and Monterey roach and their habitats. However, because of the factors potentially threatening these species' populations and the relatively limited ranges of both species, impacts to individuals and their habitats resulting from the Proposed Project would be significant (Significance Criteria A, B, and E).

As discussed under Impacts BIO-1 and BIO-2, Mitigation Measure BIO-1 and Mitigation Measure BIO-2 would require SCVWD to provide compensatory mitigation for impacts to wetland, aquatic, and riparian habitats. This mitigation may take a variety of forms, and not all of this mitigation would occur along streams that supported the Pacific lamprey and Monterey roach. However, Mitigation Measure BIO-1 and Mitigation Measure BIO-2 would result in benefits to these species through wetland, aquatic, and riparian habitat restoration, enhancement, and protection, which would help to maintain water quality, cover, and instream habitat complexity for these species. In addition, implementation of Mitigation Measure BIO-9 would increase instream complexity, and thus could be expected to benefit the Pacific lamprey and Monterey roach in a manner similar to that described for steelhead. Mitigation Measure BIO-1, Mitigation Measure BIO-2, and Mitigation Measure BIO-9 would be implemented to reduce the impact to the Pacific lamprey and Monterey roach to a less-than-significant level by compensating for Proposed Project impacts to habitat and individuals.

Impact BIO-10: Impacts on the Longfin Smelt and Green Sturgeon (Significance Criteria A and B; Less than Significant with Mitigation)

Longfin smelt (state listed as threatened) is known to occur, and green sturgeon (federally listed as threatened and a California species of special concern) could potentially occur, in the tidal reaches of South Bay sloughs. If these species were to occur in reaches near proposed maintenance activities, the health of individuals could be impaired by decreased water quality (e.g., increased turbidity resulting from sediment removal in lower reaches of creeks or spills of fuels or chemicals) . Habitat of these species would be affected little by Proposed Project activities, but removal of vegetation along sloughs could potentially result in minor adverse effects on these species.

The only sediment removal activities projected within tidal waters where southern green sturgeon could potentially occur would take place along uppermost Alviso Slough, from the Union Pacific Railroad tracks just below Gold Street upstream to the upper limits of tidal waters near Tasman Drive (a distance of approximately 1.4 miles). Within this 1.4-mile reach, sediment would be removed from approximately 40 percent of the reach at a time, and sediment removal would occur approximately five times during the 10-year Proposed Project period. Vegetation management is projected along approximately 6.89 miles of sloughs, including 3.59 miles where vegetation management also was projected for 2002–2012, and 3.30 miles where new work is projected.

These species occur infrequently and in low numbers, if at all, in the immediate Project Area, and they are not expected to spawn in the Project Area. Furthermore, they would be unlikely to occur upstream from tidal reaches because of a lack of suitable spawning conditions. Because of the infrequency of these species' occurrence in the Project Area, the

very limited extent of Proposed Project activities in tidal habitats, and the fact that instream activities that could result in adverse water quality effects would not extend far downstream in tidal sloughs (i.e., to areas where these species were more likely to occur), a low probability would exist that proposed maintenance activities would result in substantial effects on the health or survival of any individuals or have a substantial adverse effect on these species' habitats. Nevertheless, the Proposed Project would affect tidal habitat, which is designated critical habitat for the green sturgeon, as described generally for sturgeon habitat above. Specifically, Proposed Project activities could affect the PCEs of critical habitat involving food resources, water quality, and sediment quality for the green sturgeon.

SCVWD would implement BMPs for all activities along sloughs in which the longfin smelt and green sturgeon could potentially occur. These BMPs are as follows, and a description of each is provided in Table 2-12.

Applicable Best Management Practices

BMP GEN-1: In-Channel Work Window
BMP GEN-2: Instream Herbicide Application Work Window
BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-8: Protection of Sensitive Fauna Species from Herbicide Use
BMP GEN-20: Erosion and Sediment Control Measures
BMP GEN-23: Stream Access
BMP GEN-26: Spill Prevention and Response
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BMP SED-2: Prevent Scour Downstream of Sediment Removal
BMP SED-3: Restore Channel Features
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-2: Concrete Use near Waterways

Conclusion

Implementation of BMPs would reduce impacts on the longfin smelt and green sturgeon and their habitats. Because of the expected infrequency of these species' occurrence in the Project Area and likely low abundance when they occurred, the BMPs likely would be adequate to reduce impacts to these species to very low levels. However, because the longfin smelt has been recorded in tidal sloughs in the Proposed Project vicinity, and because relatively little is known about how these species use South Bay sloughs, some potential would exist for Proposed Project activities to result in significant impacts (Significance Criteria A and B).

As discussed under Impact BIO-1, Mitigation Measure BIO-1 includes mitigation for impacts to tidal wetlands and other waters, which would be the habitats in which the longfin smelt and green sturgeon could potentially occur. SCVWD would use the 21 acres of ~~excess~~ tidal marsh restoration that it has accomplished at the Island Ponds as <u>available</u>

mitigation for impacts to tidal wetlands and aquatic habitats, as well as tidal species such as the longfin smelt and green sturgeon. This mitigation would include tidal channels that could be used by green sturgeon and that already have been demonstrated to be used by longfin smelt (Hobbs 2011). Therefore, Mitigation Measure BIO-1 would be implemented to reduce the impacts on the longfin smelt and green sturgeon to a less-than-significant level, assuring that the SMP Update would not substantially reduce the number or restrict the range of these threatened species, have a substantial adverse effect on these special-status species, or in the case of the longfin smelt, impede the use of its nursery sites. It is possible that this mitigation may be refined by the NMFS, which regulates impacts to the southern green sturgeon, during Section 7 consultation (e.g., in a Biological Opinion) and/or CDFG, which regulates impacts to the longfin smelt, during Section 2081 consultation (e.g., in an Incidental Take Permit), in which case these refined measures would be implemented.

Impact BIO-11: Impacts on the California Tiger Salamander (Significance Criteria A, B, and E; Less than Significant with Mitigation)

The California tiger salamander (federally and state-listed as threatened ~~and state listed as endangered~~) has been largely extirpated from the valley floor, and extant populations in the Project Area are now limited primarily to areas with seasonal pools and stock ponds around the periphery of the Project Area, particularly in the less heavily developed areas and areas that have not been heavily cultivated. Because of its distribution in the Project Area, potential impacts to California tiger salamanders would be relatively limited. However, they may pass through work sites during seasonal movements to and from breeding ponds and may use upland burrows within work sites as refugia (e.g., to prevent dehydration during the dry summer and autumn months). In addition, some potential would exist for California tiger salamanders to breed in portions of canals, particularly inoperable canals such as the Coyote and Coyote Extension Canals.

As described under *Determination of Impacts to Wildlife and Fisheries*, proposed maintenance activities may affect California tiger salamander foraging or dispersal habitat and/or individuals (e.g., during maintenance activities or from increased mortality after construction). For example, maintenance activities may result in the injury or mortality of individuals as a result of worker foot traffic, equipment use, or vehicle traffic. Daily and seasonal movements throughout individuals' home ranges may be temporarily affected during maintenance activities because of disturbance, and substrate vibrations may cause individuals to move out of refugia, exposing them to a greater risk of predation or desiccation. In addition, tiger salamanders may be crushed in their burrows by the passage of heavy equipment or trapped and suffocated, and petrochemicals, hydraulic fluids, and solvents that are spilled or leaked from construction vehicles or equipment may kill individuals.

Removal of burrows in levees, a component of the management of animal conflicts, could impact California tiger salamanders because of the potential for tiger salamanders to use burrows as refugia. Direct mortality of individuals may occur because of filling or compaction of crevices/holes on levee surfaces or slopes. In addition, the loss of subterranean habitat caused by filling of burrows and the use of surface barriers to burrowing animals would reduce the availability of refugia, potentially subjecting dispersing salamanders to increased predation or desiccation if they were unable to find

suitable refugia. Loss of subterranean habitat also may result in the displacement of invertebrates that serve as a food source for this species. Control of burrowing mammal populations would reduce the availability of upland refugia for the salamander. The extent of effects to California tiger salamander habitat resulting from management of animal conflict activities is difficult to quantify because the extent of and specific locations for animal conflicts management are not generally known. More than 9 miles of levees along canals occur in areas where the California tiger salamander is considered extant and where animal conflict management may occur. In addition, animal conflict management could occur in other non-projected locations within potential California tiger salamander habitat.

By implementing BMPs GEN-12 and GEN-15, tiger salamanders would be relocated from work sites before the onset of maintenance activities that potentially could threaten individuals. Individuals that were found during pre-activity surveys and relocated to suitable habitat outside of the work site may be subjected to physiological stress and face a greater risk of predation, or may undergo increased competition with salamanders already present in the area to which they were relocated.

The vast majority of proposed sediment removal activities would be in areas where California tiger salamanders do not currently occur. Figure 3.3-10 depicts all projected activities relative to the expected distribution of this species in the Project Area, based on known occurrences (primarily from CNDDB 2011) and habitat suitability. As shown in this figure,, this species is largely absent from the portions of the Santa Clara Valley floor that have been heavily impacted by urban development and agricultural activities. Because most projected activities would occur in these valley-floor areas, impacts to areas that could potentially support this species would be very limited.

Because sediment removal is a projected activity for the SMP, the potential locations where sediment removal could impact tiger salamanders can be predicted. These locations are depicted in Figure 3.3-11 and summarized in Table 3.3-~~14~~15. For clarity, Figure 3.3-11 only shows the projected sediment removal activities within areas where the California tiger salamander is expected to be extant. Because no sediment removal activities in predicted California tiger salamander habitat occurred (or will occur) from 2002–2012, all impacts to California tiger salamanders from 2012–2022 would be new activities.

Sediment removal is projected in habitat where the California tiger salamander is expected to be extant, primarily along the urban fringe, along approximately 1.03 miles of creek. The sediment removal projections listed in Table 3.3-~~14~~15 provide only a rough estimate of potential impacts that would result from sediment removal, for several reasons. First, Table 3.3-~~14~~15 depicts the linear miles of channels that would be subject to impacts rather than the acreage of sediment removal itself, under the assumption that impacts to tiger salamanders would be most likely to occur because of movement of heavy equipment along channels rather than excavation of sediments within the channel. In addition, although the species has been recorded in or adjacent to some of the creeks in these areas (e.g., Saratoga Creek, Guadalupe Creek, Coyote Creek, Dexter Canyon Creek), no occurrence records are located within the immediate impact areas. Tiger salamanders are not expected to breed in these stream habitats (with the possible exception of some segments of canals; Coyote Alamitos and Almaden Calero Canals are the only canals where sediment removal is projected within the current distribution of the species). Rather, they are expected to occur here only during seasonal movements to and from breeding ponds, or

possibly while using upland refugia along these streams. Finally, any tiger salamanders present within areas affected by sediment removal activities would be likely to be underground during the dry season and during daylight hours, when such activities would occur, thus reducing the potential for impact. With implementation of the BMPs listed later in this section, particularly BMP GEN-12 (Protection of Special-Status Amphibian and Reptile Species), short-term effects on California tiger salamanders as a result of sediment removal activities are expected to be minimal.

Because vegetation management is a projected activity for the SMP Update, the potential locations where vegetation management could impact tiger salamanders also can be predicted. These locations are depicted in Figure 3.3-12 and summarized in Table 3.3-~~15~~16 (as the linear miles of channel within potential California tiger salamander habitat where vegetation management activities are projected). Although the California tiger salamander has been recorded in or adjacent to some of the creeks listed above, no occurrence records are located within the immediate impact areas, and tiger salamanders are not expected to breed in these stream habitats. Rather, they are expected to occur here only during seasonal movements to and from breeding ponds, or possibly while using upland refugia along these streams. Additionally, any tiger salamanders present within areas affected by vegetation management activities are likely to be underground during the dry season, when many such activities would occur, and during daylight hours, when all vegetation management would take place, thus reducing the potential for impact.

Vegetation management activities would include the application of aquatic herbicide (instream) and herbicide application to terrestrial areas (outside the water), as discussed above. Because California tiger salamanders are not expected to breed in the channels in the work sites and spend little time above ground in upland habitat, herbicide application likely would have limited effects on the survival, reproduction, or growth of California tiger salamanders that may be present in areas where herbicides were applied. Rather, the potential for effects on tiger salamanders resulting from vegetation management would pertain primarily to the physical presence of people and equipment during vegetation management activities. Nevertheless, some potential would exist for salamanders to be exposed to herbicides and surfactants during migration or feeding on the ground's surface, and herbicides also would reduce vegetative cover for salamanders while these animals were moving aboveground.

Critical habitat has been designated for the California tiger salamander (Figure 3.3-9). Projected activities would have the potential to affect designated critical habitat for the species in ways described above and under *Determination of Impacts to Wildlife and Fisheries*. Specifically, Proposed Project activities could affect the PCEs of critical habitat involving upland habitats with subterranean refugia and upland dispersal habitat for the tiger salamander, as described generally for habitat impacts above. However, adverse effects of Proposed Project activities on tiger salamander critical habitat would be limited to approximately 4.55 acres of work sites near the Almaden Calero Canal.

Table 3.3-~~14~~15. Projected Sediment Removal Impacts in Areas of Potential California Tiger Salamander Occurrence, 2012–2022

Creek/River	Sediment Removal Impacts, 2012–2022 (miles)
Alamitos Creek	0.04
Almaden-Calero Canal	0.63
Bodfish Creek	0.01
Calero Creek	0.04
Coyote Alamitos Canal	0.01
Coyote Creek	0.14
Guadalupe Creek	0.08
Llagas Creek	0.04
Los Gatos Creek	0.02
San Francisquito Creek	0.01
Stevens Creek	0.01
Uvas-Carnadero Creek	0.00
Total	**1.03**

Source: Data compiled by Horizon Water and Environment in 2011 based on information from SCVWD

Table 3.3-~~15~~16. Projected Vegetation Management Impacts in Areas of Potential California Tiger Salamander Occurrence, 2012–2022

Creek/River	Vegetation Management Impacts, 2012–2022 only (ac)	Vegetation Management Impacts, 2002–2010 and 2012–2022 (ac)	Total Vegetation Management Impacts, 2012–2022 (ac)
Instream Herbicide Application			
Adobe Creek		0.03	0.03
Alamitos Creek	0.04		0.04
Almaden-Calero Canal		0.32	0.32
Calero Creek	0.05		0.05
Coyote Alamitos Canal		0.06	0.06
Coyote Canal		0.48	0.48
Coyote Canal Extension		0.52	0.52
Coyote Creek	0.48		0.48
Edmundson Creek	0.00		0.00

Table 3.3-~~15~~16. Projected Vegetation Management Impacts in Areas of Potential California Tiger Salamander Occurrence, 2012–2022

Creek/River	Vegetation Management Impacts, 2012–2022 only (ac)	Vegetation Management Impacts, 2002–2010 and 2012–2022 (ac)	Total Vegetation Management Impacts, 2012–2022 (ac)
Guadalupe Creek	0.09		0.09
Llagas Creek	0.01		0.01
Los Gatos Creek	0.03		0.03
Pajaro River	0.48		0.48
Uvas-Carnadero Creek	0.09		0.09
Total	**1.27**	**1.41**	**2.68**
Non-Instream Herbicide Application			
Adobe Creek		0.00	0.00
Almaden-Calero Canal		4.95	4.95
Coyote Alamitos Canal		0.66	0.66
Coyote Canal		1.05	1.05
Coyote Creek	0.09		0.09
Edmundson Creek	0.00	0.03	0.03
Lions Creek		0.28	0.28
Llagas Creek	0.02		0.02
Norwood Creek	0.05		0.05
Pajaro River	1.04		1.04
San Francisquito Creek	0.12		0.12
Santa Teresa Creek	0.03	0.00	0.03
Stevens Creek	0.04		0.04
Uvas-Carnadero Creek	0.17		0.17
Total	**1.56**	**6.97**	**8.53**
Manual Vegetation Management			
Alamitos Creek	0.19		0.19
Almaden-Calero Canal	6.92		6.92
Bodfish Creek	0.16		0.16
Calero Creek	1.98		1.98
Coyote Alamitos Canal		1.28	1.28
Coyote Creek	2.55		2.55
Edmundson Creek	0.02	0.00	0.03
Guadalupe Creek	0.71		0.71

Table 3.3-~~15~~16. Projected Vegetation Management Impacts in Areas of Potential California Tiger Salamander Occurrence, 2012–2022

Creek/River	Vegetation Management Impacts, 2012–2022 only (ac)	Vegetation Management Impacts, 2002–2010 and 2012–2022 (ac)	Total Vegetation Management Impacts, 2012–2022 (ac)
Lions Creek	0.28	0.00	0.29
Llagas Creek	0.20	0.00	0.21
Los Gatos Creek	0.05		0.05
Norwood Creek	0.04		0.04
Pajaro River	1.52		1.52
San Francisquito Creek	0.01		0.01
Santa Teresa Creek	1.09	0.07	1.16
South East Santa Teresa Creek	2.53		2.53
Stevens Creek	0.00		0.00
Uvas-Carnadero Creek	1.94	0.50	2.44
West Little Llagas Creek	0.58		0.58
TOTAL	**20.77**	**1.85**	**22.65**

Source: Data compiled by Horizon Water and Environment in 2011 based on information from SCVWD

SCVWD would implement the following BMPs to reduce impacts to individual California tiger salamanders and their habitats (a description of each is provided in Table 2-12).

Applicable Best Management Practices

BMP GEN-2: Instream Herbicide Application Work Window
BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-8: Protection of Sensitive Fauna Species from Herbicide Use
BMP GEN-12: Protection of Special-Status Amphibian and Reptile Species
BMP GEN-15: Salvage Native Aquatic Vertebrates from Dewatered Channels
BMP GEN-20: Erosion and Sediment Control Measures
BMP GEN-23: Stream Access
BMP GEN-26: Spill Prevention and Response
BMP GEN-30: Vehicle and Equipment Maintenance
BMP GEN-32: Vehicle and Equipment Fueling
BMP GEN-33: Dewatering for Non-Tidal Sites
BMP GEN-35: Pump/Generator Operations and Maintenance
BMP SED-2: Prevent Scour Downstream of Sediment Removal
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-2: Concrete Use near Waterways
BMP ANI-1: Avoid Redistribution of Rodenticides

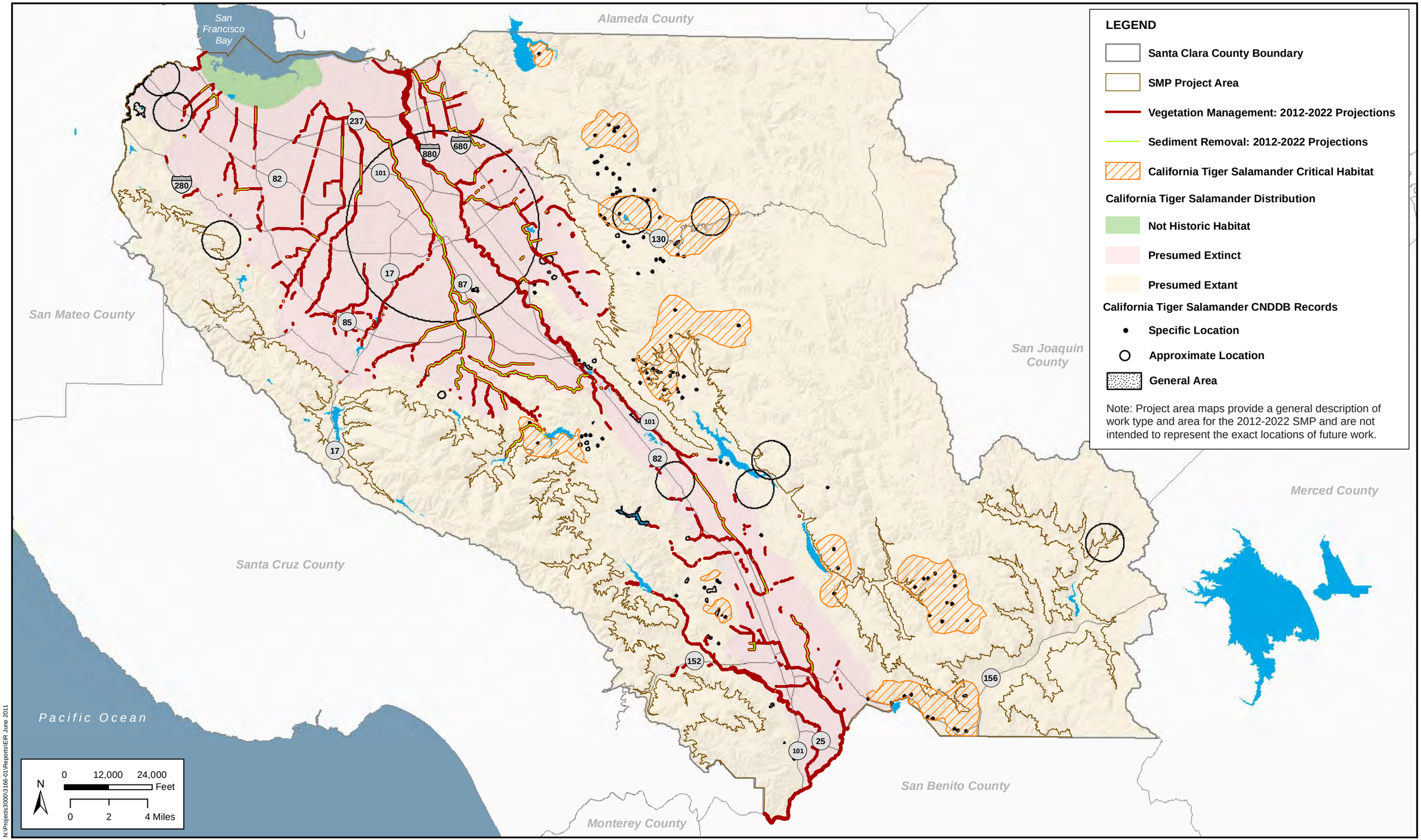

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Figure 3.3-10: Known Occurrences and Expected Distribution of the California Tiger Salamander

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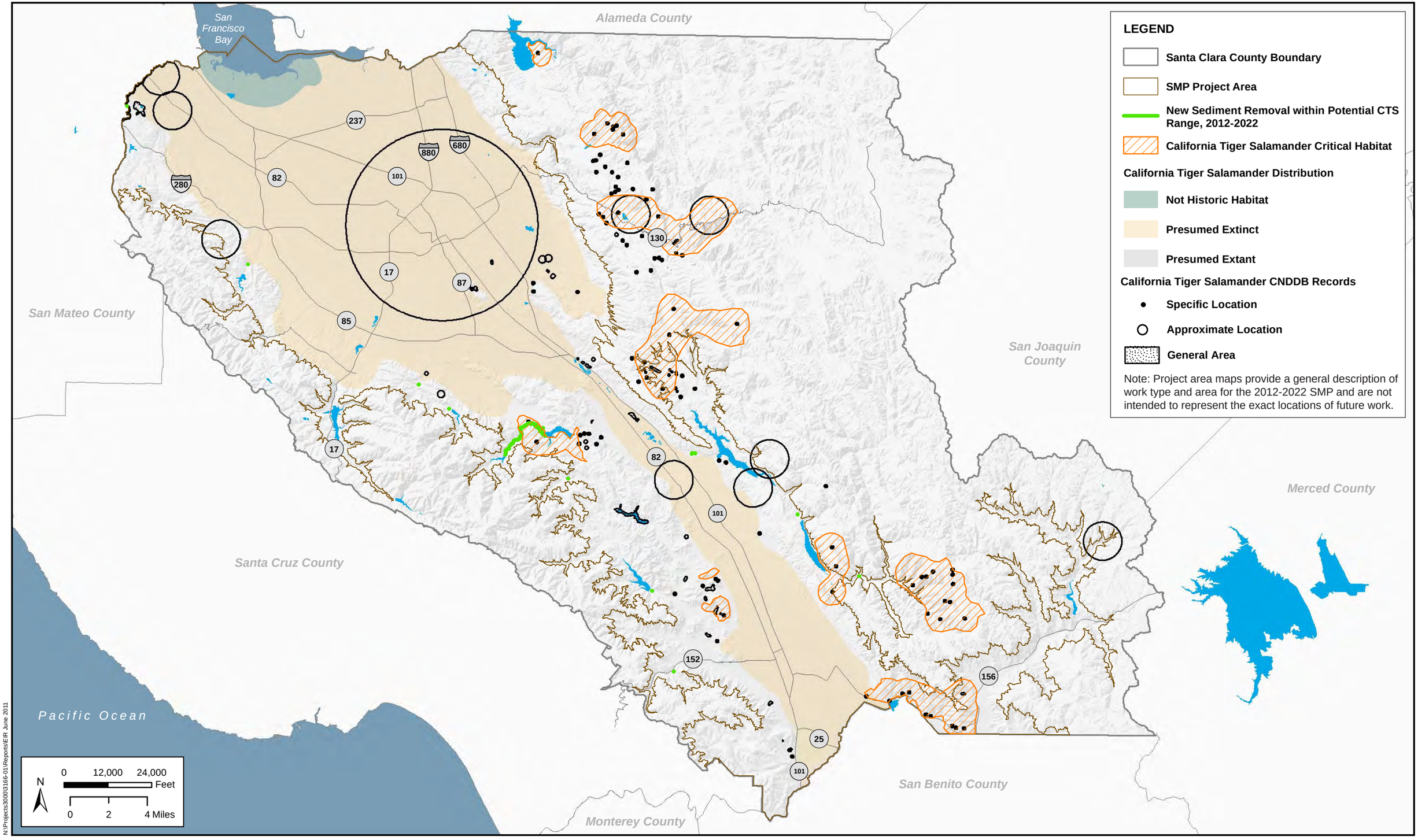

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Figure 3.3-11: Projected Sediment Removal in Areas of Potential California Tiger Salamander Occurrence, 2012-2022

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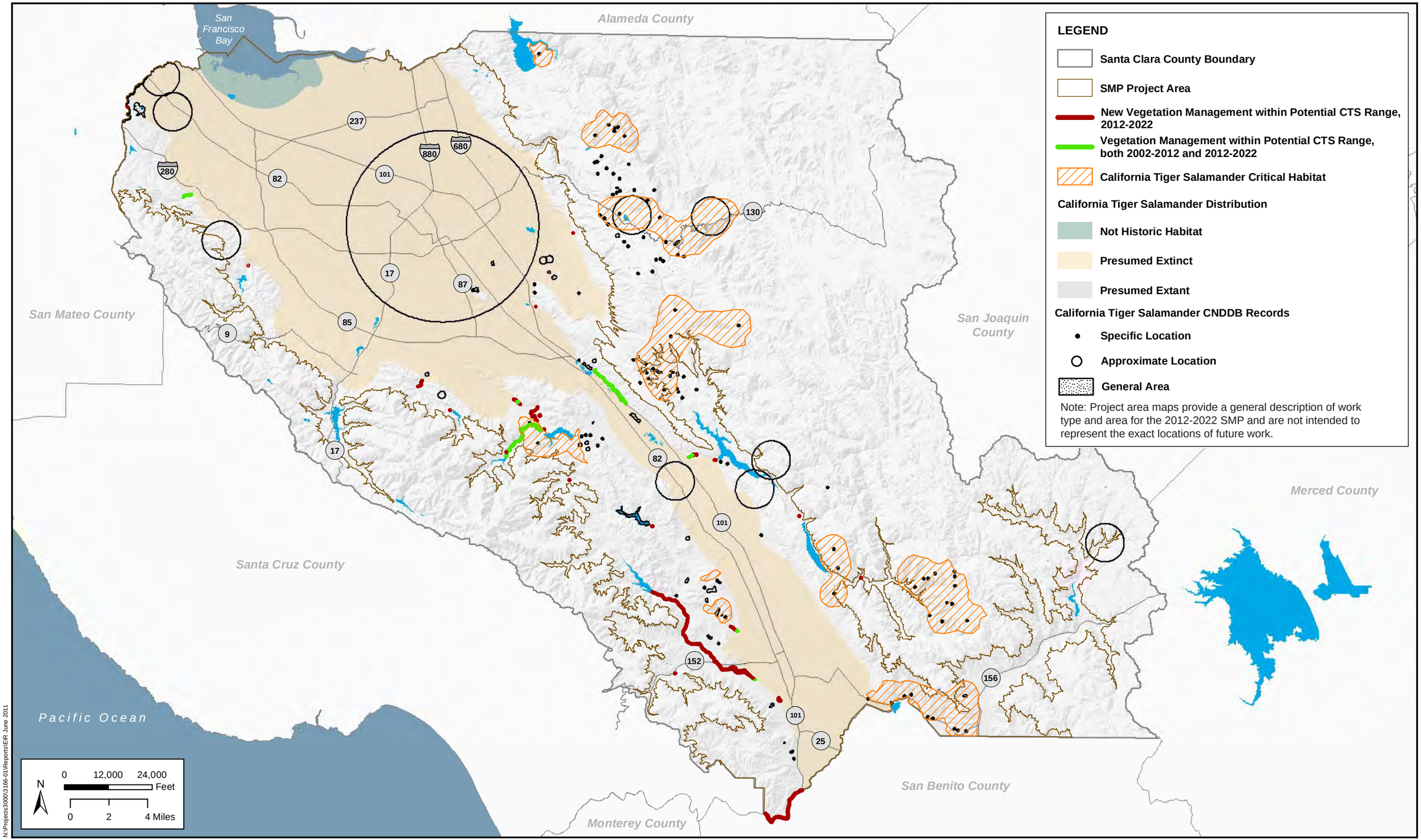

Figure 3.3-12: Projected Vegetation Management in Areas of Potential California Tiger Salamander Occurrence, 2012-2022

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BMP ANI-4: Animal Control in Sensitive Amphibian Habitat

Conclusion

Although BMPs would reduce the magnitude and extent of Proposed Project impacts on the California tiger salamander, residual impacts would remain because repeated impacts to habitat as well as loss of habitat via burrow removal could not be avoided. Because of the regional rarity of this species, impacts to California tiger salamander and its habitat would be significant (Significance Criteria A, B, and E). Implementation of Mitigation Measure BIO-10 would reduce the impact to California tiger salamander and its habitat to a less-than-significant level.

As discussed under Impacts BIO-1 and BIO-2, Mitigation Measure BIO-1 and Mitigation Measure BIO-2 would require SCVWD to provide compensatory mitigation for impacts to wetland, aquatic, and riparian habitats. This mitigation may take a variety of forms, and not all of this mitigation would occur in areas where California tiger salamander occurred. However, Mitigation Measure BIO-1 and Mitigation Measure BIO-2 could result in benefits to California tiger salamander through wetland restoration and the protection and management of mitigation lands that may support this species. Nevertheless, Mitigation Measure BIO-10 would be implemented to reduce the impact to California tiger salamander and its habitat to a less-than-significant level.

Mitigation Measure BIO-10: Implement Compensatory Mitigation for the California Tiger Salamander

SCVWD will provide mitigation to compensate for unavoidable impacts to California tiger salamanders and their habitat. SCVWD would refine the quantification of impacts to California tiger salamander habitat on an annual basis. At the end of each year's maintenance period, SCVWD will determine the extent of impacts to lands that are both within the potential range of the California tiger salamander and within potentially suitable habitat for the species. To determine whether the SMP impacts are within the potential range of the species, SCVWD will rely on the mapping in Figure 3.3-10 (which may be as modified over the course of 2012–2022, based on any new information that may modify the understanding of the species' potential range in the Project Area). To determine habitat suitability, an SCVWD biologist will determine whether the impact areas support land uses that are not conducive to California tiger salamander use, such as developed lands; all other land uses will be considered potential California tiger salamander habitat.

Compensation for these effects will be provided via the protection, enhancement, and management of habitat that currently supports, or can support, this species at a 2:1 (mitigation:impact~~:mitigation~~) ratio, on an acreage basis. Compensatory mitigation may be carried out through one or both of the following methods, in order of preference:

- The preservation, management, and enhancement (e.g., through long-term management targeted toward this species) of high-quality habitat that is already occupied by California tiger salamanders
- The restoration or enhancement of degraded habitat or habitat that is unsuitable for use by California tiger salamanders, but that (a) is in close proximity to areas of known occurrence and (b) can be made more suitable

for use via construction of one or more breeding ponds or management to improve the quality and availability of burrows in upland habitat

Because most, if not all, impacts to California tiger salamander habitat will consist of modification of upland refugial/dispersal habitat (rather than aquatic breeding habitat), mitigation lands will also consist of upland habitat for this species. All mitigation lands for this species must be located within Santa Clara County and within the area where the species is thought to be extant as shown in Figure 3.3-10 (or as otherwise modified over the course of 2012–2022, based on any new information that may modify the understanding of the species' potential range in the Project Area). SCVWD will develop an HMMP describing the measures that will be taken to manage the property and to monitor the effects of management on the California tiger salamander. That plan will include, at a minimum, the following:

- a summary of impacts to California tiger salamander habitat and populations, and the proposed mitigation;
- a description of the location and boundaries of the mitigation site and description of existing site conditions;
- a description of measures to be undertaken if necessary to enhance (e.g., through focused management) the mitigation site for California tiger salamanders;
- proposed management activities, such as managed grazing, management of invasive plants, measures targeted at sustaining populations of burrowing mammals, or other measures to maintain high-quality habitat for California tiger salamanders;
- a description of species monitoring measures on the mitigation site, including specific, objective goals and objectives (including maintaining or improving habitat suitability for California tiger salamanders), performance indicators and success criteria (including maintaining or increasing the abundance of upland refugia for California tiger salamanders), monitoring methods (such as sampling of the abundance of upland refugia), data analysis, reporting requirements, and monitoring schedule. Determining other specific performance/success criteria requires information regarding the specific mitigation site, its conditions, and the specific enhancement and management measures tailored to the mitigation site and its conditions. For example, performance criteria for a mitigation site providing only upland habitat for California tiger salamanders would include the maintenance of grassland habitat of a suitable height and density for burrowing mammals, and maintenance of suitable burrowing mammal populations, whereas a mitigation site providing salamander breeding habitat would also include criteria related to adequate depth and hydroperiod of breeding habitat. As a result, ~~those~~ additional specific criteria will be defined in the HMMP rather than in this SEIR. Nevertheless, the performance/success criteria described in the HMMP will guide the mitigation to manage and protect high-quality habitat for the California tiger salamander, adequate to compensate for impacts.

- a description of the management plan's adaptive component, including potential contingency measures for mitigation elements that do not meet performance criteria; and
- a description of the funding mechanism for the long-term maintenance and monitoring of the mitigation lands.

If lands that SCVWD currently owns, such as mitigation lands acquired for the California red-legged frog for the 2002–2012 SMP, can be enhanced (e.g., via the construction of breeding ponds) in such a way as to substantially improve their value to California tiger salamanders, then SCVWD may use those lands as mitigation for the California tiger salamander. After mitigation has been provided for impacts to a specific area supporting the California tiger salamander from a specific year's SMP Update activities, future (i.e., repetitive) impacts to that area will not require additional mitigation.

The HMMP will be provided to the USFWS and CDFG for review because this species is both state and federally listed. It is possible that this mitigation measure may be refined during the Section 7 consultation process with the USFWS (e.g., in the Biological Opinion covering Project effects on the California tiger salamander) or the Section 2081 consultation process with the CDFG (e.g., in an Incidental Take Permit), in which case the refinements required by these agencies would be implemented.

MM BIO-10 will mitigate impacts to the California tiger salamander to less-than-significant levels by enhancing, managing, and protecting habitat for this species so as to protect its populations, thereby ensuring that the SMP does not substantially reduce the number or restrict the range of this threatened/endangered species, have a substantial adverse effect on this special-status species, or impede the use of its nursery sites.

Impact BIO-12: Impacts on the California Red-Legged Frog (Significance Criteria A, B, and E; Less than Significant with Mitigation)

The California red-legged frog is federally listed as threatened and a California species of special concern. As described under *Determination of Impacts to Wildlife and Fisheries*, proposed maintenance activities may affect California red-legged frog habitat (breeding, foraging, or dispersal) and/or individuals (e.g., during maintenance activities or from increased mortality after construction). For example, maintenance activities may result in the injury or mortality of individuals as a result of worker foot traffic, equipment use, or vehicle traffic. Daily and seasonal movements throughout individuals' home ranges may be temporarily affected during maintenance activities because of disturbance, and substrate vibrations may cause individuals to move out of refugia, exposing them to a greater risk of predation or desiccation. In addition, red-legged frogs may be crushed in their burrows by the passage of heavy equipment or trapped and suffocated. Furthermore, petrochemicals, hydraulic fluids, and solvents that were spilled or leaked from construction vehicles or equipment, or spot-baiting associated with management of animal conflicts, may kill individuals of this species.

Removal of burrows in levees, a component of the management of animal conflicts, could impact California red-legged frogs because of the potential for these frogs to use burrows as refugia. Direct mortality of individuals may occur because of filling or compaction of crevices/holes on levee surfaces or slopes. In addition, the loss of subterranean habitat

caused by filling of burrows and the use of surface barriers to burrowing animals would reduce the availability of refugia, potentially subjecting dispersing frogs to increased predation or desiccation if they were unable to find suitable refugia. Control of burrowing mammal populations would reduce the availability of upland refugia for the frog. The extent of effects to California red-legged frog habitat resulting from management of animal conflicts is difficult to quantify because the extent of and specific locations for animal conflict management generally are not known. More than 12 miles of levees along Calera Creek and the Almaden Calero, Coyote Extension, and Coyote Canals occur in areas where the California red-legged frog is considered extant and where animal conflict management may occur. In addition, animal conflict management could occur in other non-projected locations within potential California red-legged frog habitat.

When performing any type of maintenance that would necessitate work within or adjacent to the active channel, SCVWD would implement BMPs (listed below) to reduce impacts to water quality (e.g., erosion and sediment control, spill prevention, standard herbicide requirements). Implementation of BMPs related to dewatering of work sites would assure that, before dewatering, the best means to bypass flow through a work site would be determined, to minimize disturbance to the channel and avoid direct mortality of aquatic animals such as amphibians. In addition, by implementing BMPs GEN-12 and GEN-15, red-legged frogs would be relocated from work sites before the onset of maintenance activities that potentially could threaten individuals of this species. However, individuals that were found during pre-activity surveys and relocated to suitable habitat outside of the work site may be subjected to physiological stress and greater risk of predation, or may undergo increased competition with frogs already present in the area to which they were relocated.

Similar to the California tiger salamander, the vast majority of proposed sediment removal activities would be in areas where red-legged frogs do not currently occur. Figure 3.3-13 depicts all projected activities relative to the expected distribution of this species in the Project Area, based on known occurrences (primarily from CNDDB 2011) and habitat suitability. As shown in this figure, red-legged frogs are largely absent from the portions of the Santa Clara Valley floor that have been heavily impacted by urban development and agricultural activities.

Since 2004, SCVWD has conducted annual surveys for the presence or absence of amphibians in numerous locations before the application of instream herbicides (see Table 3.3-3); no red-legged frogs were found at any of the locations listed in Table 3.3-3, suggesting that the distribution of this species in and near the Project Area is limited. This species is not known to breed in any of the areas where activities are proposed. Although breeding is possible, this species would be likely to occur sparingly as a non-breeding visitor, if at all, in most of the areas where Proposed Project activities would occur. Therefore, impacts to this species would be limited.

Because sediment removal is a projected activity for the SMP Update, the potential locations where sediment removal could impact red-legged frogs can be predicted. These locations are depicted in Figure 3.3-14 and summarized in Table 3.3-~~16~~17. For clarity, Figure 3.3-14 only shows the projected sediment removal activities within areas where the California red-legged frog is expected to be extant. No areas exist where sediment removal is projected in potential California red-legged frog habitat and where such sediment removal has occurred (or will occur) from 2002–2012. Therefore, all impacts to this

species from 2012–2022 would be new activities. Table 3.3-~~16~~17 takes the "work area percentage" into account, and thus the linear miles of sediment removal in this table represent a subset of the projected work areas shown in Figure 3.3-14. Unlike the California tiger salamander, impacts on California red-legged frogs may occur resulting from in-channel sediment removal activities.

Thus, although the exact acreage of sediment removal activities in predicted California red-legged frog habitat cannot be determined because the location of staging areas and channel access points are not yet known, the potential impact is estimated to be approximately 1–2 acres. Although the California red-legged frog has been recorded in or adjacent to some of the creeks in the Project Area (e.g., Saratoga Creek, Calabazas Creek, Guadalupe Creek, Coyote Creek, Dexter Canyon Creek), no occurrence records are located within the impact areas. Thus, with implementation of the BMPs discussed above, particularly BMP GEN-12 (Protection of Special-Status Amphibian and Reptile Species), the impact on this species would be very limited.

Table 3.3-~~16~~17. Projected Sediment Removal Impacts in Areas of Potential California Red-legged Frog Occurrence, 2012–2022

Creek/River	Sediment Removal Impacts, 2012–2022 (miles)
Alamitos Creek	0.04
Almaden-Calero Canal	0.63
Bodfish Creek	0.01
Calabazas Creek	0.03
Calero Creek	0.04
Coyote Creek	0.14
Guadalupe Creek	0.08
Llagas Creek	0.04
Saratoga Creek	0.01
Stevens Creek	0.01
Uvas-Carnadero Creek	0.00
Total	1.03

Source: Data compiled by Horizon Water and Environment in 2011 based on information from SCVWD

Because vegetation management is a projected activity for the SMP Update, the potential locations where vegetation management could impact red-legged frogs can be predicted. These locations are depicted in Figures 3.3-15, 3.3-16, and 3.3-17 and summarized in Table 3.3-~~17~~18. The table summarizes the acreage along each creek with potential red-legged frog habitat in which instream herbicide application, non-instream herbicide application, and manual vegetation management, respectively, have been projected from 2012–2022. Unlike the California tiger salamander, these three categories of vegetation management activities are described and shown separately for the red-legged frog because frogs, which potentially could breed in SCVWD creeks and are expected to use creeks and riparian habitats preferentially on the landscape, could potentially be impacted differently by these different types of activities. For example, instream herbicide application has greater

potential to result in adverse effects on red-legged frog eggs and larvae than non-instream herbicide application. Taking into account the overlap in areas where the different types of vegetation management would occur, vegetation management activities are projected to occur in a total of 35.42 acres of potential red-legged frog habitat.

Table 3.3-~~17~~18. Projected Vegetation Management Impacts in Areas of Potential California Red-legged Frog Occurrence, 2012–2022

Creek/River	Vegetation Management Impacts, 2012–2022 only (ac)	Vegetation Management Impacts, 2002–2010 and 2012–2022 (ac)	Total Vegetation Management Impacts, 2012–2022 (ac)
Instream Herbicide Application			
Adobe Creek		0.04	0.04
Alamitos Creek	0.04		0.04
Almaden-Calero Canal		0.32	0.32
Calero Creek	0.05		0.05
Cochran Channel		0.00	0.00
Coyote Canal		1.56	1.56
Coyote Canal Extension		0.52	0.52
Coyote Creek	0.48		0.48
Deer Creek	0.01		0.01
Edmundson Creek	0.03		0.03
Greystone Creek		0.01	0.01
Guadalupe Creek	0.09		0.09
Llagas Creek	0.09		0.09
Pajaro River	0.78		0.78
Prospect Creek	0.00		0.00
Randol Creek	0.00	0.03	0.03
Uvas-Carnadero Creek	0.30		0.30
West Branch Randol Creek	0.01		0.01
Total	**1.88**	**2.48**	**4.36**
Non-Instream Herbicide Application			
Adobe Creek		0.00	0.00
Almaden-Calero Canal		4.95	4.95
Calera Creek		0.19	0.19
Cochran Channel	0.24		0.24
Coyote Canal		3.28	3.28
Coyote Creek	0.39		0.39

Table 3.3-~~17~~18. Projected Vegetation Management Impacts in Areas of Potential California Red-legged Frog Occurrence, 2012–2022

Creek/River	Vegetation Management Impacts, 2012–2022 only (ac)	Vegetation Management Impacts, 2002–2010 and 2012–2022 (ac)	Total Vegetation Management Impacts, 2012–2022 (ac)
Deer Creek	0.02		0.02
Edmundson Creek	0.02	0.62	0.64
Evergreen Creek	0.02		0.02
Golf Creek	0.19		0.19
Greystone Creek	0.20	0.33	0.53
Llagas Creek	0.19		0.19
Pajaro River	1.49		1.49
Prospect Creek	0.00		0.00
Randol Creek	0.00	2.60	2.60
Saratoga Creek	0.54		0.54
Stevens Creek	0.04		0.04
Thompson Creek	0.05		0.05
Uvas-Carnadero Creek	0.14		0.14
West Branch Randol Creek	0.62		0.62
West Little Llagas Creek	0.49	2.36	2.84
Total	**4.64**	**14.33**	**18.97**
Manual Vegetation			
Alamitos Creek	0.19		0.19
Almaden-Calero Canal	6.92		6.92
Bodfish Creek	0.16		0.16
Calabazas Creek	0.01		0.01
Calera Creek	0.29		0.29
Calero Creek	0.09		0.09
Coyote Creek	2.62		2.62
Cribari Creek	0.00		0.00
Deer Creek	0.02		0.02
Edmundson Creek	0.19	0.72	0.91
Evergreen Creek	0.03		0.03
Golf Creek	0.12		0.12
Greystone Creek	0.21		0.21
Guadalupe Creek	0.51		0.51
Lions Creek	0.00		0.00

Table 3.3-~~17~~18. Projected Vegetation Management Impacts in Areas of Potential California Red-legged Frog Occurrence, 2012–2022

Creek/River	Vegetation Management Impacts, 2012–2022 only (ac)	Vegetation Management Impacts, 2002–2010 and 2012–2022 (ac)	Total Vegetation Management Impacts, 2012–2022 (ac)
Llagas Creek	0.38	0.09	0.47
McAbee Creek	0.14		0.14
Pajaro River	2.26		2.26
Randol Creek	1.44		1.44
Saratoga Creek	0.09		0.09
Stevens Creek	0.00		0.00
Thompson Creek	5.31		5.31
Uvas-Carnadero Creek	1.82		1.82
West Branch Randol Creek	0.27		0.27
Total	**23.07**	**0.81**	**23.88**

Source: Data compiled by Horizon Water and Environment in 2011 based on information from SCVWD

Although Figures 3.3-15 to 3.3-17 depict the stream reaches in which vegetation management activities are projected, not every area indicated as "projected" on these figures would actually be subject to vegetation management. As explained previously, a "work area percentage" has been applied to some reaches in which only a certain percentage of the reach would undergo management activities. Table 3.3-~~17~~18 takes the "work area percentage" into account, and thus the acreages of vegetation management in this table represent a subset of the projected work areas shown on the corresponding figures.

Much of the projected vegetation management work would occur on levee tops and upper banks, not in the channel habitat where the frogs are expected to concentrate their activities. Thus, the potential for direct effects on red-legged frogs during vegetation management activities on the levees is substantially less than the potential during similar work in aquatic habitats.

Mitigation activities such as gravel augmentation (Mitigation Measure BIO-8) and installation of instream complexity (Mitigation Measure BIO-9) could result in impacts to aquatic species during installation; however, the net effect of these measures on fish and amphibians would be beneficial.

Vegetation management activities would include the application of herbicides, as discussed above. Herbicides have the potential to result in adverse effects on California red-legged frogs as a direct effect on the survival, reproduction, and growth of the frog itself, as well as indirect effects, such as reduction of the prey base or modification of its habitat.

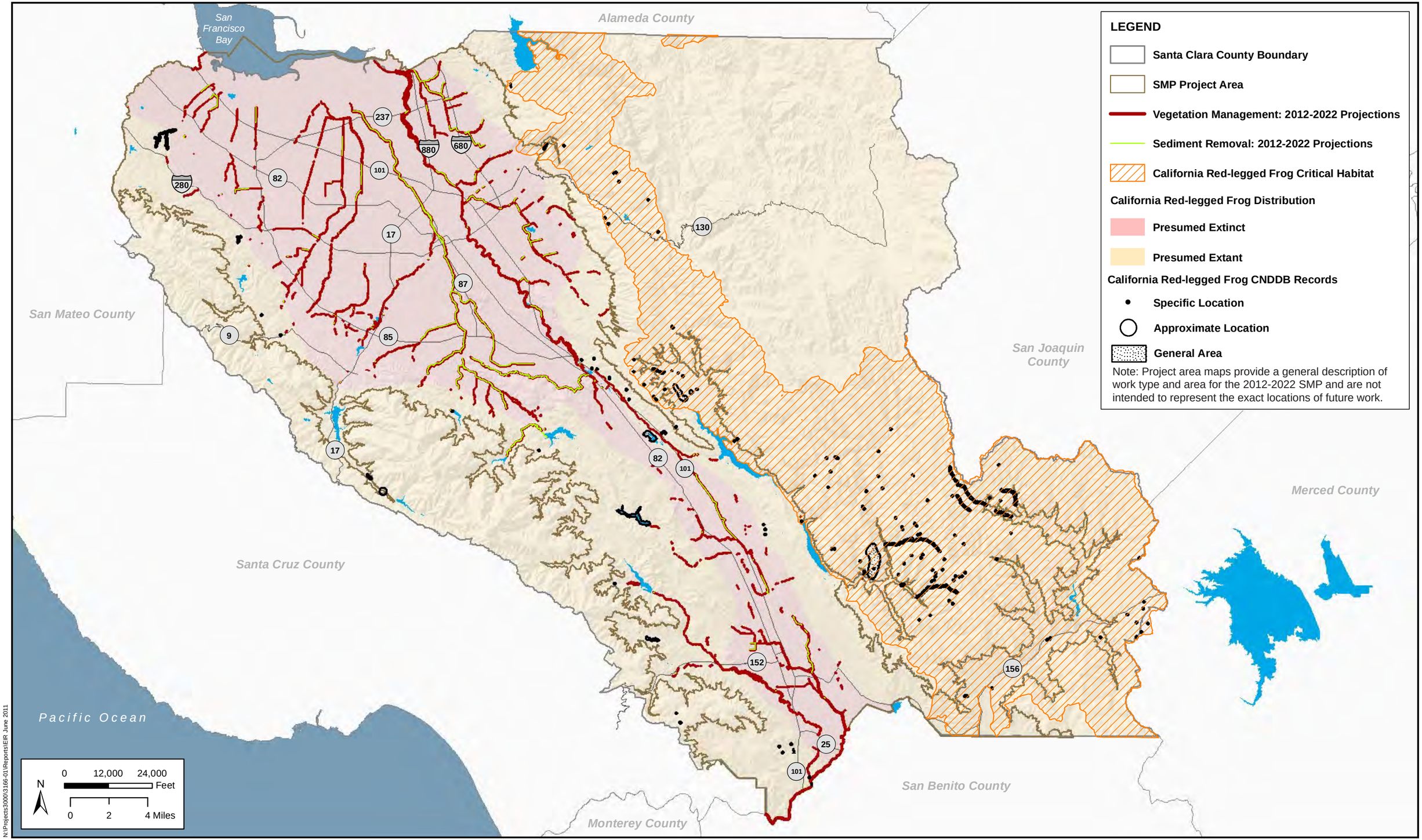

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Figure 3.3-13: Known and Expected California Red-legged Frog Distribution in Santa Clara County

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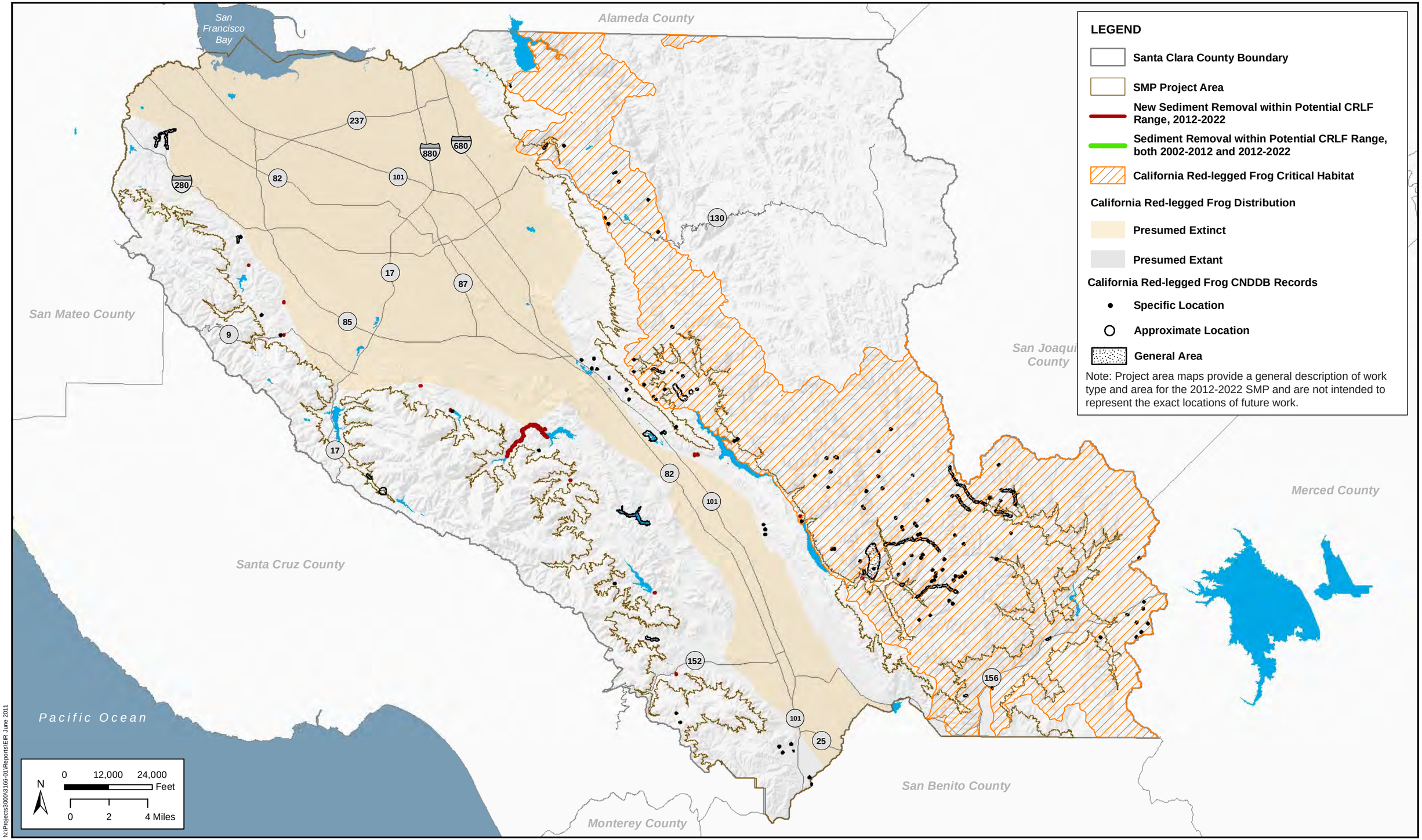

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Figure 3.3-14: Projected Sediment Removal in Areas of Potential California Red-legged Frog Occurrence, 2012-2022

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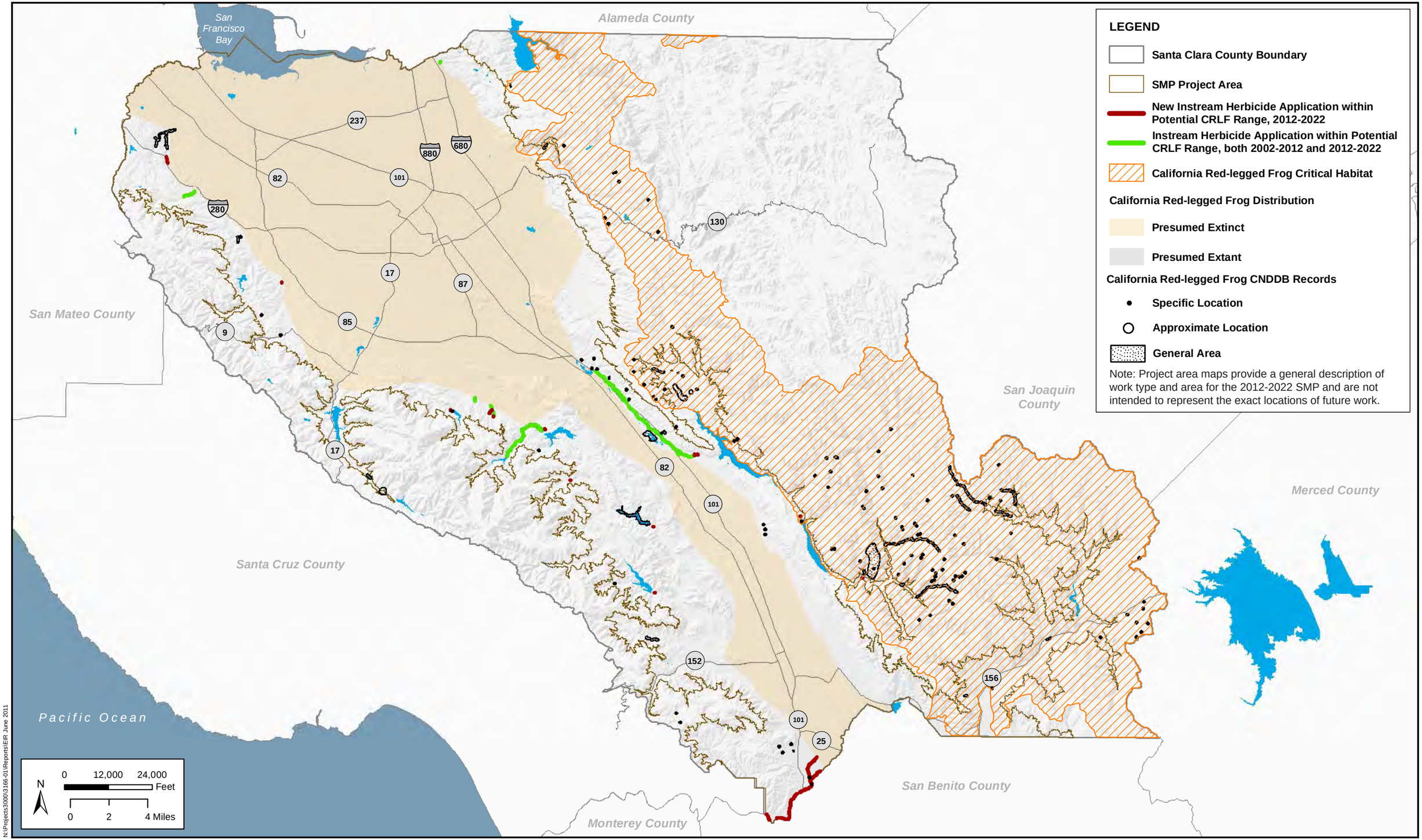

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Figure 3.3-15: Projected Instream Herbicide Application in Areas of Potential California Red-legged Frog Occurrence, 2012-2022

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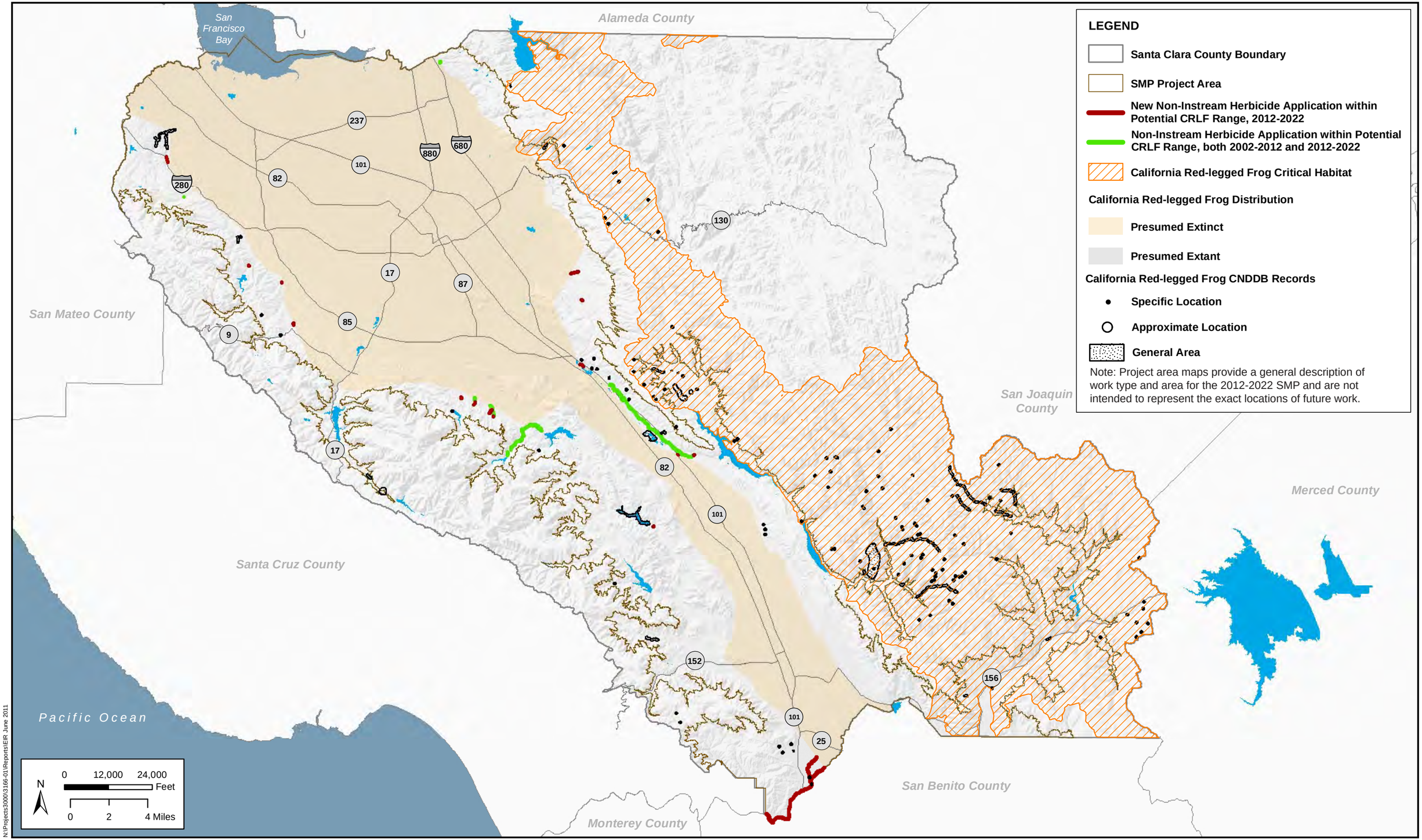

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Figure 3.3-16: Projected Non-Instream Herbicide Application in Areas of Potential California Red-legged Frog Occurrence, 2012-2022

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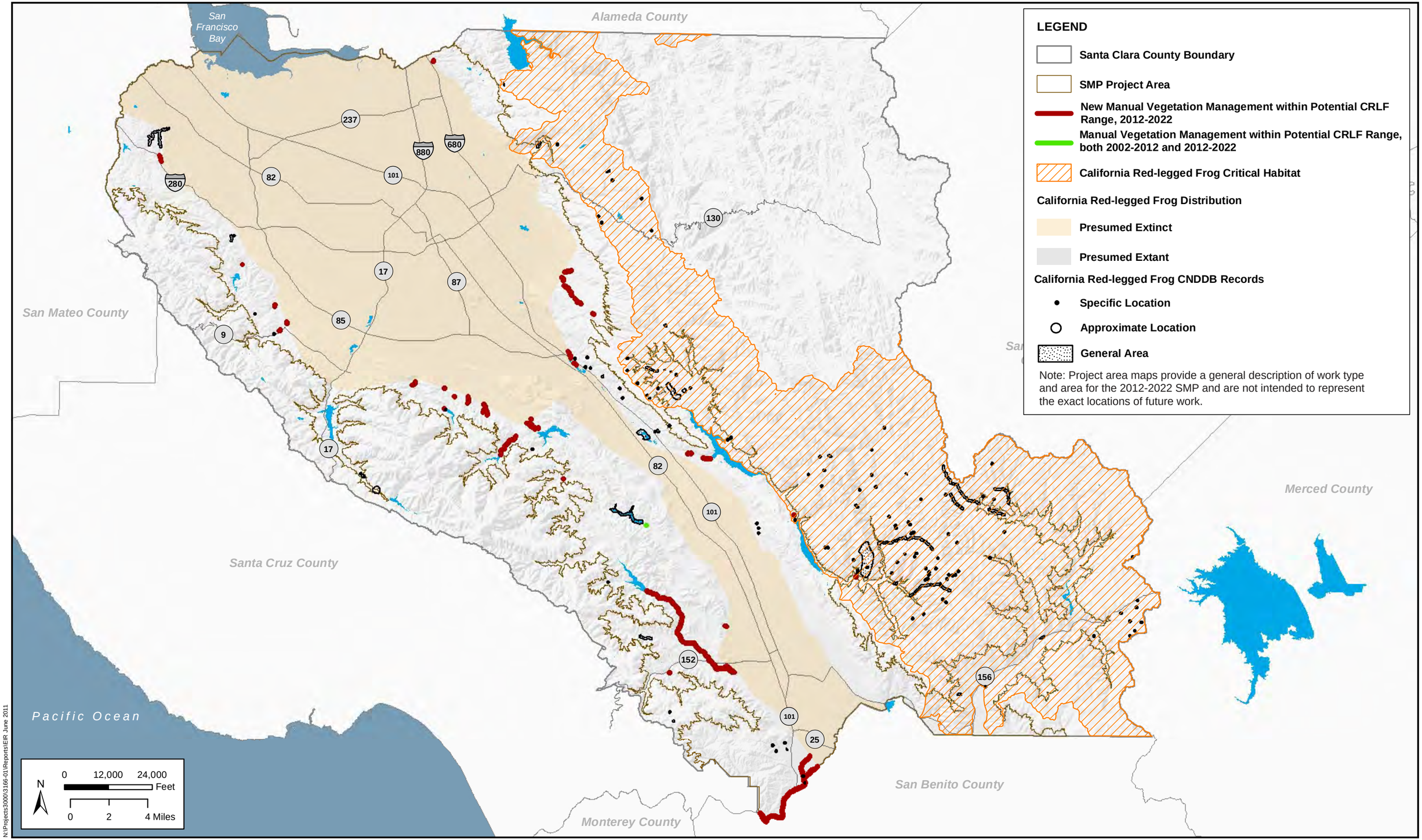

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Figure 3.3-17: Projected Manual Vegetation Management in Areas of Potential California Red-legged Frog Occurrence, 2012-2022

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USEPA has conducted ecological risk assessments to determine the potential risks of labeled uses of several herbicides, including four proposed for use by SCVWD (glyphosate, imazapyr, pendimethalin, and triclopyr), on the federally listed California red-legged frog. Evaluated herbicides proposed for use by SCVWD are as follows, with a summary of USEPA's effects determination:

- Glyphosate: Likely to adversely affect aquatic-phase California red-legged frog via indirect effects through reduction in prey (non-vascular plants) and habitat (aquatic and terrestrial plants). There are no direct effects on the aquatic-phase California red-legged frog for any of the terrestrial or aquatic uses. Likely to adversely affect the terrestrial-phase California red-legged frogs via both direct effects and indirect effects following reduction in prey (terrestrial invertebrates, terrestrial-phase amphibians and mammals) and habitat (terrestrial plants). Further, glyphosate is predicted to result in modification to RLF critical habitat.
- Imazapyr: Likely to adversely affect the California red-legged frog via indirect effects on habitat and/or primary productivity (i.e., ecosystem structure and function for both the aquatic plant community and riparian vegetation). Critical habitat may also be modified. No direct effects are anticipated.
- Pendimethalin: Likely to adversely affect the California red-legged frog via both direct and indirect effects on both terrestrial and aquatic phases of the California red-legged frog. Critical habitat may also be modified.
- Triclopyr: Likely to adversely affect the California red-legged frog via both direct and indirect effects on both terrestrial and aquatic phases of the California red-legged frog. Critical habitat may also be modified.

SCVWD would use a surfactant to enhance the performance of herbicides. Surfactants aid the ability of an herbicide to penetrate the surface of vegetation by increasing its ability to spread over vegetation, stick to foliage, and penetrate thick cuticles. Most aquatic herbicides either require or highly recommend the use of a surfactant to achieve reasonable levels of control. In instances where surfactants are absent from the tank mix, the level of control often is reduced. A reduction in control would cause a greater return frequency, which would translate to more herbicide being used in the system and more frequent disturbance to the site.

In general, aquatic species (e.g., fish and amphibians) are more susceptible to adverse effects than terrestrial wildlife because of the potential for surfactants to alter cell permeability, thus increasing the potential for absorption of chemicals through their thin, moist skin. Some surfactants, particularly those that are nonylphenol-based, have been documented to result in chemical-induced lethargy and unconsciousness in fish, which can result in an increased risk of predation as well as have estrogenic effects (Smith et al. 2004, USFS 2007). However, SCVWD proposes to limit surfactant use of products documented to have the least toxic affect to aquatic life, Agri-dex and Competitor. Both of these surfactants are oil-based (Competitor is vegetable oil-based and the primary ingredient in Agri-dex is a paraffin-based oil) and function by increasing the absorption of herbicides through plant tissues. They are especially useful in increasing the penetration of herbicides through the bark of woody brush or tree stems (Bakke 2007). A study on the toxicity of surfactants to juvenile rainbow trout concluded that Agri-dex was less toxic to rainbow trout than two other commonly used surfactants, R-11 and LI 700 (Smith et al. 2004), and the *2006*

Supplemental Environmental Assessment of NOAA Fisheries Implementation Plan for the Community Based Restoration Program (NOAA 2006) concluded that Agri-dex was among the surfactants least toxic to marine and aquatic organisms (it is unknown whether Competitor was assessed).

Although USEPA has determined that the pesticides listed above are likely to affect adversely the California red-legged frog, formal consultation between USEPA and USFWS has not been completed. Therefore, USEPA has not yet concluded whether each of these pesticides' registration, label, or use instructions needs to be altered so that use of a pesticide will not take or jeopardize the continued existence of the California red-legged frog. SCVWD would continue to use herbicides in compliance with existing applicable state and federal laws and in accordance with the voluntary guidelines established in the PRESCRIBE database managed by the California Department of Pesticide Regulation, which restricts the use of pendimethalin and triclopyr in habitat occupied by the California red-legged frog.

In addition, SCVWD would follow the herbicide use guidelines established in its quality and environmental management system documents, including Q751D02 (*Control of Oversight of Pesticide Use*) and WW75100 (*Vegetation Control Work Instructions*), and the 2012 SMP Manual (Appendix A). These guidelines require that all use of herbicide have the appropriate biological surveys and clearances and that all herbicide applications have a pest control recommendation, provided by a California licensed pest control advisor. A recommendation is provided after each site is surveyed and the most appropriate control methods for the site are determined. Furthermore, to minimize the potential for direct impacts of herbicides on California red-legged frogs, aquatic herbicides can only be used in areas of suitable red-legged frog habitat when the creek is dry and no rain is forecast for the next 48 hours (i.e., when these semi-aquatic species are unlikely to be present).

Critical habitat has been designated for the California red-legged frog (Figure 3.3-13). Projected activities have the potential to affect approximately 1.10 acres of designated critical habitat for the species in ways described above and under *Determination of Impacts to Wildlife and Fisheries*. Specifically, Proposed Project activities could affect the PCEs of critical habitat involving aquatic breeding and non-breeding habitat, upland habitat, and dispersal habitat for the California red-legged frog, as described generally for habitat impacts above. However, adverse effects of Proposed Project activities on red-legged frog critical habitat would be limited to very small areas near the northern end of Coyote Reservoir and the junction of Dexter Creek and Coyote Creek.

SCVWD would implement the following BMPs to reduce impacts to individual California red-legged frogs and their habitats. A description of each BMP is provided in Table 2-12.

Applicable Best Management Practices

BMP GEN-2: Instream Herbicide Application Work Window
BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-8: Protection of Sensitive Fauna Species from Herbicide Use
BMP GEN-12: Protection of Special-Status Amphibian and Reptile Species
BMP GEN-15: Salvage Native Aquatic Vertebrates from Dewatered Channels
BMP GEN-20: Erosion and Sediment Control Measures

BMP GEN-23: Stream Access
BMP GEN-26: Spill Prevention and Response
BMP GEN-30: Vehicle and Equipment Maintenance
BMP GEN-32: Vehicle and Equipment Fueling
BMP GEN-33: Dewatering for Non-Tidal Sites
BMP GEN-35: Pump/Generator Operations and Maintenance
BMP SED-2: Prevent Scour Downstream of Sediment Removal
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-2: Concrete Use near Waterways
BMP ANI-1: Avoid Redistribution of Rodenticides
BMP ANI-4: Animal Control in Sensitive Amphibian Habitat

Conclusion

Implementation of these BMPs would reduce impacts California red-legged frog and its habitat. However, residual impacts to the California red-legged frog would remain because complete avoidance of impacts to this species and its habitat could not be avoided. Because of the regional rarity of the California red-legged frog, any impacts to this species and its habitats would be considered significant (Significance Criteria A, B, and E). Implementation of Mitigation Measure BIO-11 would reduce the impact to the California red-legged frog to a less-than-significant level.

As discussed under Impacts BIO-1 and BIO-2, Mitigation Measure BIO-1 and Mitigation Measure BIO-2 would require SCVWD to provide compensatory mitigation for impacts to wetland, aquatic, and riparian habitats. This mitigation may take a variety of forms, and not all of this mitigation would occur in areas where California red-legged frog occurred. However, Mitigation Measure BIO-1 and Mitigation Measure BIO-2 could result in benefits to red-legged frog through wetland and riparian habitat restoration and the protection and management of mitigation lands that may support this species. Nevertheless, Mitigation Measure BIO-11 would be implemented to reduce the impact on the California red-legged frog and its habitat to a less-than-significant level.

Mitigation Measure BIO-11: Implement Compensatory Mitigation for the California Red-Legged Frog

SCVWD will provide mitigation to compensate for unavoidable impacts to California red-legged frogs and their habitat. SCVWD would refine the quantification of impacts to California red-legged frog habitat on an annual basis. At the end of each year's maintenance period, SCVWD will determine the extent of impacts to lands that are both within the potential range of the California red-legged frog and within potentially suitable habitat for the species. To determine whether the SMP impacts are within the potential range of the species, SCVWD will rely on the mapping in Figure 3.3-13 (which may be as modified over the course of 2012–2022, based on any new information that may modify the understanding of the species' potential range in the Project Area). To determine habitat suitability, an SCVWD biologist will determine whether the impact areas support land uses that are not conducive to California red-legged frog use, such as developed lands; all other land uses will be considered potential California red-legged frog habitat.

Compensation for these effects will be provided via the protection, enhancement, and management of habitat that currently supports, or could support, this species at a 2:1 (mitigation:impact~~:mitigation~~) ratio, on an acreage basis. Compensatory mitigation may be carried out through one or both of the following methods, in order of preference:

- The preservation, management, and enhancement (e.g., through long-term management targeted toward this species) of high-quality habitat that is already occupied by California red-legged frogs
- The restoration or enhancement of degraded habitat or habitat that is unsuitable for use by California red-legged frogs, but that (a) is in close proximity to areas of known occurrence and (b) could be made more suitable for use via construction of one or more breeding ponds, enhancement of breeding and non-breeding aquatic habitat via improvements to emergent vegetation or other cover, or management to improve the quality of upland habitat

Because much of the impact to California red-legged frog habitat will consist of modification of upland refugial/dispersal habitat (rather than aquatic breeding or foraging habitat), the mitigation lands will include upland habitat for this species. All mitigation lands for this species must be located within Santa Clara County and within the area where the species is thought to be extant as shown in Figure 3.3-13 (or as otherwise modified over the course of 2012–2022, based on any new information that may modify the understanding of the species' potential range in the Project Area). SCVWD will develop an HMMP describing the measures that will be taken to manage the property and to monitor the effects of management on the California red-legged frog; the HMMP will include components similar to those described for California tiger salamanders, including the maintenance or improvement of habitat conditions and components (i.e., refugia in dispersal habitat). Determining other specific performance/success criteria for this mitigation requires information regarding the specific mitigation site, its conditions, and the specific enhancement and management measures tailored to the mitigation site and its conditions. For example, performance criteria for a mitigation site providing only upland habitat for California red-legged frogs would include the maintenance of grassland habitat of a suitable height and density for use by dispersing frogs, whereas a mitigation site providing red-legged frog breeding habitat would also include criteria related to adequate depth and hydroperiod of breeding habitat and suitable vegetative cover. As a result, ~~those~~ additional specific criteria will be defined in the HMMP rather than in this SEIR. Nevertheless, the performance/success criteria described in the HMMP will guide the mitigation to manage and protect high-quality habitat for the California red-legged frog, adequate to compensate for impacts.

After mitigation has been provided for impacts to a specific area supporting the California red-legged frog from a specific year's activities, future (i.e., repetitive) impacts to that area will not require additional mitigation.

The HMMP will be provided to the USFWS for review because the California red-legged frog is a federally listed species regulated by the USFWS. It is possible that this mitigation measure may be refined during the Section 7 consultation process with the USFWS (e.g., in the Biological Opinion covering Project effects on the California red-legged frog), in which case the refinements required by the USFWS would be implemented.

MM BIO-11 will mitigate impacts to the California red-legged frog to less-than-significant levels by enhancing, managing, and protecting habitat for this species so as to protect its populations, thereby ensuring that the SMP does not substantially reduce the number or restrict the range of this threatened species, have a substantial adverse effect on this special-status species, or impede the use of its nursery sites.

Impact BIO-13: Impacts on the Foothill Yellow-Legged Frog (Significance Criteria A, B, and E; Less than Significant)

The foothill yellow-legged frog is a California species of special concern. Like the California red-legged frog discussed under Impact BIO-12, it is associated with aquatic habitats in the Project Area. The types of impacts that could occur to foothill yellow-legged frog and the mechanisms by which these impacts could occur would be very similar to those described under *Determination of Impacts to Wildlife and Fisheries* and to those described for the California red-legged frog; thus, those impacts are not repeated here. However, the foothill yellow-legged frog's distribution in the Project Area (Figure 3.3-18) is even more limited than that of the red-legged frog. Figure 3.3-18 depicts all projected activities relative to the expected distribution of this species in the Project Area, based on known occurrences (primarily from CNDDB 2011) and habitat suitability. As shown in this figure, the foothill yellow-legged frog is absent from all but a very small proportion of the areas where activities are projected. Yellow-legged frog is expected to occur primarily above the reservoirs along creeks, and thus activities associated with stream gauges (such as limited sediment removal and vegetation management), and possibly minor maintenance activities, would be the main activities that could affect yellow-legged frog.

Table 3.3-~~18~~19 indicates the linear miles of creek in which sediment removal activities are projected in potential foothill yellow-legged frog habitat, and Table 3.3-~~19~~20 indicates the acreage of projected ~~sediment removal~~vegetation management in potential foothill yellow-legged frog habitat. As shown in these tables, impacts to areas where this species may occur would be very limited. Since 2004, SCVWD has conducted annual surveys for the presence or absence of amphibians in numerous locations before the application of instream herbicides (see Table 3.3-3); yellow-legged frogs have never been found at any of the locations listed in Table 3.3-3, suggesting that the distribution of these species in and near the Project Area is so limited that impacts would be very low.

Table 3.3-~~18~~19. Projected Sediment Removal Impacts in Areas of Potential Foothill Yellow-legged Frog Occurrence, 2012–2022

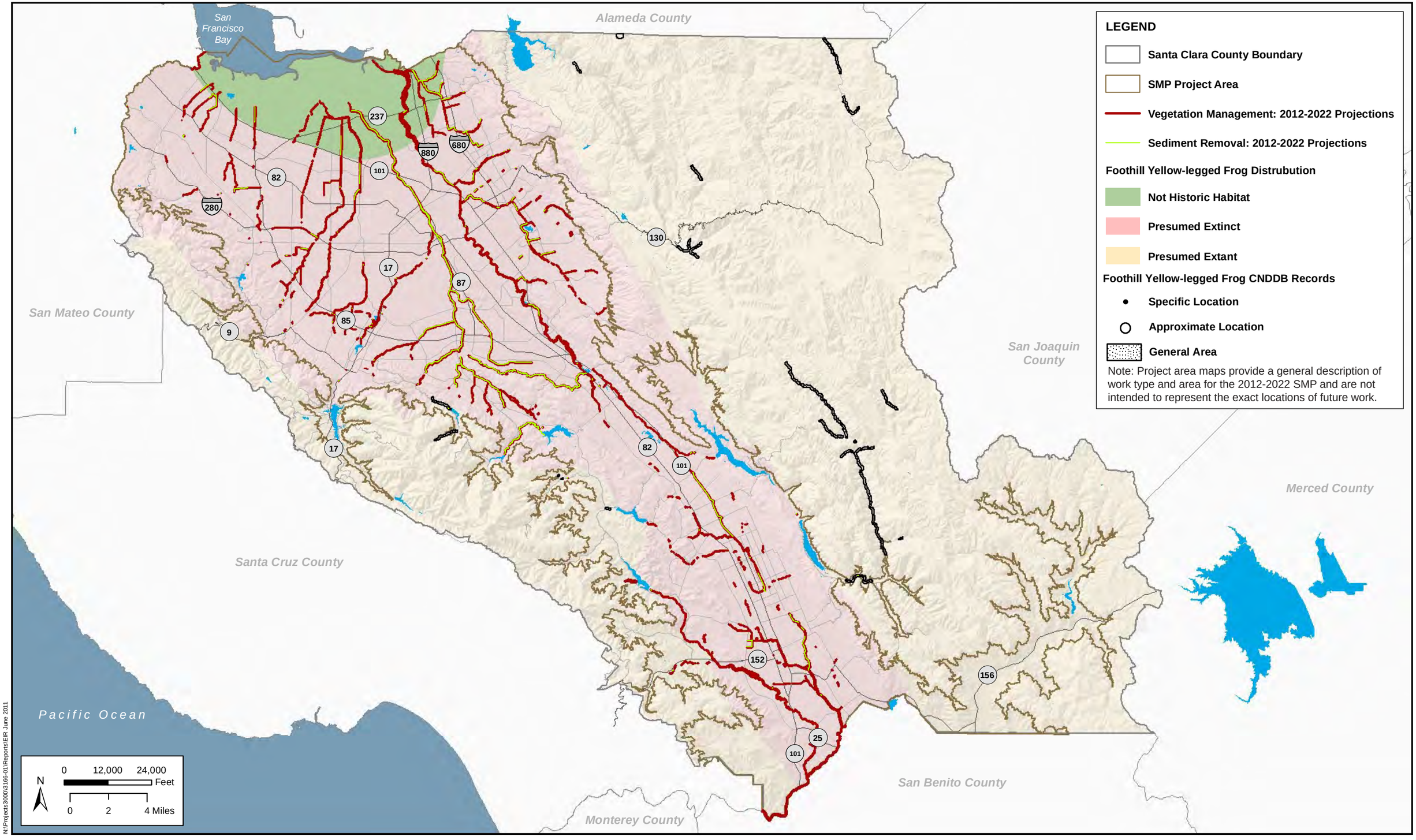
Creek/River	Sediment Removal Impacts, 2012–2022 (miles)
Bodfish Creek	0.02
Coyote Creek	0.28
Guadalupe Creek	0.16
Llagas Creek	0.11
Uvas-Carnadero Creek	<0.01
Total	**0.57**

Source: Data compiled by Horizon Water and Environment in 2011 based on information from SCVWD

Table 3.3-~~19~~20. Projected Vegetation Management Impacts in Areas of Potential Foothill Yellow-legged Frog Occurrence, 2012–2022

Creek/River	Vegetation Management Impacts, 2012–2022 (ac)
Instream Herbicide Application	
Coyote Creek	0.18
Guadalupe Creek	0.09
Llagas Creek	<0.01
Uvas-Carnadero Creek	0.03
Total	0.30
Manual Vegetation Management	
Bodfish Creek	0.16
Coyote Creek	0.92
Guadalupe Creek	0.09
Llagas Creek	0.09
Uvas-Carnadero Creek	0.37
Total	**1.63**

Source: Data compiled by Horizon Water and Environment in 2011 based on information from SCVWD



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H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Figure 3.3-18: Known and Expected Foothill Yellow-legged Frog Distribution in Santa Clara County

Santa Clara Valley Water District Stream Maintenance Program EIR (3166-01)

July 2011

SCVWD would implement the following BMPs to reduce impacts to individual foothill yellow-legged frogs and their habitats. A description of each BMP is provided in Table 2-12.

Applicable Best Management Practices

BMP GEN-2: Instream Herbicide Application Work Window
BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-8: Protection of Sensitive Fauna Species from Herbicide Use
BMP GEN-12: Protection of Special-Status Amphibian and Reptile Species
BMP GEN-15: Salvage Native Aquatic Vertebrates from Dewatered Channels
BMP GEN-20: Erosion and Sediment Control Measures
BMP GEN-23: Stream Access
BMP GEN-26: Spill Prevention and Response
BMP GEN-30: Vehicle and Equipment Maintenance
BMP GEN-32: Vehicle and Equipment Fueling
BMP GEN-33: Dewatering for Non-Tidal Sites
BMP GEN-35: Pump/Generator Operations and Maintenance
BMP SED-2: Prevent Scour Downstream of Sediment Removal
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-2: Concrete Use near Waterways
BMP ANI-1: Avoid Redistribution of Rodenticides
BMP ANI-4: Animal Control in Sensitive Amphibian Habitat

Conclusion

Implementation of BMPs would reduce impacts to individual foothill yellow-legged frogs and their habitats considerably. Impacts would occur in such limited areas in which the species could be present, thus affecting such a low number of individuals that implementing these BMPs would be adequate to assure impacts would be less-than-significant.

Although no mitigation would be needed to reduce the impact to foothill yellow-legged frog to a less-than-significant level, a number of mitigation measures for other impacts would benefit this species. As discussed under Impacts BIO-1 and BIO-2, Mitigation Measure BIO-1 and Mitigation Measure BIO-2 would require SCVWD to provide compensatory mitigation for impacts to wetland, aquatic, and riparian habitats. This mitigation may take a variety of forms, and not all such mitigation would occur in areas that would directly benefit the yellow-legged frog. However, Mitigation Measure BIO-1 and Mitigation Measure BIO-2 would result in wetland, aquatic, and riparian habitat restoration, enhancement, and protection, which would benefit the yellow-legged frog in areas where these mitigation measures would overlap with the yellow-legged frog's current range.

Impact BIO-14: Impacts on Non-Special-Status Fish and Amphibians (Significance Criteria A and E; Less than Significant with Mitigation)

As discussed in Section 3.3.3, *Environmental Setting*, the rivers and creeks of Santa Clara County are home to 12 native species of fish (SCVWD 1995, Leidy 2007). In addition to the special-status fish mentioned under Impacts BIO-8, 9, and 10, native fish such as the California roach, hitch, Sacramento sucker, threespine stickleback, and others are present in the Project Area.

Small numbers of the fall-run Chinook salmon also are known to occur in the Project Area, in Coyote Creek, Los Gatos Creek, and the Guadalupe River (Leidy et al. 2003). This species uses the lower reaches of Coyote Creek and Alviso Slough as migration corridors between estuarine habitats and upstream spawning and rearing habitats. However, genetic analysis has confirmed that Chinook in South Bay streams are all derived from hatchery stock (Hedgecock 2002), and conditions for successful spawning in the Project Area are marginal because of low water levels in the creeks in fall, when this species typically spawns. Likewise, several species of non-special-status amphibians, such as the western toad and Pacific chorus frog use Project Area creeks as breeding and foraging habitat.

Various Proposed Project activities would impact non-special-status fish and amphibians in the Project Area, in ways described under *Determination of Impacts to Wildlife and Fisheries*. The non-special-status fish and amphibians that would be impacted by the Proposed Project are relatively abundant and widespread, with the exception of the Chinook salmon, which is not native to South Bay streams. As a result, any one maintenance activity would not result in a substantial effect on regional populations. However, over the entire geographic and temporal scope of the SMP Update, Proposed Project activities could have the potential to impact relatively large numbers of non-special-status fish and amphibians, which would result in modifications to extensive areas of their habitats. In addition, mitigation activities such as gravel augmentation (Mitigation Measure BIO-8) and installation of instream complexity (Mitigation Measure BIO-9) could result in impacts to aquatic species during installation; however, the net effect of these measures on fish and amphibians would be beneficial.

When performing any type of maintenance activity that would necessitate work within or adjacent to the active channel, SCVWD would implement BMPs to reduce impacts to water quality (e.g., erosion and sediment control, spill prevention, standard herbicide requirements). In addition, implementation of BMPs related to dewatering of work sites would assure that, before dewatering, the best means to bypass flow through a work site would be determined, to minimize disturbance to the channel and avoid direct mortality of fish. Sediment removal BMPs would assure that low-flow channels within non-tidal streams were configured with the appropriate depth for fish passage. All the BMPs that would be implemented to reduce impacts to non-special-status fish and amphibians are as follows, and a description of each is provided in Table 2-12.

Applicable Best Management Practices

BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-2: Instream Herbicide Application Work Windows
BMP GEN-15: Salvage Native Aquatic Vertebrates from Dewatered Channels
BMP GEN-20: Erosion and Sediment Control Measures
BMP GEN-236: Stream Access
BMP GEN-26: Spill Prevention and Response
BMP GEN-30: Vehicle and Equipment Maintenance
BMP GEN-32: Vehicle and Equipment Fueling
BMP GEN-32: Dewatering for Non-Tidal Sites
BMP GEN-34: Dewatering in Tidal Work Areas
BMP GEN-35: Pump/Generator Operations and Maintenance
BMP SED-2: Prevent Scour Downstream of Sediment Removal
BMP SED-3: Restore Channel Features
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-2: Concrete Use near Waterways

Conclusion

Implementation of these BMPs would reduce impacts to populations and habitat of non-special-status fish and amphibians. However, residual impacts would remain. Because of the broad scope of the SMP Update—the number of these species that would be affected directly and indirectly, and the extent of habitat impacts—the collective Proposed Project activities would have the potential to substantially affect the population. Thus, impacts to individuals and their habitats resulting from the Proposed Project would be significant (Significance Criterion A).

As discussed under Impacts BIO-1 and BIO-2, Mitigation Measure BIO-1 and Mitigation Measure BIO-2 would require SCVWD to provide compensatory mitigation for impacts to wetland, aquatic, and riparian habitats. This mitigation may take a variety of forms, but all potential mitigation for impacts to those habitats would benefit non-special-status fish or amphibians, either directly or indirectly. Mitigation Measure BIO-1 and Mitigation Measure BIO-2 would result in benefits to these species through wetland, aquatic, and riparian habitat restoration, enhancement, and protection, which would help to maintain water quality, cover, and instream habitat complexity for them. In addition, implementation of Mitigation Measure BIO-9 would increase instream complexity, and thus would be expected to benefit non-special-status fish or amphibians in a manner similar to that described for steelhead. Mitigation Measure BIO-1, Mitigation Measure BIO-2, and Mitigation Measure BIO-9 would be implemented to reduce the impact to non-special-status fish and amphibians to a less-than-significant level.

Impact BIO-15: Impacts on Essential Fish Habitat (Significance Criteria A and D; Less than Significant)

As noted in Section 3.3.2, *Regulatory Setting*, the only fish species subject to a fisheries management plan that occurs in the Project Area with any regularity is the Chinook salmon, which is regulated by the Pacific Fishery Management Council's *Salmon Fishery Management Plan* (Pacific Fishery Management Council 1999). Although the Chinook salmon in the Project Area have been recognized as strays from hatchery releases (NMFS 1999, Hedgecock 2002), NMFS still considers habitat used by Chinook salmon in the South Bay as EFH.

Several fish species regulated by the *Pacific Groundfish Fisheries Management Plan* (Pacific Fishery Management Council 2008), such as the leopard shark, English sole, starry flounder, and big skate, occur in tidal habitats of South San Francisco Bay and occasionally disperse upstream into the reaches of Alviso Slough, Coyote Slough, Guadalupe Slough, Stevens Creek, San Francisquito Creek, Lower Penitencia Creek, Permanente Creek, Sunnyvale East and West Channels, and San Tomas Aquino Creek in the Project Area. Fish regulated by the *Coastal Pelagics Fisheries Management Plan* (Pacific Fishery Management Council 1998), such as the northern anchovy, Pacific sardine, and jack mackerel also occur in the South Bay but are less likely to occur in the uppermost tidal reaches of sloughs where Proposed Project activities would take place. Because of the presence of at least some species managed by one of these plans, these tidal waters possibly could be considered EFH.

The types of effects that Proposed Project activities could have on Chinook salmon and associated EFH that would support these species are the same as those described for steelhead under Impact BIO-8, with the caveat that only the impacts to CCC steelhead, occurring in the Santa Clara Basin would apply to Chinook salmon. Chinook salmon historically did not spawn in streams flowing into South San Francisco Bay. Since the mid-1980s, however, small numbers of fall-run Chinook salmon have been found in several such streams, including Coyote Creek, Los Gatos Creek, and the Guadalupe River in the Project Area (Leidy et al. 2003). However, genetic analysis, timing of spawning, and the detection of coded, wire-tagged hatchery fish in the Project Area suggest that these fish are derived from Central Valley fall-run stock (Garcia-Rossi and Hedgecock 2002), possibly hatchery releases. Conditions for successful spawning in the Project Area would be marginal because these fish spawn during fall when streamflow is at its lowest. As a result, up-migrating adults would have difficulty accessing spawning areas. Although spawning has been documented in SCVWD-maintained creeks, whether up-migrating adults have hatched on these creeks or if the adults that were observed were direct strays from other areas is unknown. Thus, no evidence exists that Chinook salmon have become naturalized in the Project Area.

Proposed Project activities would have limited effects on potential EFH in tidal waters, but such impacts may occur because of both projected sediment removal and vegetation management activities and unprojected activities (e.g., bank stabilization and minor maintenance). Sediment removal would occur in tidal areas only in the uppermost reach of Alviso Slough. Sediment removal activities would actually increase the extent of aquatic habitat for a few years, until sediment accumulation once again created wetlands within these aquatic habitats. However, during sediment removal, turbidity may increase, potentially affecting the health or foraging ability of fish in tidal waters.

Vegetation management activities would occur more widely adjacent to tidal waters; such activities would occur along San Francisquito Creek, the Sunnyvale West Channel, Moffett Channel, Guadalupe Slough, Coyote Slough, Alviso Slough, San Tomas Aquino Creek, and Permanente Creek. Some potential would exist for water-quality impacts caused by drift of herbicides into tidal sloughs containing EFH. Degradation of water quality may be particularly detrimental to young fish of species that use South Bay sloughs as nursery habitat.

Vegetation management activities in and adjacent to tidal sloughs would not result in a loss of EFH, although some vegetation removal would occur, causing a minor loss of habitat structure. Sediment removal areas within tidal channels projected from 2012–2022 would include only a very small amount of tidal channel that was not already impacted (and those impacts compensated for) from 2002–2012; this reach occurs in the Guadalupe River upstream from Gold Street. The reach of tidal channel in this area is short, and sediment removal from this area would not result in the loss of EFH. Therefore, no significant loss of EFH would occur.

The effects of Proposed Project activities on EFH and fish species regulated by the Coastal Pelagics and Pacific Groundfish Fisheries Management plans would not be substantial because of the limited overlap of Proposed Project activities with tidal waters. Furthermore, SCVWD would implement of the following BMPs to reduce impacts to fish and their habitat, including EFH; a description of each BMP is provided in Table 2-12.

Applicable Best Management Practices

BMP GEN-1: In-Channel Work Window
BMP GEN-2: Instream Herbicide Application Work Window
BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-8: Protection of Sensitive Fauna Species from Herbicide Use
BMP GEN-20: Erosion and Sediment Control Measures
BMP GEN-23: Stream Access
BMP GEN-26: Spill Prevention and Response
BMP GEN-30: Vehicle and Equipment Maintenance
BMP GEN-32: Vehicle and Equipment Fueling
BMP GEN-33: Dewatering for Non-Tidal Sites
BMP GEN-34: Dewatering in Tidal Work Areas
BMP VEG-1: Minimize Local Erosion Increase from In-Channel Vegetation Removal
BMP VEG-3: Use Appropriate Equipment for Instream Removal
BMP BANK-2: Concrete Use near Waterways

Conclusion

Implementation of these BMPs would reduce impacts to EFH and associated fish species considerably. Because no evidence exists that Chinook salmon have naturalized in SCVWD-maintained creeks, Proposed Project activities are not expected to affect adversely the viability of this species' populations in the Project Area. As a result, with implementation of these BMPs, impacts on this species would be less than significant. Likewise, these BMPs would be adequate to assure the impacts to EFH and associated species in tidal areas would be less-than-significant.

Although no mitigation would be needed to reduce impacts to EFH to less-than-significant levels, a number of mitigation measures for other impacts would benefit EFH and associated species. As discussed under Impacts BIO-1 and BIO-2, Mitigation Measure BIO-1 and Mitigation Measure BIO-2 would require SCVWD to provide compensatory mitigation for impacts to wetland, aquatic, and riparian habitats. This mitigation may take a variety of forms, and not all such mitigation would occur in areas that would directly benefit EFH or associated species. However, Mitigation Measure BIO-1 and Mitigation Measure BIO-2 would result in benefits to fish through wetland, aquatic, and riparian habitat restoration, enhancement, and protection, which would help to maintain water quality, cover, and instream habitat complexity for these species. Mitigation Measure BIO-1 would incorporate a tidal wetland mitigation component that would benefit EFH species. In addition, implementation of Mitigation Measure BIO-8 would compensate for impacts to steelhead spawning gravel, which also would provide potential spawning habitat for the Chinook salmon. Mitigation Measure BIO-9 would increase instream complexity, and thus would be expected to benefit Chinook salmon in a manner similar to that described for steelhead.

Impact BIO-16: Impacts on the Western Pond Turtle (Significance Criteria A, B, and E; Less than Significant with Mitigation)

Suitable habitat for the western pond turtle (a California species of special concern) consists of ponds or instream pools (i.e., slack water environments) with available basking sites, nearby upland areas with clay or silty soils for nesting, and shallow aquatic habitat with emergent vegetation and invertebrate prey for juveniles (Jennings and Hayes 1994). In the Project Area, all perennial creeks, many intermittent creeks, and most ponds (those not completely isolated by development) have some potential to support the western pond turtle. Figure 3.3-19 shows the known locations of this species in the county. Impacts of proposed stream maintenance activities may affect aquatic habitat used by western pond turtles for foraging or dispersal, upland habitat used for nesting, and individuals or populations of the species.

As described under *Determination of Impacts to Wildlife and Fisheries*, and similar to the California red-legged frog impact discussion, proposed maintenance activities may result in the injury or mortality of turtles. For example, individual turtles or their eggs may be directly harmed or killed during maintenance activities from crushing by construction personnel or equipment or as a result of desiccation or burying. Such impacts may occur because of both projected sediment removal and vegetation management activities and unprojected activities (e.g., bank stabilization, management of animal conflicts, and minor maintenance). In addition, riparian and upland areas that provide nesting habitat,

dispersal habitat, and refugia for western pond turtles may be temporarily or permanently lost during bank stabilization activities and the construction of temporary stream access routes. Activities requiring dewatering also would result in a temporary loss of aquatic habitat. Vegetation management may reduce instream habitat structure, including basking areas, vegetation that provides concealment from predators, and habitat that supports turtle prey. Mitigation activities such as gravel augmentation (Mitigation Measure BIO-8) and installation of instream complexity (Mitigation Measure BIO-9) could result in impacts to western pond turtles during installation; however, the net effect of these measures on turtles would be beneficial.

When performing any type of maintenance that necessitated work within or adjacent to the active channel, SCVWD would implement BMPs (listed below) to reduce impacts to water quality (e.g., erosion and sediment control, spill prevention, and standard herbicide requirements). Implementation of BMPs related to dewatering of work sites would assure that, before dewatering, the best means to bypass flow through a work site would be determined, to minimize disturbance to the channel and avoid direct mortality of aquatic animals. In addition, by implementing BMPs GEN-12 and GEN-15, western pond turtles would be relocated from the work site before the onset of maintenance activities. However, individuals that were found during pre-activity surveys and relocated to suitable habitat outside of the work site may be subjected to physiological stress and greater risk of predation, or may undergo increased competition with turtles already present in the area to which they were relocated.

SCVWD would implement of the following BMPs to reduce impacts to western pond turtles. A description of each BMP is provided in Table 2-12.

Applicable Best Management Practices

BMP GEN-2: Instream Herbicide Application Work Window
BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-8: Protection of Sensitive Fauna Species from Herbicide Use
BMP GEN-12: Protection of Special-Status Amphibian and Reptile Species
BMP GEN-15: Salvage Native Aquatic Vertebrates from Dewatered Channels
BMP GEN-20: Erosion and Sediment Control Measures
BMP GEN-23: Stream Access
BMP GEN-26: Spill Prevention and Response
BMP GEN-30: Vehicle and Equipment Maintenance
BMP GEN-32: Vehicle and Equipment Fueling
BMP GEN-35: Pump/Generator Operations and Maintenance
BMP SED-2: Prevent Scour Downstream of Sediment Removal
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-2: Concrete Use near Waterways

Conclusion

Implementation of these BMPs would reduce impacts to western pond turtles and their habitats. However, residual impacts would remain because it would not be feasible to avoid all individuals (particularly nests with eggs) and habitat loss while still meeting project goals and public health and safety directives. Although western pond turtles are widespread in the Project Area, the species is not particularly abundant there. Because individuals of this species can be long-lived, the widespread nature of the species in the Project Area may belie a population that likely would decline substantially in the future because of poor reproduction, as young turtles are seen in relatively few parts of the Project Area. Therefore, the loss of individuals or of important aquatic or upland habitat could reduce the viability of a population to the extent that it would be extirpated. This impact would be considered significant (Significance Criteria A, B, and E).

As discussed under Impacts BIO-1 and BIO-2, Mitigation Measure BIO-1 and Mitigation Measure BIO-2 would require SCVWD to provide compensatory mitigation for impacts to wetland, aquatic, and riparian habitats. This mitigation may take a variety of forms, but all mitigation for impacts to those habitats could benefit western pond turtle upland or aquatic habitat, directly or indirectly. Mitigation Measure BIO-1 and Mitigation Measure BIO-2 would result in benefits to this species through wetland, aquatic, and riparian habitat restoration, enhancement, and protection. These measures would help to maintain water quality, cover, and instream habitat complexity while protecting upland refugia and nesting habitat. In addition, implementation of Mitigation Measure BIO-9 would increase instream complexity; this complexity would include installation or improvement of large woody debris, instream flow wings, or other features that would compensate for the loss of turtle basking habitat as a result of the Proposed Project. Mitigation Measure BIO-1, Mitigation Measure BIO-2, and Mitigation Measure BIO-9 would be implemented to reduce the impact to the western pond turtle to a less-than-significant level.

Impact BIO-17: Impacts on the California Horned Lizard (Significance Criteria A, B, and E; Less than Significant)

The California horned lizard (a California species of special concern) is associated with a variety of open vegetation communities, including chaparral, coastal scrub, and annual grassland, as well as with clearings in riparian woodlands. These communities are characterized by sandy, loosely textured soils that are the lizards' preferred habitat (Jennings and Hayes 1994) and by the presence of native harvester ants (*Pogonomyrmex barbatus*), which are a primary part of their diet (Fisher et al. 2002). However, suitable habitat is scarce in the Project Area, and the species has been recorded from very few areas near projected work sites (Figure 3.3-19). As a result, this species likely would be present only in very low numbers in areas where it could be impacted by Proposed Project activities.

Nevertheless, some potential would exist for individuals of this species to be killed or injured during stream maintenance activities from crushing by construction personnel or equipment. Such impacts may occur because of both projected sediment removal and vegetation management activities and unprojected activities (e.g., bank stabilization, management of animal conflicts, and minor maintenance). In addition, the introduction of non-native Argentine ants, the modification of habitats to favor these ants instead of native

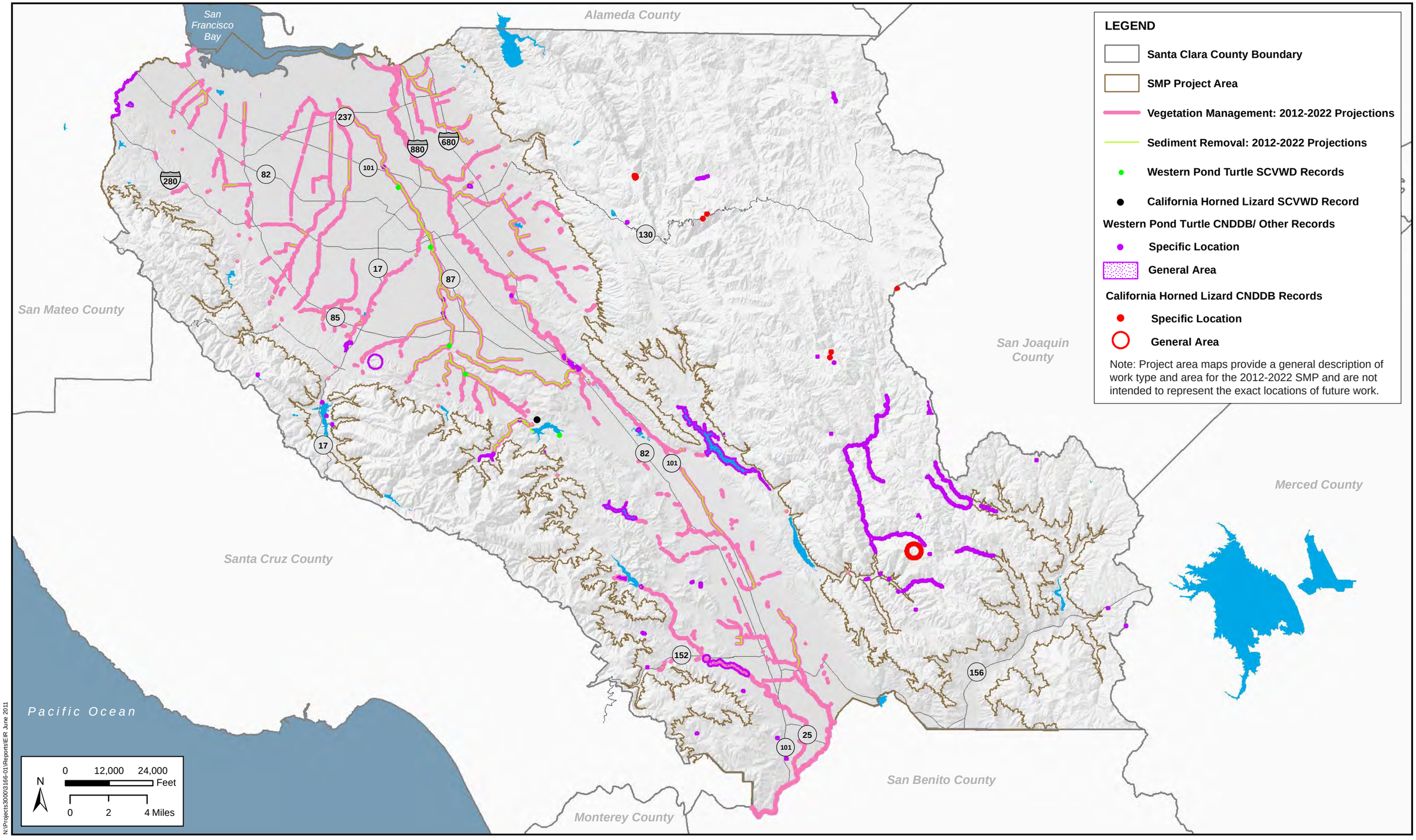

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Figure 3.3-19: Western Pond Turtle and California Horned Lizard CNDDB Occurrences in Santa Clara County

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harvester ants, and the introduction of non-native or invasive plants that would degrade habitat quality may affect the species after maintenance activities were complete. However, the likelihood of such impacts would be extremely low because suitable habitat in the Project Area primarily occurs in uplands in less developed areas outside of stream maintenance work sites (with much more limited habitat in clearings within riparian areas). Furthermore, populations of the California horned lizard in the Project Area are limited in number and extent, and few individuals likely would be present. This species occurs much more commonly just to the east in the interior of the Diablo Range, but only very sparingly on the fringes of the Project Area itself. Therefore, the Proposed Project would not have a substantial effect on regional populations of the species (which would include those in the Diablo Range).

SCVWD would implement the following BMPs, to limit the area of disturbance and to protect special-status reptiles such as the California horned lizard. A description of each BMP is provided in Table 2-12.

Applicable Best Management Practices

BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-12: Protection of Special-Status Amphibian and Reptile Species

Conclusion

Implementation of these BMPs would be adequate to assure the potential impact to the California horned lizard would be less-than-significant. No mitigation would be required.

Impact BIO-18: Impacts on the Black Skimmer (Significance Criteria A, B, and E; Less than Significant)

The black skimmer (a California species of special concern) is associated with saline-managed pond habitats, which occur only in the northernmost portion of the Project Area. Black skimmers nest on small islands within managed ponds; this nesting habitat is ephemeral and thus is not mapped. Sediment management activities under the Proposed Project would not directly affect black skimmer nesting habitat. Similarly, proposed vegetation management activities are not expected to occur in suitable nesting habitat that currently exists, nor are vegetation management activities proposed in areas that are likely to be converted to suitable nesting habitat for this species in the next 10 years. Although herbicide application and mowing is projected to occur along levees adjacent to breeding habitat, because these activities would not occur in the managed pond habitat itself and would be of short duration in any specific area, they are not expected to disturb nesting skimmers to the point of nest abandonment.

The only activities with some potential to affect nesting black skimmers would be minor maintenance activities. Although these activities are not projected, some road grading (e.g., along levee roads around saline managed ponds) or removal of sediment or debris at flap gates possibly could occur near nesting sites for this species. Thus, some potential would exist for minor maintenance activities to disturb nesting skimmers, possibly to the point of abandonment of eggs or young.

Conclusion

SCVWD would implement BMP GEN-6 (*Minimize Impacts to Nesting Birds via Site Assessments and Avoidance Measures*) to minimize the potential for Proposed Project activities to impact nesting birds. With implementation of this BMP, no disturbance of nesting black skimmers is expected to occur. Therefore, the impact to this species would be less than significant, and no mitigation would be required.

Impact BIO-19: Impacts on the Western Snowy Plover (Significance Criteria A, B, and E; Less than Significant)

The western snowy plover (federally listed as threatened and a California species of special concern) is associated with non-tidal saline managed pond and salt panne habitats, which occur only in the northernmost portion of the Project Area. Figure 3.3-20 depicts the locations of potential (or recent) western snowy plover breeding habitat in the Project vicinity.

No sediment removal is projected to occur in western snowy plover habitat. Similarly, vegetation management activities are not projected to occur in currently suitable nesting habitat or in areas that are likely to be converted to suitable nesting habitat for these species in the next 10 years. Although herbicide application and mowing are projected to occur along levees, these activities would occur along outboard levees (i.e., those along sloughs) that would not be used for nesting by snowy plovers in the Project Area.

Although no activities are projected in or adjacent to habitat that is currently used by nesting snowy plovers, some potential would exist for Proposed Project activities to disturb nesting plovers. This species can select breeding areas opportunistically, and possible changes in habitat from 2012–2022 could result in use of new areas by breeding plovers. For example, if management of ponds adjacent to projected activities (such as Pond A4 between Moffett Channel and Guadalupe Slough, or Pond A18 adjacent to South Coyote Slough) changed so that these ponds became suitable for nesting, then plovers may nest in areas adjacent to projected activities. Minor maintenance road work and sediment/debris removal at flap gates, which are not projected activities, would occur in bayfront areas, and such activities potentially could occur along levees near breeding plovers. Sediment reuse, such as sediment disposal at the edges of managed ponds to provide upland transition zones for future tidal restoration, also may occur at the edges of ponds where snowy plovers could breed. Likewise, if activities such as vegetation management or management of animal conflicts needed to occur in non-projected areas, such as segments of Alviso Slough along Pond A12, then Proposed Project activities could occur adjacent to snowy plover nesting and foraging habitat. Even in such cases, Proposed Project activities are not expected to alter directly snowy plover breeding habitat, and no long-term impacts from any Proposed Project activities would occur on snowy plovers.

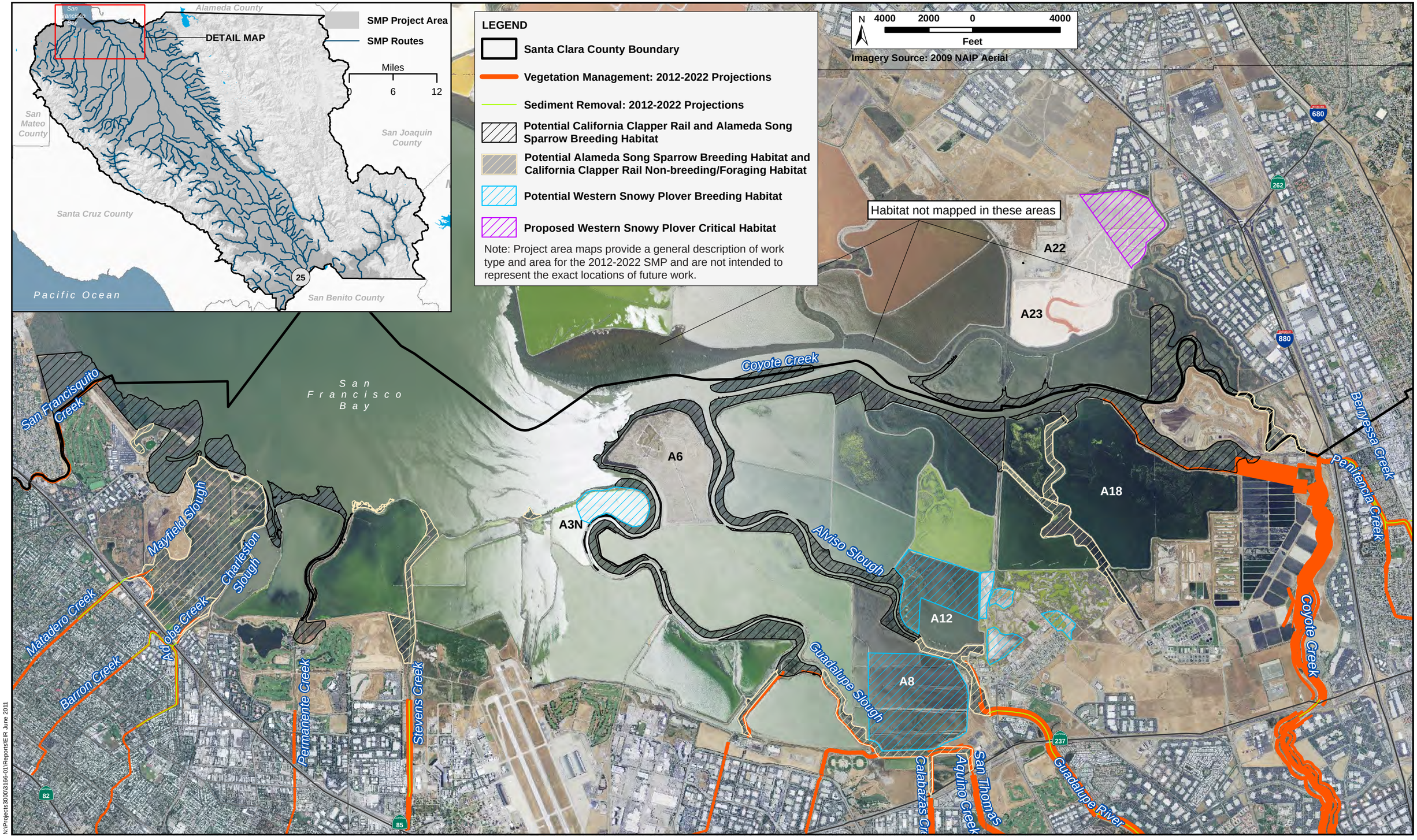

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Figure 3.3-20: Western Snowy Plover, California Clapper Rail, and Alameda Song Sparrow Habitat in Santa Clara County

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However, as described under *Determination of Impacts to Wildlife and Fisheries*, snowy plovers could be disturbed by human activity and movement of equipment from the activities described in the previous paragraph. If such disturbance occurred during the breeding season in close proximity to nesting plovers, abandonment of eggs or chicks could occur, or adults could spend enough time off the nest that eggs could be lost to exposure. Distraction of adults by Proposed Project-related disturbance also could increase the potential for predators to take young or eggs. SMP Update-related disturbance during the non-breeding season could result in temporary avoidance of foraging habitat near the projected activity by plovers, but this impact would be of very short duration.

Conclusion

SCVWD will implement BMP GEN-6 (*Minimize Impacts to Nesting Birds via Site Assessments and Avoidance Measures*) to minimize the potential for Proposed Project activities to impact nesting birds. With implementation of this BMP, no disturbance of nesting snowy plovers is expected to occur. Therefore, the impact to this species would be less than significant, and no mitigation would be required.

Impact BIO-20: Impacts on the California Clapper Rail and Alameda Song Sparrow (Significance Criteria A, B, and E; Less than Significant with Mitigation)

The California clapper rail (federally and state listed as endangered and a state fully protected species) and Alameda song sparrow (a California species of special concern) are similarly associated with salt marsh habitats, and both are known to breed in the Project Area. Thus, these species were assessed together because the potential impacts of the Proposed Project on them would be similar.

Figure 3.3-20 depicts the locations of potential California clapper rail breeding habitat in the Project Area; this mapping is based on known occurrences of clapper rails and characteristics (such as plant species composition and marsh width) of the tidal marshes. The distribution of Alameda song sparrows likely extends farther upstream, primarily because this species will breed in narrower strips of marsh such as those found upstream from some of the broader marsh patches, shown in Figure 3.3-20 as potential clapper rail breeding habitat.

Very little potential would exist for bank stabilization activities to impact California clapper rails and Alameda song sparrows because bank stabilization would be unlikely to be needed in and near the tidal salt and brackish marsh habitats in which these species occur. However, bank stabilization possibly could be needed around artificial structures, such as bridges or culverts, in and near tidal habitats. In-kind bank repairs have occurred in the past on the outboard sides of levees near potential clapper rail habitat. In addition, minor maintenance activities such as flap gate repair, removal of sediment and debris from flap gates, and levee road maintenance occasionally has been necessary in areas near clapper rail habitat. Increased human activity may affect the behavior of the clapper rails and song sparrows, causing them to avoid work sites and possibly exposing them to increased competition with conspecifics in the areas to which they dispersed and to increased levels of predation caused by unfamiliarity with the new area.

Clapper rail reactions to disturbance may vary with the seasons; however, both breeding and non-breeding seasons would be equally critical. Clapper rail mortality is greatest during the winter, primarily because of predation during extreme winter high tides (Eddleman 1989, Albertson 1995). Human-related disturbance may increase the clapper rails' vulnerability to predators. During high tides, clapper rails and other wildlife hide within any available cover in the transition zone and high marsh. As people approach, the birds may flush and attract predators. The presence of people in or near the high marsh plain or upland areas during marsh inundation may even prevent clapper rails from leaving the lower marsh plain to seek cover, which also leaves them vulnerable to predation (Evens and Page 1983, Evens and Page 1986). Disturbance caused by Proposed Project activities in close proximity to clapper rail or Alameda song sparrow habitat during the breeding season could potentially result in the abandonment of nests, eggs, and young.

Neither sediment removal activities nor instream herbicide treatment are projected to occur within suitable breeding habitat for these species. Although clapper rails occasionally may wander upstream along tidal sloughs from their typical salt marsh habitats into tidal brackish/freshwater marsh habitats, they are expected to do so rarely. California clapper rails would not breed in these areas, and song sparrows breeding upstream as far as where sediment removal activities would occur (e.g., along the lower Guadalupe River from Gold Street upstream, and along lower Penitencia Creek upstream from Interstate 880) would be more likely to be of the non-special-status subspecies *gouldii*, or intergrades between *gouldii* and *pusillula*, rather than being Alameda song sparrows. Thus, any sediment removal activities in these areas would not affect breeding habitat or breeding individuals, and would affect only habitat that was used occasionally as foraging habitat by wandering individuals. However, sediment that was removed from other locations potentially could be reused in areas close to clapper rail and song sparrow habitat. Such activities could result in disturbance to individuals, similar to that described above.

Non-instream herbicide application, hand removal of instream vegetation, and mowing are projected to occur along approximately 2.96 miles (taking "work area percentage" into account) of levee adjacent to suitable breeding habitat for the California clapper rail and Alameda song sparrow, including along South Coyote Slough, at the confluence of Guadalupe Slough and Moffett Channel, and near the mouth of San Francisquito Creek. These locations are shown in Figure 3.3-20. Because such vegetation management would be limited to the tops and sides of the levees, potentially extending downslope into bank/bench areas, this activity is not expected to result in the loss of nesting habitat. However, activities resulting in a substantial increase in noise, movement of equipment, or human presence near active nests could result in the abandonment of nests, and possibly the loss of eggs or young as a result. These vegetation management activities are also projected to occur along approximately 3.47 miles (again, accounting for work area percentage) adjacent to potential foraging (but non-breeding) habitat for the California clapper rail and nesting habitat for the Alameda song sparrow along upper Alviso Slough and Guadalupe Slough (Figure 3.3-20).

In addition, removal of vegetation from the sides of levees adjacent to clapper rail and song sparrow habitat, and particularly from lower portions of banks and benches, would reduce the amount of vegetative cover that may be used to conceal individuals from predators during high tides, especially during the winter. Thus, vegetation management activities

that would temporarily remove this habitat (e.g., herbicide application on the outboard levee of the San Francisquito Creek or Coyote Slough) would result in an adverse impact to these species. SCVWD has projected removal of such vegetation from approximately 5 percent of the portion of San Francisquito Creek adjacent to suitable habitat, 30 percent of Coyote Slough/Coyote Creek, 10 percent of Alviso Slough, and 20 percent of Guadalupe Slough.

SCVWD would implement several BMPs to address the impact of maintenance activities on the California clapper rail and Alameda song sparrow, including implementation of BMPs specifically designed to protect the California clapper rail. These BMPs would avoid or minimize impacts to these species through the identification and avoidance of occupied nesting habitat, where practicable, and the use of biological monitors where suitable habitat could not be avoided. These BMPs are as follows, and a description of each is provided in Table 2-12.

Applicable Best Management Practices

BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-6: Minimize Impacts to Nesting Birds via Site Assessments and Avoidance Measures
BMP GEN-8: Protection of Sensitive Fauna Species from Herbicide Use
BMP GEN-11: Protection of Salt Marsh Harvest Mouse and California Clapper Rail
ANI-2: Prevent Harm to the Salt Marsh Harvest Mouse and California Clapper Rail

Conclusion

Implementation of these BMPs would reduce impacts on the California clapper rail and Alameda song sparrow. However, residual impacts to these species' habitats, particularly in upland transitional areas, would remain. For California clapper rails, this impact would be potentially significant because populations of the species and suitable habitat are limited locally and regionally, and loss of active nests may have a substantial effect on local and regional populations (Significance Criteria A, B, and E). For the Alameda song sparrow, this impact would be potentially significant because a relatively large number of breeding birds could be affected, resulting in a substantial effect on local and regional populations (Significance Criteria A, B, and E). Mitigation Measure BIO-1 would be implemented to reduce the impact to a less-than-significant level.

Mitigation Measure BIO-1 includes mitigation for impacts to tidal habitats and tidal marsh species. As mitigation for impacts to tidal habitats and tidal marsh species was predicted to result from the 2002–2012 SMP, SCVWD restored the "Island Ponds" (Ponds A19, A20, and A21), located between Coyote Slough and Mud Slough near Alviso, to tidal action. Monitoring has documented the formation of nascent tidal marsh habitat, including extensive channel networks, within these ponds. Thirty acres of tidal restoration within the Island Ponds was intended to serve as mitigation for impacts to tidal habitats for the 2002–2012 SMP. However, based on the actual impacts from 2002–2012 SMP activities, only 9 acres of tidal mitigation was needed to compensate for those impacts. ~~Furthermore~~As a result, SCVWD created 21 acres of ~~excess~~ tidal habitats beyond what was needed to mitigate for the actual impacts from 2002–2012 SMP activities. SCVWD would use the 21 acres of ~~excess~~ tidal marsh restoration as available mitigation for impacts to tidal wetlands and aquatic habitats, as well as tidal marsh species, under the 2012–2022

SMP Update. Physical breaching of the Island Pond levees and other physical work required for this tidal restoration has already occurred, and no further activities (other than continued monitoring of marsh development per the 2002–2012 SMP monitoring requirements) are proposed by SCVWD. This mitigation would compensate for all impacts of Proposed Project activities on these two species, by restoring extensive vegetated tidal marsh that would provide breeding and foraging habitat for these species, thereby ensuring that the SMP Update does not substantially reduce the number or restrict the range of these species, have a substantial adverse effect on these special-status species, or impede the use of their nursery sites. It is possible that this mitigation may be refined by the USFWS during Section 7 consultation (e.g., in a Biological Opinion), or by the CDFG during CESA consultation, in which case the refined mitigation measure would be implemented.

Mitigation Measure BIO-1 would be implemented to compensate for all impacts on the California clapper rail and Alameda song sparrow to a less-than-significant level.

Impact BIO-21: Impacts on the California Black Rail and Bryant's Savannah Sparrow (Significance Criteria A, B, and E; Less than Significant)

The California black rail (state listed as threatened and a fully protected species) and Bryant's savannah sparrow (a California species of special concern) are similarly associated with salt marsh habitats in the Project Area, and were assessed together because the potential impacts of the Proposed Project on them would be similar.

Bryant's savannah sparrow is known to breed in the Project Area in tidal salt marsh and brackish marsh habitats, diked and muted tidal salt marsh habitats, and (in very limited numbers) inland grasslands. The California black rail is not known or expected to breed in the Project Area, and it occurs only as a rare winter visitor to tidal salt marshes along the edge of the South Bay.

As discussed under *Determination of Impacts to Wildlife and Fisheries*, proposed maintenance activities may result in direct and indirect impacts on these species. However, neither sediment removal activities nor instream herbicide treatment are projected to occur within suitable habitat, as sediment removal would not extend downstream to tidal salt marshes used by them.

Vegetation management activities are proposed in areas in and adjacent to suitable breeding habitat for Bryant's savannah sparrow, including along Coyote Slough and the Coyote Creek Bypass, Lower San Francisquito Creek, and possibly Guadalupe Slough and Alviso Slough. Because Bryant's savannah sparrows may nest in vegetation along the sides of these levees, these activities would have the potential to disturb nesting birds, and nests placed on the ground within vegetation on levees could be destroyed during vegetation management and inspection activities. Both Bryant's savannah sparrows and black rails use vegetation along the toe of the levee slope for cover, especially during very high winter tides that inundate the rest of the marsh plain. As a result, vegetation removal along these levees would reduce cover for foraging and non-breeding individuals during high winter tides. Vegetation management activities are projected to occur along only approximately 5 percent of the portion of San Francisquito Creek adjacent to suitable breeding habitat, 30 percent of Coyote Slough/Coyote Creek, 10 percent of Alviso Slough, and 20 percent of

Guadalupe Slough. Because the majority of vegetation in these areas would not be affected by vegetation management, and because known wintering populations of black rails in the South Bay are apparently very small (with no records from the majority of the areas where vegetation management would occur), sufficient cover would be present along those levees to continue to provide wintering habitat and high-tide refugia for these species. In addition, because the abundance of Bryant's savannah sparrows nesting on levees (as opposed to high-marsh areas) within these sloughs is fairly low, the number of savannah sparrow nests that could be impacted by these activities would be low relative to regional populations. Thus, projected vegetation management would not result in a substantial impact to regional populations of Bryant's savannah sparrows.

In-kind bank repairs have occurred in the past on the outboard sides of levees near potential Bryant's savannah sparrow nesting habitat and California black rail foraging habitat. In addition, minor maintenance activities such as flap gate repair, removal of sediment and debris from flap gates, and levee road maintenance occasionally has been necessary in areas near habitat for these two species. Effects of proposed activities would be similar to those of vegetation management, but would be more limited because of the limited extent of such activities expected to occur in or near habitat of these species.

Vegetation management along levees may actually benefit Bryant's savannah sparrows, by helping them to maintain suitable nesting habitat. If this activity were to cease, vegetation along the levees would increase in height and density to the point where it no longer would provide suitable breeding habitat. In addition, much of the vegetation management that would take place in salt marsh habitats would consist of invasive species management in the Coyote Bypass area, which would benefit the savannah sparrow. Thus, vegetation management would provide a long-term benefit to this species.

SCVWD would implement several BMPs that would reduce the impact of maintenance activities on the California black rail and Bryant's savannah sparrow. SCVWD would implement BMP GEN-6 (*Minimize Impacts to Nesting Birds via Site Assessments and Avoidance Measures*) to minimize the potential for Proposed Project activities to impact nesting birds, which would minimize impacts to nesting savannah sparrows. Several other BMPs are specific to the salt marsh harvest mouse and California clapper rail, but they also would help to minimize potential impacts to the California black rail and Bryant's savannah sparrow. These BMPs are as follows, and a description of each is provided in Table 2-12.

Applicable Best Management Practices

BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-6: Minimize Impacts to Nesting Birds via Site Assessments and Avoidance Measures
BMP GEN-8: Protection of Sensitive Fauna Species from Herbicide Use
BMP GEN-11: Protection of Salt Marsh Harvest Mouse and California Clapper Rail
ANI-2: Prevent Harm to the Salt Marsh Harvest Mouse and California Clapper Rail

Conclusion

Implementation of these BMPs would be adequate to assure that the impact of Proposed Project activities on the Bryant's savannah sparrow and California black rail would be less than significant, and no mitigation would be required. Although no mitigation for impacts to these species would be necessary, implementation of the tidal mitigation component of Mitigation Measure BIO-1 would benefit these species by restoring breeding habitat for Bryant's savannah sparrow and wintering/foraging habitat for both species.

Impact BIO-22: Impacts on the San Francisco Common Yellowthroat (Significance Criteria A, B, and E; Less than Significant)

The San Francisco common yellowthroat (a California species of special concern) is a fairly common breeder in fresh and brackish marshes in the northern part of the Project Area. It is known to breed in tidal salt and brackish marshes near the edge of the South Bay, as well as in herbaceous riparian habitat and ruderal floodplain habitat along streams entering the Bay, such as lower Coyote Creek and the Guadalupe River (Bousman 2007m). Proposed sediment removal activities would have the potential to affect the habitat in numerous areas where the San Francisco common yellowthroat is known to breed. Thus, as discussed under *Determination of Impacts to Wildlife and Fisheries*, proposed maintenance activities may result in direct and indirect impacts on this species.

Suitable habitat for San Francisco common yellowthroats may be temporarily lost as a result of sediment management activities and instream herbicide application, especially in areas on the Guadalupe River from Gold Street in Alviso upstream to U.S. Highway 101, and to a lesser extent in areas along Lower Coyote Creek, Coyote Slough, San Tomas Aquino Creek, and Lower Calabazas Creek downstream of Tasman Drive. Non-instream herbicide application also could result in the loss of nesting habitat (i.e., on levee slopes) and foraging habitat, particularly along Alviso Slough, Guadalupe Slough, and the Lower Sunnyvale West Channel. Herbicide application in the Coyote Bypass potentially could affect this species' habitat by addressing the invasive perennial peppergrass, which San Francisco common yellowthroats use for nesting. Although sediment removal would result in a temporary loss of breeding habitat for the San Francisco common yellowthroat, as discussed above, SCVWD studies have found that wetland vegetation often quickly re-establishes following sediment removal activities; therefore, the impact would be of short duration (i.e., 2–3 years). Although frequent, repetitive sediment removal or vegetation management would result in a long-term reduction of habitat for this species, less frequent, though periodic, sediment removal and herbicide application in freshwater marsh habitat would prevent succession that would ultimately convert high-quality nesting habitat provided by emergent vegetation to taller, woody riparian habitat, which would provide lower-quality breeding habitat. Therefore, Proposed Project activities would help to maintain extensive high-quality habitat for San Francisco common yellowthroats in the long term, at the expense of 2–3 years of habitat loss immediately following sediment removal.

Impacts to San Francisco common yellowthroats and their habitat also may occur because of unprojected activities, such as bank stabilization, management of animal conflicts, and minor maintenance. In particular, if bank stabilization activities replaced existing breeding habitat with hardscape, then breeding habitat could be lost permanently. However, such activities are expected to occur only in small, very localized areas. Thus, the amount of habitat lost as a result of bank stabilization would not result in a substantial effect on regional populations of this species.

Individual San Francisco common yellowthroats (especially eggs or young in nests) may be killed or injured during sediment removal activities, crushed by construction personnel or equipment. In addition, activities causing a substantial increase in noise, movement of equipment, or human presence near active nests may result in nest abandonment, and possibly the loss of eggs or young as a result. Because of the large numbers of individuals and active nests of this species occurring at work sites, such activities could have a substantial impact on regional populations in the absence of BMPs.

To reduce these impacts, SCVWD would implement the following BMPs. A description of each BMP is provided in Table 2-12.

Applicable Best Management Practices

BMP GEN-4: Minimize the Area of Disturbance
BMP GEN-6: Minimize Impacts to Nesting Birds via Site Assessments and Avoidance Measures
BMP GEN-8: Protection of Sensitive Fauna Species from Herbicide Use

Conclusion

Implementation of these BMPs would be adequate to assure that the impact of Proposed Project activities on the San Francisco common yellowthroat would be less than significant, and no mitigation would be required.

Although no mitigation for impacts to this species would be necessary, several mitigation measures for other impacts would benefit this species. As discussed under Impacts BIO-1 and BIO-2, Mitigation Measure BIO-1 and Mitigation Measure BIO-2 would require SCVWD to provide compensatory mitigation for impacts to wetland, aquatic, and riparian habitats. This mitigation may take a variety of forms, and such mitigation would benefit the San Francisco common yellowthroat only if wetland and riparian restoration were to occur within this subspecies' limited range. Nevertheless, wetland and riparian mitigation within this subspecies' range would provide breeding and foraging habitat for the species. Implementation of the tidal mitigation component of Mitigation Measure BIO-1 would provide wintering habitat, and possible breeding habitat as well, for the San Francisco common yellowthroat.

Impact BIO-23: Impacts on the Least Bell's Vireo (Significance Criteria A, B, and E; Less than Significant with Mitigation)

The least Bell's vireo (federally and state-listed as endangered) was thought to have been extirpated from northern California by 1970, but in the past two decades, populations have begun to rebound because of intensive recovery efforts (Kus 2002, USFWS 2006). However, only three records have been made in Santa Clara County since 1932. Two were from lower Llagas Creek between Highway 152 and the confluence with the Pajaro River, just east of Gilroy; one of these records, made in 1997, pertains to a nesting pair. A third record was from Coyote Creek near the Coyote Creek Golf Course (H. T. Harvey & Associates, unpublished).

Least Bell's vireo numbers may increase in number and distribution as the core populations increase, but it is unlikely to be ever more than a rare and very locally occurring breeder along South County streams, because of its limited historical distribution in the County and the abundance of brood parasitic brown-headed cowbirds (*Molothrus ater*). It is a riparian-obligate breeder (Kus 1998), nesting in dense thickets of willows and other low bushes along perennial or ephemeral streams (Franzreb et al. 1994, Kus 2002).

The Proposed Project may affect suitable habitat (breeding or foraging) for the least Bell's vireo and/or individuals (e.g., disturbance of active nests during maintenance activities). As discussed under *Determination of Impacts to Wildlife and Fisheries*, proposed maintenance activities may result in direct and indirect impacts on the least Bell's vireo. Potential effects would include injury or mortality of individuals (especially eggs or young in nests) as a result of equipment, vehicle traffic, and worker foot traffic; nests typically are built only a few feet off the ground, and thus maintenance personnel could impact nests directly while moving through vegetation. Individuals and their nests also could be disturbed by substantial increases in noise and human disturbance, and increases in native and non-native predators. Human disturbance, leading to reduced attendance of nests, could potentially increase the risk of brood parasitism by brown-headed cowbirds.

Based on past work records, SCVWD stabilizes less than 0.25 mile of stream bank per year throughout the Pajaro River Basin, only a small portion of which is suitable habitat for the least Bell's vireo. Because of the very limited extent of bank stabilization activities expected in the Pajaro River Basin and the very localized, sporadic nature of occurrence of least Bell's vireo, a low probability would exist for the species to be impacted by bank stabilization activities. Nevertheless, SCVWD would implement BMP GEN-6 to avoid impacts of Proposed Project activities to nesting birds.

Sediment removal activities are not proposed within areas of suitable habitat for the least Bell's vireo (i.e., along the Pajaro River, Llagas Creek south of Highway 152, and Uvas/Carnadero creeks on the valley floor), except within a 300-foot reach of Llagas Creek around stream gauge 5085, where 0.78 acres of sediment removal is projected to occur. This activity would take place on the proposed reach no more than twice during the 10-year Proposed Project span. Sediment removal activity in this reach could result in effects on the least Bell's vireo, similar to those described above, if vireos were actively nesting when sediment removal occurred. Sediment removal also could result in impacts to a small

amount of potential nesting and foraging habitat, for access to the stream gauge and movement of equipment during sediment removal.

Instream vegetation management is proposed to occur on Llagas Creek and lower Uvas/Carnadero Creek, in suitable habitat for the least Bell's vireo. This effect would occur infrequently on any proposed reach (not more than three times during the 10-year Proposed Project span), and would impact a maximum of 10 percent of any specific reach.

Non-instream herbicide application along the upper (levee top) and lower maintenance roads of lower Llagas Creek also is proposed in areas of suitable habitat for the least Bell's vireo. Hand removal of vegetation, mowing, and herbicide application are projected to affect a large portion of the suitable habitat along the creek (e.g., if the target vegetation types were present, herbicide application could potentially occur along 100 percent of the bank/bench from the Pajaro River confluence to Highway 152, on both sides of the creek). Upland vegetation adjacent to riparian habitats is frequently used for foraging, and sometimes nesting, by least Bell's vireos (USFWS 1998b), and the pair that attempted nesting in 1997 along lower Llagas Creek was frequently seen in tall, weedy vegetation on the bank and bench outside of the willow riparian corridor (S. Rottenborn, pers. obs.). Thus, increased noise, movement of equipment, or human presence in this habitat could result in the abandonment of a territory by a pair of least Bell's vireos attempting to nest, or preclude the use of habitat along lower Llagas Creek by a pair of vireos that would have otherwise attempted nesting. Herbicide application is not expected to impair the health of any individual vireos.

Because non-instream herbicide application could potentially occur twice yearly (early and late spring, thus keeping vegetation short throughout the species' breeding season), this impact would substantially reduce the area's value as foraging habitat for the least Bell's vireo by removing shrubs and tall forbs from the upper (levee top) and lower maintenance roads along lower Llagas Creek. The frequency with which this vegetation management would occur would result in longer-term effects.

Although non-instream vegetation management (hand removal of vegetation, mowing, and herbicide application) also is proposed along the Pajaro River and the lower Uvas/Carnadero Creek in areas of suitable habitat for the least Bell's vireo, each type of activity would take place on a specific reach no more than twice during the 10-year Proposed Project span and would affect a maximum of 2 percent of the reach. As a result, effects of such non-instream vegetation management along the Pajaro River and Uvas/Carnadero Creek on potential least Bell's vireo habitat would be minimal.

Collectively, projected 2012–2022 vegetation management activities would affect a total of 19.09 acres in instream and bank/bench areas along reaches of creek that could potentially support nesting least Bell's vireos (i.e., along lower Llagas Creek downstream from Highway 152, the Pajaro River from Llagas Creek downstream, and lower Uvas/Carnadeo Creek downstream from Hecker Pass Road).

SCVWD would implement the following BMPs to reduce impacts to least Bell's vireos. A description of each BMP is provided in Table 2-12.