Natural Environment Study

Niles Canyon Safety Improvement Project

Caltrans District 4
Alameda County
State Route 84
ALA 84 (PM 10.8/18.0)
EA 2A332

STATE OF CALIFORNIA
Department of Transportation

September 2016

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STATE OF CALIFORNIA
Department of Transportation

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Summary

The California Department of Transportation (Caltrans) proposes to construct safety improvements at several specific locations along the State Route (SR) 84 corridor from post mile (PM) 10.8 at SR 238 (Mission Boulevard) in Fremont to PM 18.0 at the SR 84/Interstate 680 (I-680) separation near the town of Sunol. Safety improvements will be constructed in several isolated locations along SR 84, and therefore the Biological Study Area (BSA) consists of twelve separate segments that were defined to encompass all project improvements as well as space needed for potential construction access and staging. The proposed project involves several components, including: installation of traffic signs and lighting, low speed curve improvements, installation of K-rail and Midwest guardrail system, installation of a rock drapery system, signalization, limited shoulder widening, and the replacement of one culvert at Stonybrook Creek with a single-span bridge. The BSA crosses Alameda Creek at two locations: the Alameda Creek Bridge (Bridge #33-0036) and the Alameda Creek Bridge Overhead (Bridge #33-0039). The BSA totals approximately 61.13 acres; 28.30 of which are the paved surfaces of SR 84 and 13.26 of which are urban areas. No project activity is anticipated to occur in the areas between the isolated segments of the BSA. The project is located in the Niles U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (quad).

Preliminary biological technical studies were conducted for the project, and include:

- Vegetation typing
- A special-status plant survey
- A tree inventory
- A preliminary determination of jurisdictional waters
- A wildlife habitat assessment

Vegetation Types

Land cover types mapped within the BSA include barren, grassland, oak woodland, riparian woodland, coastal scrub, creek channel, fresh emergent wetland, urbanized areas, and paved road. Project activity on paved roads was not counted toward impact calculations because paved roads are not considered to be habitat for wildlife species. Only the vegetation and aquatic communities that occur under the existing Alameda Creek Bridge, Alameda Creek Bridge Overhead, and Stonybrook Creek box culvert – rather than the paved surfaces of the bridges and culvert themselves – were

considered when discussing the paved road impacts. Therefore, the area of creek channel under the existing paved bridge decks was counted in the total for the vegetation communities within the BSA, and not toward paved road. Table S-1 summarizes the estimated acreage of land cover types in the BSA.

Table S-1. Land Cover Types and Acreages within the BSA

Land Cover Type	Total within BSA (Acres)	Temporary Impacts (Acres)	Permanent Impacts (Acres)	Total Impacts (Acres)
Barren	0.24	0.24	0.00	0.24
California Annual Grassland	1.56	0.07	0.01	0.08
California Bay/Coast Live Oak	5.42	0.66	0.68	1.34
Coastal Scrub	4.37	2.75	0.47	3.22
Valley Foothill Riparian	7.76	1.61	0.35	1.96
Fresh Emergent Wetland	0.03	0.01	0.00	0.01
Creek Channel	0.43	0.00	0.01	0.01
Urban-Landscaped	12.85	2.14	0.95	3.09
Urban-Railroad	0.17	0.00	0.00	0.00
Road	28.30	0.00	0.00	0.00
Total	**61.13**	**7.48**	**2.47**	**9.95**

Wetlands and Other Waters of the U.S.

Based on preliminary delineations, there are a total of 3.094 acres of potentially jurisdictional wetlands or other water features in the BSA, including 0.0347 acres of wetlands and 3.059 acres of other water features. Table S-2 summarizes estimated temporary and permanent impacts to wetlands and other waters of the U.S.

Table S-2. Impacts to Wetlands and Other Waters

Feature Type	Total Area (Acres)	Temporary Impacts (Acres)	Permanent Impacts (Acres)	Total Impacts (Acres)
Water Features	3.0590	0.2589	0.0329	0.2918
Wetlands	0.0347	0.0082	0.0012	0.0094
Total Waters of the U.S.	**3.0937**	**0.2671**	**0.0341**	**0.3012**

Tree Survey

The tree inventory for this project included trees surveyed and measured in 2012 for a previous project that did not go to construction. Areas of the current BSA that were not included in the 2012 tree survey were surveyed in August and December, 2014 and again in March and July 2016. All trees of four inches or larger diameter at breast height (DBH) were included in the tree inventory and marked with individual, numeric-stamped, aluminum tree tags and nails. A total of 1,201 trees were recorded within the BSA, with the majority considered native to California. Trees located in permanent impact areas are likely to be removed during project activities. Some trees located in temporary impact areas may be preserved depending on the specific activity occurring near them. Tree abundance and potential impacts are shown in Table S-3.

Table S-3. Tree Abundance and Impacts within the Biological Study Area

	Total in BSA	Temporary Impacts	Permanent Impacts	Total Impacts
Native Trees	1,121	213	68	281
Non-Native Trees	80	27	2	29
Total Trees	**1,201**	**240**	**70**	**310**

Special-Status Species and Habitats

Based on literature and database searches, prior botanical surveys, and familiarity with the region, a total of 38 plant species were initially evaluated, and 25 species were determined to have the potential to occur within the BSA. A special-status plant survey was conducted within the BSA in August 2014, with additional areas assessed in December 2014, March 2015, May 2015, August 2015, March 2016, May 2016, and August 2016. No special-status plants were observed. Completion of these surveys indicate there is a low potential for rare plants to be in the BSA. If protected species are discovered, appropriate agency coordination and protective measures will be established.

A wildlife habitat assessment was conducted within the BSA in August 2014, with additional areas assessed in December 2014 and March 2016. Based on literature and database searches, past wildlife studies, and familiarity with the region, a total of 66

wildlife species were initially considered to have potential to occur within the BSA. Following the wildlife studies, 28 of these species were dropped from consideration based on a lack of suitable habitat. Three federally and/or state-listed threatened or endangered species, and eight state species of special concern, were considered to have at least a moderate potential to occur in the BSA.A site visit was conducted within the portion of the BSA affected by the Stonybrook Creek Culvert Replacement Project to describe the instream habitat conditions present in Stonybrook and Alameda Creeks in March 2016. The purpose of the aquatic habitat survey was to evaluate the suitability of creek reaches within the BSA for anadromous fishes and other aquatic species.

Federally and State-listed Wildlife Species with Moderate or High Potential to Occur

- Steelhead (Central California Coast Distinct Population Segment [DPS]; *Oncorhynchus mykiss irideus*), federally threatened
- California red-legged frog (*Rana draytonii*), federally threatened, state species of special concern
- Alameda whipsnake (*Masticophis lateralis euryxanthus*), federally threatened, state threatened

State Wildlife Species of Special Concern with Moderate or High Potential to Occur

- River lamprey (*Lampetra ayresii*), state species of special concern
- Western pond turtle (*Emys marmorata*), state species of special concern
- Yellow warbler (*Setophaga petechia*), state species of special concern
- Pallid bat (*Antrozous pallidus*), state species of special concern
- Townsend's big-eared bat (*Corynorhinus townsendii*), state species of special concern and candidate for state listing
- Western mastiff bat (*Eumops perotis californicus*), state species of special concern
- Western red bat (*Lasiurus blossevillii*), state species of special concern
- San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), state species of special concern

Table S-4 summarizes anticipated temporary and permanent impacts to land-cover types suitable to these species.

Table S-4. Temporary and Permanent Impacts to Habitat for Listed Species

Land Cover Type	Species Habitat	Temporary Impacts (Acres)	Permanent Impacts (Acres)	Total Impacts (Acres)
California Annual Grassland	California Red-Legged Frog, Alameda Whipsnake	0.07	0.01	0.08
California Bay/ Coast Live Oak	California Red-Legged Frog, Alameda Whipsnake	0.66	0.68	1.34
Coastal Scrub	California Red-Legged Frog, Alameda Whipsnake	2.75	0.47	3.22
Valley Foothill Riparian	California Red-Legged Frog, Alameda Whipsnake	1.61	0.35	1.96
Fresh Emergent Wetland	California Red-Legged Frog, Alameda Whipsnake	0.01	0.00	0.01
	Total	**5.10**	**1.51**	**6.61**

Cumulative Impacts

Several past, current, or future projects in the area around Niles Canyon and the Alameda Creek watershed had, or have, the potential to affect jurisdictional wetlands, trees, and/or special-status species. These projects are further summarized and evaluated as part of the resource-specific analysis of the proposed project's effects. To summarize, effects from these identified projects were, or will be, assessed during their particular consultation and permitting processes, so Caltrans does not anticipate any unmitigated cumulative impacts.

Avoidance and Minimization Measures

General and species-specific avoidance and minimization efforts will be implemented to reduce potential effects to special-status species. These measures will include minimizing the area of impact, implementing a work window to avoid California red-legged frog and Alameda whipsnake, conducting environmental education for construction personnel, conducting preconstruction surveys for special-status species and nesting birds, delineation of the work area and all environmentally sensitive areas with fencing, presence of an on-site biological monitor during designated periods, avoidance of wildlife entrapment by covering trenches or providing escape routes, and other construction-site best management practices (BMPs).

Permits and Agreements

Several permits and agreements from regulatory agencies are anticipated for this project:

- Biological Opinion from U.S. Fish and Wildlife Service (USFWS)
- Incidental Take Permit and Streambed Alteration Agreement from California Department of Fish and Wildlife (CDFW)
- Section 404 Nationwide Permit 14 from U.S. Army Corps of Engineers (USACE)
- Section 401 Water Quality Certification from Regional Water Quality Control Board (RWQCB)

A Biological Opinion from National Marine Fisheries Service (NMFS) is not currently required, as fish passage between Alameda Creek and San Francisco Bay is blocked by the BART weir. *O. mykiss* prevented from leaving the watershed are not currently considered to be anadromous Central California Coast DPS steelhead. They are instead considered landlocked rainbow trout. Caltrans will pursue a Biological Opinion from NMFS once the planned fish ladder is installed for the BART weir, and fish within Alameda Creek are included by NMFS as part of the federally threatened Central California Coast steelhead DPS.

Compensatory Mitigation

As required by the Federal Endangered Species Act (FESA), Caltrans will implement reasonable and prudent measures to minimize and avoid take of listed species. Pursuant to the procedures of the California Environmental Quality Act (CEQA), Caltrans has assessed the project's potential to impact species designated as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS. To reduce the potential adverse impacts, Caltrans will propose a mitigation component to offset any adverse impacts caused by the project. Caltrans proposes that compensatory mitigation in the form of habitat restoration and preservation will be provided at a 1:1 ratio of mitigation acreage to impact acreage for temporary habitat impacts and a 3:1 ratio for permanent habitat impacts. Table S-5 summarizes proposed compensatory mitigation for habitat effects to listed species within the BSA.

Caltrans proposes mitigation for temporary impacts to be accomplished through on-site restoration of temporarily impacted area, and mitigation for permanent impacts

will be accomplished through preservation of suitable habitat off-site through purchase of credits at an approved conservation bank. Caltrans anticipates being able to purchase credits for 4.53 acres to cover multiple listed species impacts at a ratio of 3 preserved for each 1 impacted (3:1).

Table S-5. Proposed Compensatory Mitigation for Listed Species

Species	Total
California Red-Legged Frog	
1:1 Ratio for Temporary Impacts on site	5.10
3:1 Ratio for Permanent Impacts off site	4.53
Total Compensation	9.63
Alameda Whipsnake	
1:1 Ratio for Temporary Impacts on site	5.10
3:1 Ratio for Permanent Impacts off site	4.53
Total Compensation	9.63

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List of Abbreviated Terms

AC	asphalt concrete
ACRCD	Alameda County Resource Conservation District
ACWD	Alameda County Water District
BA	Biological Assessment
BART	Bay Area Rapid Transit
BDPL	Bay Division Pipeline
BMP	Best Management Practice
BSA	Biological Study Area
BO	Biological Opinion
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CWA	Clean Water Act
DBH	diameter at breast height
DI	drainage inlet
DPS	Distinct Population Segment
EIR	Environmental Impact Report
EMS	Extinguishable Message Sign
FESA	Federal Endangered Species Act
FGC	[California] Fish and Game Code
FHWA	Federal Highway Administration
GANDA	Garcia and Associates
GIS	Geographic Information Systems
MAP-21	Moving Ahead for Progress in the 21st Century Act
MBGR	metal-beam guardrail
MBTA	Migratory Bird Treaty Act
MGS	Midwest Guardrail System
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
NES	Natural Environment Study

NMFS	National Marine Fisheries Service
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
OHWM	Ordinary High Water Mark
PCA	Project Construction Area
PCE	Primary Constituent Element
PM	post mile
PRC	Public Resources Code
quad	U.S. Geological Survey 7.5-minute topographic quadrangle
RWQCB	Regional Water Quality Control Board
SFPUC	San Francisco Public Utilities Commission
SR	State Route
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
TCE	Temporary Construction Easement
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

Chapter 1. Introduction

The California Department of Transportation (Caltrans) proposes to construct safety improvements at several specific locations along the State Route (SR) 84 corridor from post mile (PM) 10.8 at SR 238 (Mission Boulevard) in Fremont to PM 18.0 at Interstate 680 (I-680) near the town of Sunol (Figure 1). The proposed project involves several components, including: installation of traffic signs and lighting, low speed curve improvements, installation of K-rail and Midwest guardrail system, installation of a rock drapery system, signalization, limited shoulder widening, and the replacement of one culvert at Stonybrook Creek with a single-span bridge. The project is located in the Niles U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (quad). Safety improvements will be constructed in several isolated locations along SR 84, and therefore the Biological Study Area (BSA) consists of twelve separate segments that were defined to encompass all project improvements as well as space needed for potential construction access and staging, and buffers around these areas to account for sensitive biological resources that may be adjacent to the project (Figure 2). The BSA crosses Alameda Creek at two locations: the Alameda Creek Bridge (Bridge #33-0036) and the Alameda Creek Bridge Overhead (Bridge #33-0039). The total area within the BSA is 61.13 acres. No project activity will occur in the areas between the isolated segments of the BSA.

The Project Construction Area (PCA) is the area that will be directly affected by construction, either through temporary or permanent impacts. This includes all areas where project activity will occur, and all locations for access and staging of construction equipment. The PCA is nested entirely within the BSA.

The purpose of this Natural Environment Study (NES) is to provide technical information to determine the extent to which the proposed project may affect special-status species, wetlands and other waters of the U.S., protected natural plant communities, and anadromous fish passage. The NES presents technical information with which later decisions regarding project impacts can be made. All figures for this NES are presented in Appendix A.

1.1. Project Purpose and Need

The purpose of the project is to improve safety at spot locations on SR 84 within the Niles Canyon corridor by improving sight distance and reducing the number of head-

on-cross-centerline, fixed-object, and run-off-the-road-type accidents. From January 1, 2009 to December 31, 2011, a total of 83 accidents, including 41 injury accidents and one fatality, were reported within these project limits on SR 84. The accidents involved hitting objects, broadsides, rear ends, overturns, and other types of vehicular accidents.

1.2. Project Description

Project elements are shown in Figure 3, and are described in detail below.

1.2.1. Installation and Removal of Traffic Signs

As part of the proposed safety improvements on the Niles Canyon corridor, 29 new roadway traffic signs will be installed and five existing signs will be removed and replaced. The footing for each of the sign posts requires a four-inch by four-inch hole with a depth of 3.5 feet. All equipment staging areas will be located on existing pavement and as such, a partial lane closure will be needed to install the traffic signs along the SR 84 corridor.

1.2.2. Low Speed Curve Improvements

A sharp curve (300-foot radius and a 53 degree central angle) with minimal lane widths and shoulders is located approximately 0.5 mile east of the Alameda Creek Bridge from Station 38+80 to 43+80 (PM 13.70 to 13.80). The total length of the existing curve is approximately 500 feet.

No construction materials for work at the low-speed curve will be stored on-site. Any existing paved area within Caltrans right-of-way within the project area may be used for materials/construction staging. No non-paved areas within Caltrans right-of-way are proposed as equipment staging areas for the low speed curve improvements. Six months will be needed for construction; construction will be conducted mostly at night and with one lane closed. Standard nighttime construction hours are 9 PM to 4 AM.

Correcting Super Elevation

The curve will be reconstructed so that it has an overall 12 percent super elevation. Super elevation is the degree to which a curve is banked. The existing roadway pavement would be ground and overlaid to provide the additional super elevation throughout the curve. The surface of the pavement would be wetted down prior to

grinding to reduce dust. A vacuum truck would then remove the loose material. This material will be disposed of by the contractor per Caltrans specifications.

The approximate roadway length of increased super elevation would be 280 feet. The increase in super elevation would "hinge" around the westbound edge of the travel-way in order to minimize potential impacts to the creek bank along the westbound lanes. A three-foot shoulder already exists along this curve, so an additional five feet of widening on the eastbound side will be required to create an eight-foot standard shoulder.

Roadway Widening

The current 12-foot lane width would be increased to 13 feet throughout the 280-foot length of this curve, beginning approximately at Station 38+80 and extending for a total length of 500 feet along the curve and ending at Station 43+80. The current eastbound shoulder has a variable width. This would be replaced with a standard eight-foot shoulder. This is occurring in the same area as a proposed retaining wall (see below). This will add an additional 3,000 square foot area along the existing roadway.

Rock Cuts and Installation of Type 60 Concrete Barrier at Low-Speed Curve Improvement

Two rock cuts are proposed at the Low-Speed Curve Improvement. The first rock cut spans from Station 39+80 to 40+13, a length of approximately 33 feet, and will be eight to ten feet in height. The second rock cut spans from Station 42+50 to 42+90, a length of approximately 40 feet, and will be eight to ten feet in height. Between the two rock cuts (from Station 40+13 to 42+50), a 237-foot long, three-foot tall Type 60 concrete barrier is proposed as a safety measure. It is unlikely that vegetation will grow over the rock cuts. All equipment and staging areas used to construct the rock cuts will be located on the existing pavement.

Construct Retaining Wall with Safety Shape Barrier

Caltrans proposes to construct two three-foot high Type 6A retaining walls at the locations of the rock cuts at the low-speed curve listed above. A 33-foot long wall will be constructed from Station 39+80 to Station 40+13 and a 40-foot long wall from Station 42+50 to Station 42+90. The wall footings will be 3.25 feet wide, with eight inches of the footing protruding behind the wall. Cuts and fills will be required along

the sites of the walls, depending on existing conditions. Temporary construction impacts not covered in the widening section consist of a two-foot swath behind the walls.

For wall construction, cutting activities will involve excavation and hauling using excavators and small loaders. Filling activities will involve importation of engineered fill material followed by compaction with heavy equipment. Bulldozers will be used to spread the material and various types of equipment will be used to achieve compaction requirements. The contractor will access the work site via the existing roadway. Material from the cut will be used for fill and backfill purposes. Any surplus excess cut material will be disposed of by the contractor per Caltrans specifications. Fill material behind the walls may be a combination of cut material and Caltrans approved imported "structural fill". Compaction of the fill material will be accomplished by mechanical means with a combination of "jumping jacks" for narrow areas and wheeled vibratory compaction for the remainder.

Drainage Improvements

An existing cross-pipe drainage feature located at Station 39+45 on the low speed curve will be extended ten feet to cross the newly widened eastbound shoulder. There will be no impacts for this extension outside of the area already being impacted by the shoulder widening.

1.2.3. Tree Removal

Trees within eight feet of the edge of travel-way throughout the project area will be removed, unless guardrail exists to protect the trees. A total of 33 trees will be removed due to their proximity to the roadway, though this only represents a partial list of total trees to be removed as part of this project. The total impacts to trees are discussed in Section 4.2.2. Trees will be cut using mechanical means such as electric or gas operated saws from the edge of the travel-way. An approximate ten foot by ten foot area will be impacted around each tree that will be removed. A truck with a chipper will be used for chipping the removed trees, and stumps will be ground out. There will be no need for storage of construction equipment or materials. Oak trees will be removed in accordance with Caltrans policies for managing Sudden Oak Death. Tree removal is estimated to take one month. In areas where oak trees will be removed, they will be replaced in kind with Valley Oak as close to the area where they were removed as is feasible. Mature oak trees will be replaced at a higher ratio or with more mature saplings.

1.2.4. Utility Pole Removal

Utility poles within eight feet of the edge of travel-way will be moved ten feet from their current locations perpendicular to the existing roadway or across the road where limited space exists to relocate the poles. If guardrail currently exists to protect the poles, they will not be relocated. A ten foot buffer should surround the utility poles as an area of temporary impact. In areas of new pavement widening, they will be placed adjacent to the new shoulder; elsewhere, the new poles will be located in vegetated or otherwise unimproved areas. The construction footprint for removal of existing poles and construction of new poles will be approximately four feet by four feet. Each new pole will be 18 inches in diameter. A total of 16 utility and two electrical/telephone poles will be relocated.

1.2.5. K-rail Replacement

An obsolete section of K-rail that is located at the edge of eastbound travel-way spanning approximately 850 feet from Station 326+50 to 335+00, which crosses under the Rosewarnes railroad crossing at Station 334+00, will be replaced by K-rail that meets current standards. The old K-rail will be removed using a forklift from the roadway. An approximately one-foot wide section of new pavement will be constructed at the location of the K-rail that is to be replaced. Replacement K-rail will be installed using a crane or forklift. Reflectors will be installed on top of each rail unit within ten feet of a traffic lane. Type-P marker panels will be installed at strategic locations on railings and end posts. Construction impacts beyond the existing travel-way will include one foot of new paving and two feet of temporary impacts beyond that over a length of approximately 900 feet during the paving and new k-rail installation. Lane closures utilizing a temporary K-rail barrier will be required for construction tasks in order to direct traffic and protect the construction area in the westbound lane of the travel-way. The closures will be conducted at night and on weekends.

1.2.6. Install Rock Fall Protection Systems

Two separate rock fall protection systems will be installed on steep sections of hillside adjacent to SR 84 that are prone to rock falls.

Site 1: Cable Net Drapery System on Upslope Hill Facing East at Station 335+00 to 337+50

A cable net drapery system that will be installed from Station 335+00 to 337+50 (a length of approximately 250 feet). The cable net drapery will be anchored at the top of the slope (approximately 40 feet above the roadway) and falling rocks will work their way down into an existing catchment ditch to be cleared out by Caltrans Maintenance. Vegetation is expected to grow in isolated patches through the cable net drapery system. The cable net drapery system will be either brown or black in color. Anchoring of the cable net drapery will be located within Caltrans' right-of-way. A 26-foot by 100-foot area at the top of the slope, directly above the cable net drapery, will be acquired as new right-of-way from the San Francisco Public Utilities Commission (SFPUC) in order to install and maintain the cable net drapery system.

All materials needed to construct the cable net drapery system will be flown by helicopter to the newly acquired 26-foot by 100-foot right-of-way area at the top of the slope; this is the only permitted location for equipment staging at the top of the slope. The first step for constructing the cable drapery system is to drill and install all of the anchors for the system. Once the anchors have been tested, a top support cable will be installed across all the anchors. The individual cable net drapery panels will be flown in by a helicopter, connected to the top support cable, and then laid across the slope. All work on the slope will be done with hand tools and personnel on ropes. The edges of each panel will be stitched or stapled together to create a single uniform cable mesh covering of the slope. Flying in the cable net drapery system via helicopter ensures that no access roads are needed to install the rock drapery system at this location.

Access for the installation of this cable net drapery system is expected to require an area 170 feet upslope from the centerline of the road at Station 334+40, and 141 feet upslope from the centerline at Station 337+70. Vehicle pull out locations on the north side of the westbound lane (from Station 307+00 to 312+00) will be used as equipment staging areas. The bowl area upslope of Station 334+60 will also be used as a construction staging area.

Traffic impacts due to the installation of the cable net drapery system include a westbound SR 84 lane closure. A four to eight week construction period is anticipated. While the helicopter is in operation, both directions of SR 84 will be closed for 15 minute intervals.

Site 2: Rock Fall Fence on Upslope Hill Facing East at Station 361+00 to 365+00

A dynamic rock fall fence, approximately eight feet tall and 400 feet long, will be installed approximately 40 feet above the roadway. Rocks falling from the slope will be "caught" in the fence, which will be angled perpendicular to the slope so that no rocks fall onto SR 84.

Post foundations will be constructed by drilling a series of three-inch holes, no more than ten feet deep, into native material. Either a cable anchor or anchor bar will be installed into the drilled hole and grouted. At the top of each post location a small form will be constructed and a concrete pad will be poured. The fence posts will then be installed on top of each concrete pad. Cranes, man lifts, and spider excavators (excavators with mechanical legs that can walk up and operate in very steep terrain) will be used to install the dynamic rock fall fence. A 40-foot by 500-foot Temporary Construction Easement (TCE) from Station 360+00 to 365+00 is needed to complete the work. Equipment for the rock fall fence will be staged at the same vehicle pull out locations used for the cable net drapery system (Site 1), on the north side of the westbound lane of SR 84 from Station 307+00 to 312+00. Traffic impacts due to the installation of the rock fall fence include a westbound SR 84 closure. A four to eight week construction period is anticipated.

1.2.7. Shoulder Widening

The following sections of road shoulder will be widened to accommodate an eight-foot shoulder with a safety edge on both sides of the current travel lane:

- Sims Park/Quarry Road (westbound from Station 110+44.75 to 116+80.00), for a total length of 635 feet
- The west side of Silver Springs (Station 165+80.00 to 189+10.00), for a total length of 2,330 feet
- Paloma Way (Station 223+20.00 to 253+00.00), for a total length of 2,980 feet

In the area where the shoulder will be constructed, concrete saws will be used to provide a clean transition at the edge of the travel-way and proposed new shoulders. The old shoulder's Asphalt Concrete (AC) will be removed by loaders and the debris hauled off-site by the contractor for disposal per standard Caltrans specifications. The shoulder area will be prepared for the new structural section by compacting the road

base and covering it with new AC. The new AC will then be compacted by vibratory rollers to the final profile grade/elevation. Then the new structural section will be placed and paved with AC. It will then be compacted by vibratory rollers to the finished grade. Striping and delineation will be done as soon as the new section is completed and the surface passes inspection. A truck-mounted specialty sprayer with a compressor will complete the striping operations. Delineations, such as buttons, will be mounted by hand with adhesive placed on the AC surface. There will be temporary construction impacts ten feet beyond the proposed eight-foot edge of shoulder within the existing right-of-way. Estimated construction time for this portion of the project will be three months.

1.2.8. Widening and Barrier Rail Replacements on Alameda Creek Bridge Overhead

Caltrans proposes to remove a concrete curb and replace outdated barrier rail on the Alameda Creek Bridge Overhead (Bridge #33-0039), Station 62+50.00 to 70+50.00. The existing curb is approximately three feet wide and 800 feet long. It will be removed using a saw cut method and immediately transported outside of the project area. Disposal of the old curb will be per standard Caltrans specifications. The current curb will be replaced with a shoulder approximately 1.5 feet wide and 800 feet long on either side of the bridge deck.

Work at the Alameda Creek Bridge and Overhead includes installing overhead protection under the existing bridge; removing existing bridge rails and overhangs; drilling and bonding dowels; placing concrete formwork; pouring the concrete for the overhangs; curing the new concrete to the required strength; placing carbon fiber reinforced polymer (CFRP) strips in the new overhangs; forming and pouring concrete for the new bridge rails; installing new electrical conduit and pull boxes on the outside face of the bridge girders; removing and repairing unsound concrete in the bridge; cleaning and replacing the expansion joints; placing polyester concrete overlay on the bridge deck; structure excavation and backfilling at the abutments; and reconstructing bridge abutments and wingwalls. Reconstruction of Bridge Abutment 1 involves the removal of approximately 27 cubic yards of concrete; the left side of Abutment 1 has a retaining wall approximately 95 feet long and the intent is remove the top three feet of the abutment. Work at Abutment 15 involves the removal of approximately 15 cubic yards of concrete.

Approximately 14 feet of temporary access will be needed outside the roadway. Temporary impacts will extend approximately 100 feet to the left of Abutment 1 and 50 feet to the right of Abutment 1. Temporary impacts will extend approximately 50 feet either direction from Abutment 15.

The current bridge and overhead has an antiquated tubular steel type barrier. The preferred option is to replace the existing bridge railing with a Type ST-20S (see through metal barrier). The new barrier width would be 1.75 feet wide. The second bridge railing option is ST-70 (also a see through metal barrier).

In accordance with Caltrans Standard Specifications Section 15-4, temporary support shoring, temporary bracing, or protective covers would be used on the Alameda Creek Bridge and Overhead to prevent materials from entering Alameda Creek during the replacement of the bridge railings. Caltrans would implement Standard Water Quality BMPs to ensure there are no impacts to water quality.

Access for construction will be from the current roadway; there will be no storage of materials on-site and no off-pavement staging areas will be provided. Four weekend closures of Niles Canyon are proposed in order to complete the proposed work at the Alameda Creek Bridge and Overhead.

Bicyclist warning signs will be located on both sides of the Alameda Creek Bridge and Overhead. In order to connect to a power source for the bicyclist warning signs, trenching will occur approximately 3,000 feet on both sides of the Alameda Creek Bridge and Overhead. The trench will be approximately one foot wide, 18 inches deep, and will be located on pavement.

Trenching activities will cross paths with the NRHP-eligible Sunol Aqueduct, which is approximately 20 inches underground. If the trenching will potentially impact Sunol Aqueduct, the trenching for electrical will occur at a shallower depth of approximately 12 inches to protect the aqueduct in place at the crossing area. If trenching at a shallower depth does not protect Sunol Aqueduct, the warning sign requiring power will be eliminated and replaced with one that does not require power.

1.2.9. Install and Replace Metal Beam Guard Railing with Midwest Guardrail System

The existing metal beam guardrail (MBGR) will be replaced with the Midwest Guardrail System (MGS) to meet current design safety standards. From the

intersection of Mission Blvd (ALA 238) to the eastern limit of the Niles Canyon project at I-680, a total of 9,427-linear feet of existing metal-beam guard rail will be replaced with Midwest Guardrail System (MGS) along the roadway in both directions and 2,980 feet of new MGS will installed along the Paloma Way widening on the edge of shoulder.

MGS is constructed by driving wood posts or by digging a ten-inch by ten-inch by 3.4-foot deep post-hole using a digging rig; placing six-inch by eight-inch treated wood posts in the holes; backfilling the holes with native soil; and bolting guardrail to the posts. Posts are placed with 6.25-foot spacing from center to center. The area centered under the MGS will have a four-foot wide and two-inch deep strip of minor concrete for weed control along its entire length. An additional five feet outside of the edge of paved shoulders will be used as temporary equipment access areas for the replacement of the 9,427 linear feet of existing metal-beam guard rail.

1.2.10. Sidewalk Rehabilitation, Safety Shape Barrier, and Drainage Rehabilitation at Silver Springs Undercrossing

Sidewalk Rehabilitation and Safety Shape Barrier

Caltrans proposes to remove sidewalks and construct a safety shape at the Silver Springs Undercrossing (Bridge #33-0042). The existing foot-foot wide sidewalks along the eastbound lane from Station 194+47.83 to 205+68.92 and along the westbound lane from Station 194+93.00 to 206+05.25 will be removed to create space for a shoulder that would be wide enough for use by bicyclists. New shoulders will be installed on both sides of the roadway for a total length of 2,200 feet (each shoulder will be approximately 1,100 feet long). Striping and delineation will be done as soon as the new section is completed.

A safety shape barrier will be constructed at the Silver Springs Undercrossing between the abutments and the new shoulder. It will be constructed within the footprint of the removed sidewalk and extend two feet from the wall of the undercrossing. Installation of the safety shape barrier will not require any ground disturbance beyond what is already being disturbed by the removal of the old sidewalk.

Roadway appurtenances will include relocated roadway signs, highway lighting, and MGS. There will be no additional impacts since these features will be in areas that will already be impacted by construction of the safety shape barrier and sidewalks.

In the area where the shoulder will be constructed, saw cutters will be used to provide a clean transition at the edge of the travel-way and the new shoulder. Old AC will be removed by loaders and taken from the site by trucks. Waste materials will be disposed of by the contractor per standard Caltrans specifications. The shoulder area will be prepared for new structural sections by compacting the base and covering it with AC. The shoulder will be covered by AC and will be compacted by vibratory rollers to the final profile grade/elevation. Then the new structural section will be placed and paved to a finished grade using pavers and trucks to carry the AC. All construction will be within existing paved areas. A truck-mounted specialty sprayer with compressor will complete the striping operations. Delineations, such as buttons, will be mounted by hand with adhesive placed on the AC surface. The area of total impact from construction will be 8,000 square feet. The footprint of the sidewalk will be one foot deep for removing the existing sidewalk and four feet wide. One lane closure is proposed and a minimum eight-week construction period is needed.

Drainage Inlet Extension

The existing drainage inlets (DIs) will be extended to the new shoulder proposed at the Silver Springs Undercrossing. The installation of these DIs will occur entirely within the footprint of construction for the sidewalk rehabilitation. Construction will require trenching along the shoulder, within the area where the old sidewalk will be removed that will be five feet deep, two feet wide, and six feet long at each DI location.

DIs are inflows into longitudinal drainage pipes and cross-culverts, protected with a standard two-foot by three-foot bicycle-proof grate. The DI boxes function as connectors between longitudinal pipes and cross-culverts. The boxes themselves are one foot by two feet and will be put in place where the sidewalk is being removed, so there will be no additional ground disturbance. A total of five DIs will be moved by five feet each at the following locations as part of the work at the Silver Springs Undercrossing:

- Station 19.5+0.0 (Eastbound)
- Station 19.7+7.0 (Eastbound)
- Station 20.0+3.8 (Eastbound)
- Station 20.1+6.0 (Westbound)
- Station 20.3+5.0 (Eastbound)

1.2.11. Signalization

Caltrans proposes to signalize the intersection of SR 84 and Pleasanton-Sunol Road, which is currently a current four-way stop, and the intersection of SR 84 and Main Street, which is currently a four-way stop.

Proposed improvements include:

- Providing right turn pocket on Pleasanton-Sunol Road
- Installation of seven traffic light signals (posts) at the intersection of SR 84 and Pleasanton-Sunol Road
- Installation of four signals (posts) at the intersection of SR 84 and Main Street

Intersection of SR 84 and Pleasanton-Sunol Road

The right turn pocket will be widened by 12 feet with an additional four-foot shoulder, for a total of 16 feet. Fifteen feet beyond the proposed new edge of shoulder will be required for temporary construction impacts. Construction will remove six trees at this location.

At the intersection of Pleasanton-Sunol Road and SR 84, there will be seven traffic light signals:

- three Type 15 Lighting Poles will be installed on the northeast corner
- one Type 15 Lighting Pole will be installed on the southeast corner
- one Type 28-5-100 Lighting Pole will be installed on the southwest corner
- two Type 15 Lighting Poles will be installed on the northwest corner

Type 15 poles will be constructed by digging a round hole with a three-foot diameter that is 12 feet deep. The Type 28-5-100 pole will require a hole that is 3.5 feet in diameter and 12 feet deep. The construction impact around each feature will be an additional five square foot area.

Electricity will be provided to these traffic lights by using Model 332 Controller Cabinets that are connected by buried conduits to existing utility poles. The trenching required for the buried conduits will be one foot wide, three feet deep, and require a total length of 400 feet. The cabinets will be mounted on a concrete footing with a footprint of seven feet by five feet by five feet deep.

Intersection of SR 84 and Main Street

Four new traffic signals with end lighting poles and two new STOP bars (striping on the roadway for crosswalks) are proposed at the intersection of SR 84 and Main Street in Sunol. Type 15 Lighting Poles will be used for the traffic signals. The footprint of each of these features will be a round hole with a three-foot diameter that is 12 feet deep. The construction impact around each feature will be an additional five square foot area.

Electricity will be provided to these traffic lights by using controller cabinets and electrical trenching with the same specifications as those listed above for the intersection of SR 84 and Pleasanton-Sunol Road. A total of 300 feet of electrical trenching will be required for the signalization of the Main Street intersection.

1.2.12. Active Warning System

Four active warning systems will be installed throughout the project area. The active warning system is a push-button-activated flashing beacon that bicyclists can use to signal their presence on roadway structures such as bridges and underpasses to motorists. The components of the system are a 36-inch post bearing the push button installed outside the shoulder, two 14-foot posts with footings bearing a warning sign and the button-actuated flashing yellow beacon, and a five-foot by two-foot controller cabinet with footing. Each button post will be placed in a hole drilled by a rig-mounted auger to a depth of approximately three feet and held in place with concrete. The posts with beacons will be mounted on a footing and will require a five-foot square area for construction ground disturbance. A control cabinet for each button/beacon combination will be installed near the sign. Three of the four locations will be connected to existing electrical utility services by buried conduits. At the fourth location, the system will be powered using a solar panel mounted on the beacon post with a battery installed inside. There will be no controller cabinet at this location.

1.2.13. Lighting

Standard Caltrans Type 15 lighting poles on standard footings will be installed at 16 locations along the length of the project and connected by buried conduits to existing pull boxes or utility poles. The area of disturbance for the construction of each footing is approximately 30 inches in diameter and five feet deep.

1.2.14. Speed Feedback Signs

The project will install three solar powered speed-feedback signs and twelve conventionally powered speed-feedback signs at various locations along SR 84. The solar powered speed-feedback signs will be constructed by drilling a post hole, placing a breakaway steel pole in the hole, backfilling with excavated material, and then mounting a standard speed-feedback sign and solar panel. Conventionally-powered speed-feedback signs consist of: a 13-foot post with footing, a standard speed feedback sign, and an electrical hookup to a control cabinet. The components will be connected by a buried conduit to existing electrical utilities. The post will be constructed by drilling an eight-inch wide hole that is five feet deep, placing a 13-foot breakaway steel pole in the hole, and then backfilling the hole with excavated material.

1.2.15. Dynamic Active Warning System

The Dynamic Active Warning System automatically triggers an Extinguishable Message Sign (EMS) when vehicles are present. Two systems will be installed. At the approach to the Silver Springs undercrossing (Station 189+00), it will signal when traffic, which may not be visible to approaching motorists, has backed up within the under crossing. At the Palomares Road intersection the system (at Station 386+20) will signal to motorists on SR 84 that vehicles on Palomares Road are waiting to make a left turn.

The components of the system are loop detectors embedded in the pavement, a flashing beacon, a controller cabinet, and the electrical hookup to two EMSs mounted on wooden posts. The components will be connected by buried conduit to existing electrical utility infrastructure.

The loop will be installed by cutting into the AC surface of the roadway and sealing the loop in place. This will not cause any construction impacts outside of the paved roadway. The posts for the EMS signs will be mounted on a footing with a construction footprint of five inches by five inches by five feet deep. The controller cabinet will be installed on a footing with a construction footprint of seven feet by five feet by five feet deep. Components will be connected to existing electrical utilities by buried conduits.

1.2.16. Relocate Flashing Beacons

The project will relocate the existing flashing beacon that is east of the Palomares undercrossing to a pole with mast arm that will be 350 feet east of the current location. The components of the system are a 23-foot post with footing, mast arm, and flashing beacon, a service cabinet, and electrical hookup to the cabinet.

The components will be connected by buried conduit to existing electrical utility service. Trenching from the existing pole to the new location will be for a length of approximately 700 feet. The 23-foot tall post will be mounted on a footing requiring a 2.5-foot diameter hole that is 8.5 feet deep. The cabinet will be mounted on a footing with a construction footprint of seven feet by five feet by five feet deep.

1.2.17. Electrical Conduits

All of the electrical systems listed in the preceding sections will be powered by solar panels or be connected to existing electrical infrastructure. Electrical conduit will be required for connecting the non-solar systems to existing infrastructure. This conduit will be placed in trenches that will be dug between the systems and the existing infrastructure. The standard trenching used for installing this conduit will be two feet wide and three feet deep. An additional width of six feet (three feet on either side) from the electrical trenching will be required for equipment access and staging. The total estimated linear distance of electrical trenching throughout the entire project is 5,865 feet.

1.2.18. Replacement of Stonybrook Creek Box Culvert

The project proposes to replace the existing 57-foot reinforced box culvert that drains Stonybrook Creek into Alameda Creek with a single span bridge. Replacement of the existing box culvert would provide increased capacity to meet stormwater requirements and facilitate improved passage of aquatic species, including steelhead, from Alameda Creek to upper reaches of Stonybrook Creek. In addition, replacement of the box culvert would reduce channel maintenance requirements and provide the following:

- The new bridge design would pass the 100-year design discharge with one foot of freeboard under the bridge,
- The proposed bridge abutments would be skewed to be more in line with the approaching creek (given site constraints),

- The channel profile and substrate would be restored to conditions similar to upstream and downstream conditions,
- The vertical bridge abutments would be spaced wider than the active channel width to allow unimpeded bed-load transport under the bridge,
- The re-graded channel bottom section would be shaped to match upstream channel sections and the creek bed will be overlaid with native materials. A slight centerline depression in the channel section would be provided to initiate the formation of a low flow channel, and,
- The creek bed would be allowed to aggrade or degrade naturally over time while the creek's side slopes would be hardened as necessary to protect adjacent structures and embankments.

Equipment used to complete the bridge construction will include an excavator, hoe ram, backhoe, loader, manually wheeled and/or tracked compactor, material handling trucks (pickup, flatbed truck with crane, end dump tractor trailer), concrete ruck and tremmy. In-stream work would be limited to the use of an excavator or loaders and a compactor to prepare sub-grade and finish grade. Night work may occur and lighting may be used. Geotechnical borings were previously conducted for this project and would not be needed.

Temporary Creek Diversion

To create a dry working environment within Stonybrook Creek during replacement of the existing box culvert, a temporary creek diversion is proposed from June 1 to October 15. The temporary creek diversion involves the installation of two temporary earthen dams, one upstream of the work area to prevent inflow, and one downstream to prevent backflow.

Temporary impacts to construct and maintain the temporary creek diversion would extend 50 feet upstream of the existing box culvert and 50 feet downstream from the drip line of the existing box culvert. All construction equipment used for the construction of the creek diversion would use the access road needed to demolish the existing box culvert. Means and methods of the installation may include installation of temporary berms (plastic-wrapped gravel bags, or Aquadams) to create a dry working environment for the installation of the temporary earthen dams, and to control sediment dispersal within the creek. In addition, a cutoff wall may be necessary to reduce the flow of water through the substrate under the upstream dam and/or temporary berms. The cutoff wall would consist of a two-foot deep by two-

foot wide trench, spanning the width of the creek, with impermeable material placed below grade to reduce seepage into the work area. The trenching and construction of the cut off wall would not occur in the flowing Stonybrook Creek; the berm would be built first, followed by the trenching and construction of the cut off wall.

The temporary earthen dam would be constructed 30-foot wide at the base, approximately six-feet tall, with 2:1 side slopes. Prior to placement of the dam, sharp objects, boulders, and cobbles would be removed from the dam area to create a smooth streambed and prevent channels by which water can pass beneath the dam after it is built; these objects would be removed by hand or, if necessary, by a grapple located on either side of the creek. The water would flow by gravity through the construction site in a single, maximum four-foot-diameter pipe; the pipe would run along the southern bank of the creek as to not impede access across the construction area.

To access the box culvert, an access road approximately 1,000 feet long and 20-feet wide would be constructed from the north side of SR 84 to the culvert and would extend through the existing culvert. Heavy equipment, trucks, the drill rig, and other construction equipment would use this temporary access road while working in the creek area. An estimated 23 trees would need to be removed to construct this access road. It is anticipated that the contractor would use the existing private road adjacent to SR 84 on the north as an equipment laydown/staging area for the project.

During the demolition of the box culvert, the area underneath the bridge and extending approximately ten feet from either edge of the box culvert would be covered with a temporary ground cover consisting of plastic sheets, tarps, and/or plywood sheets. No temporary stockpiling of material in the creek is proposed; if any material falls in the creek during the demolition of the box culvert, it would be removed immediately.

Demolition of Existing Reinforced Box Culvert

Demolition activities would include the removal of the existing culvert (approximately 16 feet wide and 60 feet long). The bottom of the reinforced box culvert would be jack hammered out, removed in pieces by hand, and hauled away by trucks on the proposed access road. Maximum ground disturbing activities for the removal of the bottom of the culvert would occur five feet below original ground for the length and width of the existing reinforced box culvert (approximately 16 feet wide and 60 feet long).

During the demolition, ground on either side of the reinforced box culvert would be cut at a 1:1 ½ slope to create space for the construction of the new bridge abutments and rockslope protection. Excess soil as a result of cutting the 1:1 ½ slope would become the property of the contractor.

Construction of New Single Span Bridge

The new Stonybrook Creek Bridge would span approximately 24 feet over Stonybrook Creek (previous technical studies indicated the measured creek channel width was 20.5 feet). Length of the new bridge would be approximately 80 feet. The bridge would be widened approximately four feet to the north and approximately four feet to the south but there would be no shift in the existing alignment of SR 84. The bridge would consist of a 30-foot-long precast structure and two approachment slabs, each of which would be approximately 25 feet long. The total width of the bridge would be approximately 60 feet, consisting of a two-foot wide median barrier (suitable for a rumble strip), three 12-foot wide travel lanes, two eight-foot shoulders, and two feet on either side of the bridge for installation of the bridge railing. The two 12-foot lanes are for traffic in either direction of SR 84 while a third 12-foot lane would standardize the proposed left turn pocket at Palomares Road (proposed as part of 2A331: Caltrans Niles Canyon Short-Term Safety Improvements Project). Bridge railing options for the 80-foot long bridge include C412, ST-70, or concrete barrier type 736.

Approachment Slabs

To construct the approachment slabs, existing SR 84 asphalt concrete (AC) would be jack hammered, removed with a bulldozer equipped with a scraper, and hauled away. The maximum depth of ground disturbance below the existing SR 84 pavement would be five feet. The original ground would be excavated, or filled as necessary, and the area would be compacted with a compactor. The proposed roadway would be built on the embankment and would be approximately two feet thick. The structural section would then be built up by placing pavement structural subbase followed by AC; each layer would be compacted after having been applied. The existing asphalt concrete would be overlaid with new asphalt concrete at the conform area. Temporary construction impacts would not extend beyond the edge of the new roadway for the construction of the approach slabs.

Bridge Abutments & Retaining Walls/Wingwalls

Two abutment foundations would be constructed outside the creek channel. Each abutment would be located on a spread footing, approximately sixty feet long and eight feet wide. Each abutment would be keyed into the spread footing. Both abutments would be connected to retaining walls/wing walls.

Two retaining walls (approximately 100 foot long, one foot wide with a maximum height of ten feet) would be constructed on the northeast and southwest sides of the bridge to support the roadway. The southwest retaining wall/wing wall would begin at approximately Sta. 377+26 and end at Sta. 378+26. The northeast retaining wall/wing wall would begin at approximately Sta. 378+70 and end at Sta. 379+70. The retaining walls would require approximately one foot of ground disturbance for the foundation of the walls and temporary ground disturbance of two feet beyond the length and width of the retaining wall. The retaining walls would be constructed on the spread footing previously described. Rebar would be placed into the concrete of the spread footing and used to connect the retaining wall to the spread footing.

Type 736 concrete barriers would be constructed on top the two retaining walls. These barriers would match the length and width of the retaining wall (approximately 100 feet long and one foot wide) and would be approximately three feet high.

Temporary Falsework

Construction of the single-span bridge would involve the placement of falsework within the Stonybrook Creek channel. With the implementation of the temporary creek diversion, a dry working environment is anticipated to set up the temporary falsework. Access to the creek bed for the construction of the temporary falsework would be via the 1,000 foot long access road, approximately 20 feet wide, north of SR 84. All falsework installation and removal would be completed between June 1 and October 15.

Rockslope Protection

Rockslope protection would be installed on either side of the two new abutments, underneath the SR 84 roadway. The rock slope protection would extend the entire length of single-span Stonybrook Bridge (60 feet by 80 feet) and would wrap around the outer edge of bridge for approximately 20 feet. The maximum depth of ground disturbance would be five feet at any point on the 1:1 ½ slope. Rock slope protection fabric would be installed prior to the installation of rock slope protection.

Regrade Stonybrook Creek Channel

The Stonybrook Creek channel would be regraded and shaped to resemble upstream channel sections. The bedding would be overlaid with local rock materials. A slight centerline depression in the channel section would allow for a low flow channel to form.

Shoulder Transition

A two-hundred-foot shoulder transition would be constructed on both sides of the 80-foot single-span bridge. The two-hundred-foot-shoulder transition would be eight feet at its widest point and would transition to a two-foot shoulder to conform to the existing shoulder width of SR 84. All work to construct the eight-foot shoulder transition would occur from paved surface. With the eight-foot shoulder transition, the project limits would be approximately 500 feet (an 80 foot bridge, two 200 foot shoulder transition sections, and a ten foot buffer on either side of the 200 foot transition section).

Right of Way Requirements

A Temporary Construction Easement (TCE), approximately 50 feet upstream and downstream of Stonybrook Creek from the existing Caltrans Right of Way line, would be needed. An additional TCE approximately 300 feet south of SR 84, along Stonybrook Creek, to the meeting point of Stonybrook Creek and Alameda Creek would be acquired to explore riparian mitigation planting.

Drainage and Water Quality

Weepholes would be located on the newly constructed retaining walls. No impacts to existing drainage are anticipated as rainwater would flow off to sides of the bridge via scuppers located on the bridge deck of the new bridge.

The project will seek to incorporate permanent stormwater treatment BMPs, with the goal of treating approximately 2.27 acres of impervious surface. Treatment BMPs will be bioretention-type, constructed in swale and/or basin configuration. Biofiltration strips may also be incorporated, though these are not as preferential as bioretention BMPs. BMPs will be incorporated on-site, within the project limits and Caltrans Right-of-Way, to the maximum extent practicable. If the obligation is not achieved on-site, additional locations will have to be vetted; these include: elsewhere

within Department Right-of-Way, within the same watershed; outside of Department Right-of-Way via partnership with a municipality or agency.

Utilities

Two PG&E poles would be relocated along with a flashing beacon within the project limits. The poles would be located outside the clear recovery zone (approximately eight feet from the edge of travel way) and within Caltrans' right of way.

Traffic Closures

Work at both Stonybrook Bridge and the Alameda Creek Bridge and Overhead would be constructed during four weekend closures of Niles Canyon. Niles Canyon would be closed on Friday at midnight and would reopen at 5 AM.

1.3. Avoidance and Minimization Measures

To avoid and minimize effects to special-status species and their habitats within the BSA, Caltrans would implement the following general measures:

1. **Permits.** Caltrans will include a copy of the all relevant permits within the construction bid package of the proposed project. The Resident Engineer or their designee will be responsible for implementing the Conservation Measures and Terms and Conditions of the U.S. Fish and Wildlife Service (USFWS) Biological Opinion (BO), the California Department of Fish and Wildlife (CDFW) Incidental Take Permit, and the CDFW 1602 Lake and Streambed Alteration Agreement.

2. **Biological Monitor Approval.** Caltrans will submit the names and qualifications of the biological monitor(s) for USFWS/CDFW approval prior to initiating construction activities for the proposed project.

3. **Biological Monitoring.** The agency-approved biologist(s) will be on-site during initial ground-disturbing activities, and thereafter as needed to fulfill the role of the approved biologist as specified in project permits. The biologist(s) will keep copies of applicable permits in their possession when on-site. Through the Resident Engineer or their designee, the agency-approved biologist(s) shall be given the authority to communicate either verbally, by telephone, email or hardcopy with all project personnel to ensure

that take of listed species is minimized and permit requirements are fully implemented. Through the Resident Engineer or their designee, the agency-approved biologist(s) shall have the authority to stop project activities to minimize take of listed species or if he/she determines that any permit requirements are not fully implemented. If the agency-approved biologist(s) exercises this authority, the agencies shall be notified by telephone and email within 48 hours.

4. **Worker Environmental Awareness Training.** All construction personnel will attend a mandatory environmental education program delivered by an agency-approved biologist prior to working on the project.

5. **Pre-construction Surveys.** Prior to any ground disturbance, pre-construction surveys will be conducted by an agency-approved biologist for listed species. These surveys will consist of walking surveys of the project limits and, if possible, accessible adjacent areas within at least 50 feet of the project limits. The biologist(s) will investigate all potential cover sites when it is feasible and safe to do so. This includes thorough investigation of mammal burrows, rocky outcrops, appropriately sized soil cracks, tree cavities, and debris. Native vertebrates found in the cover sites within the project limits will be documented and relocated to an adequate cover site in the vicinity.

6. **Prevention of Wildlife Entrapment.** To prevent inadvertent entrapment of listed species during construction, excavated holes or trenches more than one foot deep with walls steeper than 30 degrees will be covered at the close of each working day by plywood or similar materials. Alternatively, an additional four-foot high vertical barrier, independent of exclusionary fences, will be used to further prevent the inadvertent entrapment of listed species. If it is not feasible to cover an excavation or provide an additional four-foot high vertical barrier, independent of exclusionary fences, one or more escape ramps constructed of earth fill or wooden planks will be installed. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. If at any time a trapped listed animal is discovered, the on-site biologist will immediately place escape ramps or other appropriate structures to allow the animal to escape or the USFWS will be contacted by telephone for guidance. The USFWS will be notified of the incident by telephone and electronic mail within 48 hours.

7. **Wildlife Exclusion Fencing.** The limits of construction zones within suitable habitat for listed species will be delineated with high visibility wildlife exclusion fencing at least four feet in height to prevent wildlife from accessing the construction footprint. The fencing will be removed only when all construction equipment is removed from the site. No project activities will occur outside the delineated PCA. Wildlife exclusion fencing is not required for construction activities occurring outside of suitable habitat for listed species.

8. **Listed Species On Site.** The Resident Engineer will immediately contact the agency-approved project biologist(s) in the event that an Alameda whipsnake or California red-legged frog is observed within a construction zone. The Resident Engineer will suspend construction activities within a 50-foot radius of the animal until the animal leaves the site voluntarily or an agency approved protocol for removal has been established. In the event that a California tiger salamander or other listed species is observed within a construction zone, all construction activities will stop and the USFWS and/or CDFW will be contacted to reinitiate consultation.

9. **Work Window.** All work within suitable upland habitat for California red-legged frog and Alameda whipsnake will occur between March 1 and November 30. During this time, Alameda whipsnakes are typically active and able to move away from construction activities to avoid harm, and California red-legged frogs will have a lower potential for movements across upland habitat. Work within an inundated drainage, channel, wetlands and waters, or in-water work, will be conducted outside the Northern California rainy season of October 15 through April 15.

10. **Work Window for Nesting Birds**. To the extent practicable, tree removal, vegetation removal, and clearing and grubbing activities will be conducted during the non-nesting season, from September 1 to February 14.

11. **Pre-construction Surveys for Nesting Birds.** Pre-construction surveys for nesting birds will be conducted by a qualified biologist no more than 72 hours prior to the start of construction for activities occurring during the nesting season (February 15 to August 31).

12. **Non-Disturbance Buffer for Nesting Birds.** If work is to occur within 300 feet of active raptor nests or 50 feet of active passerine nests, a non-

disturbance buffer will be established at a distance sufficient to minimize disturbance based on the nest location, topography, cover, the species' sensitivity to disturbance, and the intensity/type of potential disturbance.

13. **Pre-construction Surveys for Tree-roosting Bats.** No more than two weeks prior to tree removal, a qualified biologist will conduct a pre-construction survey for crevice and cavity roosting habitat in trees within the BSA that are 12 inches or greater in diameter at breast height. If active roosting habitat is identified, minimization measures will be identified through coordination with CDFW.

14. **Water Quality Inspection.** Water quality inspector(s) will inspect the site after a rain event to ensure that the stormwater Best Management Practices (BMPs) are adequate.

15. **Vehicle Use.** Project employees will be required to comply with guidance governing vehicle use, speed limits on unpaved roads, fire prevention, and other hazards.

16. **Night Work.** To the extent practicable, nighttime construction will be minimized.

17. **Night Lighting.** Artificial lighting of the proposed PCA during nighttime hours will be minimized to the maximum extent practicable.

18. **Trash Control.** All food-related trash items such as wrappers, cans, bottles, and food scraps will be disposed of in closed containers and removed at least once a day from the work area.

19. **Firearms.** No firearms will be allowed in the BSA except for those carried by authorized security personnel, or local, State, or Federal law enforcement officials.

20. **Pets.** To prevent harassment, injury or mortality of sensitive species, no pets will be permitted on the project site.

21. **Caltrans Standard BMPs.** The potential for adverse effects to water quality will be avoided by implementing temporary and permanent BMPs outlined in Section 7-1.01G of the Caltrans Standard Specifications. Caltrans erosion control BMPs will be used to minimize any wind or water-related erosion.

The State Water Resources Control Board has issued a National Pollution Discharge Elimination System Statewide Storm Water Permit to Caltrans to regulate storm water and non-storm water discharges from Caltrans facilities. A Storm Water Pollution Prevention Plan (SWPPP) will be developed for the project, as one is required for all projects that have at least 1.0 acre of soil disturbance. The SWPPP complies with the Caltrans Storm Water Management Plan (SWMP). The SWMP includes guidance for Design staff to include provisions in construction contracts to include measures to protect sensitive areas and to prevent and minimize storm water and non-storm water discharges.

The SWPPP will reference the Caltrans Construction Site BMPs Manual. This manual is comprehensive and includes many other protective measures and guidance to prevent and minimize pollutant discharges and can be found at the following website:

http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm

Protective measures will be included in the contract, including, at a minimum:

a. No discharge of pollutants from vehicle and equipment cleaning are allowed into the storm drain or water courses.

b. Vehicle and equipment fueling and maintenance operations must be at least 50 feet away from water courses.

c. Concrete wastes are collected in washouts and water from curing operations is collected and disposed of and not allowed into water courses.

d. Dust control will be implemented, including use of water trucks and tackifiers to control dust in excavation and fill areas, rocking temporary access road entrances and exits, and covering temporary stockpiles when weather conditions require.

e. Coir rolls will be installed along or at the base of slopes during construction to capture sediment and temporary organic hydro-mulching will be applied to all unfinished disturbed and graded areas.

f. Work areas where temporary disturbance has removed the pre-existing

vegetation will be restored and re-seeded with a native seed mix.

g. Graded areas will be protected from erosion using a combination of silt fences, fiber rolls along toe of slopes or along edges of designated staging areas, and erosion-control netting (such as jute or coir) as appropriate.

22. **Prohibition of Monofilament Erosion Control.** Plastic monofilament netting (erosion control matting) or similar material will be prohibited from use on the project because California red-legged frog and Alameda whipsnake may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

23. **Concrete Waste and Stockpiles.** All grindings and asphaltic-concrete waste will be stored within previously disturbed areas absent of habitat and at a minimum of 150 feet from any aquatic habitat, culvert, or drainage feature.

24. **Revegetation Following Construction.** All areas that are temporarily affected during construction will be revegetated with an assemblage of native grass, shrub, and trees as appropriate. Invasive, exotic plants will be controlled within the PCA to the maximum extent practicable, pursuant to Executive Order 13112.

1.4. Mitigation

As required by the federal Endangered Species Act (FESA), Caltrans will implement reasonable and prudent measures to minimize and avoid take of listed species. While the proposed project has the potential to affect California red-legged frog, Alameda whipsnake, and critical habitat for Alameda whipsnake, the avoidance and minimization measures described in Section 1.3 will reduce the potential adverse impacts.

Pursuant to the procedures of the California Environmental Quality Act (CEQA), Caltrans has assessed the project's potential to impact species designated as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS. To reduce the potential adverse impacts Caltrans will propose a mitigation component to offset any adverse impacts caused by the project.

The special-status species with potential to occur on this project are cryptic and therefore difficult to quantify in terms of numbers of individuals that may be present within the PCA. A ratio of mitigation area to impact area at 3:1 for permanent impacts to suitable habitat and 1:1 for temporary impacts is appropriate to offset impacts to cryptic species. Acreage estimates of the proposed compensatory mitigation are summarized in Chapter 4 for jurisdictional water features and special-status species. Multi-species conservation credits may be applied when tracking Caltrans' fulfillment of the proposed mitigation acreage. The number of trees that may be impacted by the project is also quantified in Chapter 4.

Mitigation for temporary impacts will be accomplished through on-site restoration of temporarily impacted areas, and mitigation for permanent impacts will be accomplished through preservation of suitable habitat off-site through purchase of credits at an approved conservation bank. Currently Caltrans plans to purchase credits at the Ohlone West Conservation Bank for California red-legged frog and Alameda whipsnake. In the event that credits are not available, Caltrans will coordinate with the regulatory agencies to establish an appropriate mitigation strategy.

Chapter 2. Study Methods

2.1. Regulatory Requirements

Project implementation will affect natural resources within the jurisdiction of the following federal and state agencies:

- United States Fish and Wildlife Service (Sacramento Office)
- United States Army Corps of Engineers (San Francisco Office)
- California Department of Fish and Wildlife[1] (Bay–Delta Region Office)
- San Francisco Bay Regional Water Quality Control Board

The federal regulatory requirements and laws that apply to the proposed project include:

- National Environmental Policy Act (NEPA) (42 United States Code [USC] § 4321)
- Federal Endangered Species Act (16 USC § 1531)
- Clean Water Act (CWA), Sections 404 (33 USC § 1344) and 401 (33 USC §1341)
- Migratory Bird Treaty Act (16 USC § 703-712)
- Magnuson-Stevens Act (16 USC §§ 1801-1884)
- Bald Eagle Protection Act (16 USC § 668 et seq.)
- Executive Order 11990 (Protection of Wetlands) (42 Code of Federal Regulations [CFR] 26921)
- Executive Order 13112 (Invasive Species) (64 CFR 6183)

The applicable state laws and regulations include:

- California Environmental Quality Act (Public Resources Code [PRC] § 21000 et seq.)
- California Endangered Species Act of 1984 (CESA) (Fish and Game Code [FGC] § 2050 et seq.)
- Native Plant Protection Act of 1977 (NPPA) (FGC §§ 1900 – 1913)
- Lake and Streambed Alteration Agreement (FGC §§ 1600-1607, 2080.1)
- Protection of Migratory Birds (FGC § 3503, 3515, and 3800)

[1] Effective January 1, 2013, the California Department of Fish and Game was renamed the California Department of Fish and Wildlife (CDFW). Neither the California Fish and Game Code (the section of state law regulating natural resources), nor the California Fish and Game Commission were renamed.

- State Senate Bill 857 (fish passage) (FGC § 5901)

2.2. Studies Required

2.2.1. Database Searches and Literature Review

A literature review was conducted to investigate the potential presence of special-status species and critical habitat within the BSA and vicinity. A regional list of special-status wildlife and flora species was developed by querying the following databases, and each species was then evaluated to determine its potential to occur within the BSA:

- The Information for Planning and Conservation (IPaC) species list from the Sacramento Office of the USFWS generated for the BSA (USFWS 2016; Appendix B).
- The National Marine Fisheries Service (NMFS) species list for the Niles quadrangle (446C; Appendix B).
- The California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California database was searched for the following quads: Calaveras Reservoir (427A), Milpitas (427B), Mountain View (428A), Livermore (446A), Dublin (446B), Niles (446C), La Costa Valley (446D), Hayward (447A), and Newark (447D; CNPS 2016).
- The California Natural Diversity Database (CNDDB) was queried for all occurrence records within five miles of the BSA (CDFW 2016a; Figures 4 and 5).

The results from these searches informed the preliminary technical studies that were conducted to evaluate special-status species for this NES. The result of the evaluations, including each species' potential for occurrence, is provided in Appendix C.

2.2.2. Botanical and Wetlands Studies

Preliminary technical studies were conducted to evaluate the potential for special-status plant species to occur within the BSA. The botanical studies included rare plant surveys and the vegetation typing which is included in this NES (Appendix D). A delineation of potentially jurisdictional wetlands and other Waters of the U.S. was also conducted (Appendix E).

2.2.2.1. VEGETATION TYPING AND LAND COVER CLASSIFICATION

Vegetation mapping had previously been established in 2006 when tree and vegetation surveys were conducted by CH2M Hill for a previous project that did not go to construction. The previous project BSA extended from the intersection of Interstate 680 and SR 84 (PM 18.0) west to the Alameda Creek Bridge (PM 13.6) (CH2M Hill 2007). This vegetation mapping included several areas that overlap the current BSA. During rare plant surveys conducted in August 2014 and again in March 2015, May 2015, August 2015, March 2016, May 2016, and August 2016, Garcia and Associates (GANDA) botanist Constance Ganong mapped vegetation types within new areas of the current BSA, confirmed that the vegetation typing for those areas surveyed in 2006 was accurate, and identified suitable habitat for special-status plant species in the current BSA. Vegetation types were classified in the BSA based on *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988), with the exception of habitat (California bay/coast live oak) described by Sawyer and Keeler-Wolf in *A Manual of California Vegetation* (2009). The verified vegetation type mapping from the 2006 surveys was combined with the newly mapped areas to form a complete vegetation map of the current BSA.

2.2.2.2. SPECIAL-STATUS PLANT SURVEYS

Protocol-level special-status plant surveys for late blooming species were completed for the Niles Canyon Safety Improvement Project in August 2014, and supplemental assessments were conducted on December 2, 2014, March 10-11, May 6 and May 19, August 5 and 17, 2015, March 1-3, 2016, May 9, May 11, and August 2 and 22, 2016. In addition, special-status plant surveys were conducted for a previous project in 2007 by GANDA from PM 18.0 to 13.7 (GANDA 2007). The goals of the protocol-level surveys were to locate, map, and census any special-status plant populations within the project limits. Protocol-level surveys were floristic, meaning that all plant species encountered were identified to the taxonomic level needed to determine if they have special-status. Protocol-level surveys were completed according to the botanical survey guidelines of the USFWS (USFWS 1996a), CDFW (CDFW 2009), and the CNPS (CNPS 2001). No federally or state-listed plants or plants with California Rare Plant Ranks were observed in the portions of the BSA where protocol-level surveys were completed. The rare plant survey report is presented in Appendix D.

2.2.2.3. TREE SURVEY

Because of the overlap of the current BSA with previous tree inventories conducted in the Niles Canyon corridor, only areas that were not covered in previous surveys were inventoried. The data from the Alameda Creek Bridge Replacement Project Tree Inventory (Caltrans 2014), a project planned to go to construction in 2017, and the Niles II Project Tree Inventory (GANDA 2012), a previous project that did not go to construction, were used to complete the inventory of all trees within the BSA. Trees in sections of the current BSA not covered by these previous surveys were surveyed by GANDA biologists working in teams of two or three people during eight site visits on August 18-21, December 2, 2014, March 22, 25, 29, and July 14, 2016. The purpose of the survey was to measure and record the location, species, and DBH of all trees with four inch and greater DBH within the BSA for the Niles Canyon Safety Improvement Project. The entire tree inventory is presented in Appendix F.

2.2.2.4. WETLAND DELINEATION

GANDA botanist Constance Ganong and biologist Meghan Bishop conducted field investigations on September 5 and December 2, 2014 to delineate potential waters of the U.S., including wetlands and water features within the BSA. This investigation followed the methods described in the *Army Corps of Engineers Wetlands Delineation Manual* (USACE 1987), supplemented with guidance as directed by the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008) and *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008). A previous preliminary investigation of jurisdictional waters was conducted within 11.13 acres in 2009 at the BSA for the Alameda Creek Bridge Replacement Project. This preliminary investigation of jurisdictional waters was conducted by URS Corporation and then verified and revised in 2010 by the Caltrans Liaison at the U.S. Army Corps of Engineers (USACE) (USACE File Number SPN-2010-00203S). Therefore, a wetland delineation was not conducted for the area of the Niles Canyon Safety Improvement Project BSA since preliminary jurisdictional determinations verified by the USACE do not expire (USACE 2005). An additional delineation of potential jurisdictional features around Stonybrook Creek and its confluence with Alameda Creek was completed on March 1, March 22, and July 14, 2016. The preliminary jurisdictional determination for the current project and the aquatic delineation report from the July 14 field visit are presented in Appendix E.

2.2.3. Wildlife Studies

Preliminary technical studies were conducted to evaluate the potential for special-status wildlife species to occur within the BSA.

2.2.3.1. WILDLIFE HABITAT AND FISHERIES ASSESSMENT

A reconnaissance-level survey of the BSA was conducted on August 13, 2014 by GANDA biologists Meghan Bishop and Dana Terry, and a supplemental survey was conducted by Meghan Bishop on December 2, 2014. The purpose of this survey was to document habitat within the BSA and assess the potential for the occurrence of special-status wildlife species. Representative areas of the site were surveyed on foot, and the remainder of the BSA was surveyed by vehicle. The habitat assessment also drew on conclusions from biological studies conducted within the BSA for other Caltrans projects that either did not go to construction or are still in the planning phase. GANDA biologists Alexander Pries and Dana Terry, and BioMaAS biologist Elizabeth Gruenstein conducted a supplemental site visit to assess the newly added areas related to the Stonybrook Creek culvert replacement on March 24, 2016. GANDA biologists Rob Aramayo, Katrina Belanger-Smith, and Tiffany Ngo conducted a site visit to describe the instream habitat conditions present in Stonybrook and Alameda Creeks on March 24, 2016. The purpose of the aquatic habitat survey was to evaluate the suitability of creek reaches within the BSA for anadromous fishes and other aquatic species. The wildlife habitat assessment report is presented in Appendix G and the fisheries assessment report is presented in Appendix I.

2.3. Personnel and Survey Dates

Table 1 summarizes the personnel and survey dates of each of the field studies conducted for the Niles Canyon Safety Improvement Project. Field studies for other projects in the Niles Canyon corridor are not included in Table 1.

Table 1. Summary of Personnel and Survey Dates

Staff	Survey Dates	Company / Affiliation
Vegetation Typing		
Constance Ganong, Meghan Bishop	8/7 , 8/8, 12/2/2014	GANDA
Rare Plant Surveys		

Staff	Survey Dates	Company / Affiliation
Constance Ganong, Meghan Bishop, Tiffany Ngo, Rebecca Doubledee	8/7 , 8/8, 12/2/2014 3/10-11, 5/6, 5/9, 8/5, 8/17, 2015 3/1-3, 5/9-5/11, 8/2, 8/22/2016	GANDA
Wetland Delineation		
Constance Ganong, Meghan Bishop, Tiffany Ngo	9/5, 12/2/2014 3/1, 3/22, 7/14/2016	GANDA
Tree Survey		
Eric Jepsen, Constance Ganong, Tiffany Ngo, Meghan Bishop, Alex Pries, Deanna de Castro, Jennifer Addison	8/18-8/21, 12/2/2014 3/22, 3/25, 3/29, 7/14/2016	GANDA
Wildlife Habitat Assessment		
Meghan Bishop, Dana Terry, Alex Pries, Elizabeth Gruenstein	8/13, 12/2/2014 3/24, 7/30/2016	GANDA BioMaAS
Fisheries Assessment		
Robert Aramayo, Katrina Belanger-Smith, Tiffany Ngo	3/24/2016	GANDA

2.4. Agency Coordination and Professional Contacts

Below is a summary of agency consultation and professional contacts to date:

- June 4, 2014 – A meeting was held at Caltrans District 4 Office to discuss the Alameda Creek Bridge Replacement Project. Conclusions from that meeting are relevant to the Niles Canyon Safety Improvement Project, because the project areas partially overlap. Attendees included John Cleckler (USFWS), Melissa Escaron and Marcia Grefsrud (CDFW), Holly Costa (USACE), Derek Beauduy of the Regional Water Quality Control Board (RWQCB), and Joe Heublein (NOAA). Discussion on the potential occurrence of California tiger salamander occurred. Staff from USFWS and CDFW concluded that California tiger salamander would not likely be present in the proposed bridge replacement project area and that compensatory mitigation would not be required for that project.
- January 12, 2015 – Caltrans held a technical assistance meeting in the field with John Cleckler of the USFWS. John Cleckler concluded that California tiger salamander would not likely be present in the proposed project area but

further research and discussion with other USFWS staff would be needed before a conclusion that compensatory mitigation for California tiger salamander would not be required for the project.

- August 27, 2015 – Caltrans informed John Clecker, Darren Howe (NOAA), and Melissa Escaron that Stonybrook Creek Culvert Replacement Project would be incorporated in to the Niles Safety Improvement Project.
- December 21, 2015 – Caltrans held an all agencies meeting with Darren Howe, Derek Beauduy and Dale Bowyer of RWQCB, Melissa Escaron, and stakeholders Alameda Creek Alliance. The meeting covered project elements, the new Stonybrook Creek bridge design, and mitigation for riparian trees for projects occurring within the Niles corridor. The agency representatives present requested a new simulation of the proposed bridge design.
- February 1, 2016 – Caltrans submitted the Stonybrook Creek Culvert Replacement Plans to John Cleckler, Melissa Escaron, Derek Beauduy, and Darren Howe. The plans were submitted with a new simulation of the proposed bridge design.
- February 3, 2016 – Caltrans submitted the Stonybrook Creek Culvert Replacement Plans and updated simulation to Patricia Goodman of USACE.
- February 8, 2016 – Melissa Escaron and Derek Beauduy informed Caltrans that the simulation submitted does not appear to be freespan. Melissa Escaron stated and Derek Beauduy concurred that the design is not likely to be approved by their respective agencies. Derek Beauduy inquired about the reasons for proposing this design instead of a clear span bridge.
- February 26, 2016 – Caltrans confirmed with Darren Howe that prior to the BART weir removal, NOAA will support Caltrans through technical assistance. If the BART weir is removed prior to permitting, Caltrans will initiate either formal individual consultation through NOAA or through the programmatic BO.
- April 11, 2016 – Caltrans submitted a response letter to Melissa Escaron and Craig Weightman of CDFW and Derek Beauduy of RWQCB. The transmittal included Caltrans' emails proposing the bridge as mitigation, the Stonybrook Creek at SR84 Culvert Replacement Hydraulic Report, a technical memorandum discussing comments and recommendations for the culvert replacement project, a Caltrans Record of Meeting stating the active channel

measurement, the CDFW 1602 Lake and Streambed Alteration Agreement for the Niles 1 Project, the RWQCB 401 Certification for the Niles 1 Project, a recent figure showing the OHWM measured in March 2016, a figure from the Niles 1 project displaying the OHWM, and an updated simulation. The Stonybrook Creek Bridge Plans were also included as an attachment.

- April 12, 2016 – During Melissa Escaron's absence, Craig Weightman requested for additional information about the project.

2.5. Limitations That May Influence Results

The winter of 2013-2014 was among the top three driest water years on record in California, and 2013 was the all-time driest calendar year (The Weather Channel 2014). The dry weather may have affected plant species richness within the BSA. Additionally, some plants, including special-status species, which may have bloomed in a normal precipitation year, may not have bloomed at all. To address these concerns, subsequent plant surveys will be performed prior to construction during appropriate blooming periods.

Certain areas were inaccessible due to safety concerns. Areas of steep cut slope and steep grading were not surveyed on foot because of a lack of shoulder access and dangerous walking conditions on the steep hillsides. Indirect observations were made of most of these hillsides from adjacent accessible areas, and observations were assisted by using binoculars and supplemented with aerial imagery interpretation. The two areas of extreme cut slopes that were not foot surveyed due to safety concerns total 4.12 acres. These indirect observations were sufficient to identify the dominant vegetation types present and the occurrence of special-status plant species. Areas totaling 2.78 acres were added to the BSA after the surveys were completed. These areas were surveyed in December 2014, after the late-bloom period had already ended.

The field delineation of jurisdictional waters was conducted during the late summer (September 5) during one of the driest water years on record in California. However, the identification of wetlands is based on hydric soil characteristics, direct hydrologic indicators, and vegetation types. This combination of criteria allowed investigators to determine presence of wetlands under the low-precipitation conditions. The jurisdiction of individual features is still pending verification by the USACE.

This project relies heavily on the roosting bat habitat surveys that were conducted for the Alameda Creek Bridge Replacement Project and the Stonybrook Creek Culvert Replacement Project to inform the determinations of potential for various bat species to occur. This survey was focused on identifying bats roosting in and on the Alameda Creek Bridge in July of 2014 and around the Stonybrook culvert in July of 2016. There is a high degree of variation in bat activity on a nightly and seasonal basis. As a result, there is the possibility that additional numbers of bats or additional species may be present in the Alameda Creek Bridge, within the vicinity of Stonybrook Creek, or elsewhere in Niles Canyon. Species such as the western red bat and hoary bat might be present during the fall migration period. No formal roosting bat surveys were conducted in the Alameda Creek Bridge Overhead. Other potential bat roosting habitat is likely present in the BSA in trees and possibly rock outcrops. Daytime investigation of potential roosts in trees is impractical; therefore surveys focusing on trees typically consist of a habitat assessment to identify potentially suitable features (e.g., exfoliating bark, decaying branches, hollows, woodpecker holes).

Protocol-level surveys for federally listed wildlife species were not performed for this project. The potential for federally listed wildlife species to occur within the BSA was based on the evaluation of habitat suitability for target species during field surveys, the inference of presence, and technical assistance with USFWS. The field surveys were augmented through a review of authoritative databases (e.g., CNDDB) for species occurrences in the project vicinity; previous habitat assessments and reconnaissance-level site visits; and the review of aerial photographs.

Chapter 3. Results: Environmental Setting

3.1. Biological Study Area

Safety improvements will be constructed in several isolated locations along SR 84, and therefore the BSA consists of twelve separate segments that were defined to encompass all project improvements as well as space needed for potential construction access and staging (Figure 3). No project activity will occur in the areas between the isolated segments of the BSA. The total area within the BSA is 61.13 acres, 28.30 of which are the paved surfaces of SR 84 and adjacent connecting roadways.

The PCA is the area that will be temporarily or permanently impacted through project activities, and is included entirely within the BSA. The PCA was developed by converting the project design files to Geographic Information Systems (GIS) format, identifying the features that will be constructed and identifying staging areas and areas which require temporary access for construction.

3.2. Physical Conditions

The existing physical conditions of the BSA are typical of the San Francisco Bay Area Coast Range environments of California. The climate is Mediterranean, which has moist, mild winters and dry summers. The BSA is located to the east of the San Francisco Bay, which moderates the typically Mediterranean climate. Annual precipitation averages 18 inches, and is typically delivered as rainfall between November and April. Average temperatures range from 39 to 56 degrees (º) Fahrenheit (F) in winter, and from 57 to 89 ºF in summer (NOAA 2014).

The Union Pacific Railroad tracks and SR 84 both run through Niles Canyon, alternating along the north and the south sides via several road and rail bridges spanning Alameda Creek. This stretch of SR 84 is named Niles Canyon Road and is a two-lane highway used as an alternative commute corridor to the highly utilized I-680. There are several rural residences located along Niles Canyon Road. At the west end of the project, the roadway runs along the Niles District in the City of Fremont and is adjacent to residential housing. At the east end of Niles Canyon, the roadway runs along the south edge of the Town of Sunol and runs east to I-680 along a stretch named Paloma Way. An area of low, rolling hills covered in open grassland used for

grazing is located immediately north of Paloma Way. To the south, there is a large field that contains an active open-pit gravel mine. The edges of this field, including the areas immediately adjacent to Paloma Way, are subject to periodic disking.

The BSA also crosses Stonybrook Creek, a tributary to Alameda Creek that flows southward along Palomares Road, and flows under SR 84 via a large concrete culvert located approximately 300 feet west of the intersection of Niles Canyon Road and Palomares Road.

Alameda Creek drains a large watershed east of Niles Canyon, including the Sunol Regional Wilderness area to the southeast and Livermore Valley to the northeast (via a tributary named Arroyo de la Laguna). Flows in Alameda Creek are controlled by water agencies such as SFPUC through releases from reservoirs upstream of the BSA.

The soil survey for the BSA was obtained from the Natural Resources Conservation Service (NRCS) online Web Soil Survey, and twelve different soil units were identified (NRCS 2014).

- Los Gatos-Los Osos complex, 30 to 75 percent slopes, eroded (LpF2)
- Los Osos loam, seeped variant, 3 to 15 percent slopes (LsC)
- Los Osos silty clay loam, 30 to 45 percent slopes, eroded (LtE2)
- Los Osos and Millsholm soils, 30 to 45 percent slopes, eroded (LuE2)
- Millsholm silt loam, 45 to 75 percent slopes, eroded (MhF2)
- Positas gravelly loam, 2 to 20 percent slopes, eroded (PoC2)
- Positas gravelly loam, 20 to 40 percent slopes, eroded (PoE2)
- Riverwash (Rh)
- Rock land (RoF)
- Yolo loam, 0 to 3 percent slopes (YmA)
- Yolo loam, 3 to 10 percent slopes (YmB)
- Zamora silt loam, 0 to 4 percent slopes (Za)

The BSA is within the lower portion of the Alameda Creek watershed, an area that includes the southern two-thirds of Alameda County and drains approximately 700 square miles. Alameda Creek carries runoff from the upper Alameda Creek watershed and the watersheds of Arroyo de la Laguna, Calaveras Creek, and Arroyo Hondo. Alameda Creek has high winter and spring flows, but for most of the year the creek in the vicinity of the BSA exhibits slow to moderate flows with several deep pools and some riffles. The SFPUC regulates the flows in Alameda Creek for flood protection

and water management at San Antonio Reservoir, Calaveras Reservoir, and the Upper Alameda Creek Diversion Dam. As a result, fluctuations in flow are usually moderated during rain events. Additional tributaries in the vicinity of the BSA include Arroyo de la Laguna and Sinbad Creek, and a few small intermittent streams that carry water from the north and south sides of Niles Canyon into Alameda Creek.

3.3. Biological Conditions

The classification of vegetation used in this report is based on *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988), with the exception of habitat (California bay/coast live oak) described by Sawyer and Keeler-Wolf in *A Manual of California Vegetation* (2009). In addition, the BSA includes paved, urban, and landscaped areas.

A description of each land cover type as it exists within the BSA was included in the rare plant survey report (Appendix D). Table 2 lists the size of each land cover type with the BSA. These land cover types are shown in Figure 6.

In addition to the mapped vegetation and land cover types, the wetlands report (Appendix E) describes aquatic features that may be jurisdictional to the USACE under Section 404 of the Clean Water Act. The BSA includes potentially jurisdictional waters that are regulated by the USACE, and other federal waters regulated by the RWQCB. Waters of the State and riparian areas regulated by CDFW are also present within the BSA.

Table 2. Land Cover Types and Acreages in the BSA

Land Cover Type	Acreage
Barren	0.24
California Annual Grassland	1.56
California Bay/Coast Live Oak	5.42
Coastal Scrub	4.37
Valley Foothill Riparian	7.76
Fresh Emergent Wetland	0.03
Creek Channel	0.43
Urban-Landscaped	12.85
Urban-Railroad	0.17
Road	28.30

Total	**61.13**

3.3.1. California Annual Grassland

California Department of Fish and Wildlife's *Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988) describes annual grasslands as a compilation of exotic grass species derived from Europe and introduced during the North American settlement of the late 1800s. Common annual grass species include various brome species (*Bromus* spp.), wild oats (*Avena fatua*), and foxtail barley (*Hordeum murinum*). Common forbs include broadleaf filaree (*Erodium botrys*), redstem filaree (*Erodium cicutarium*), bur clover (*Medicago polymorpha*), and popcorn flower (*Plagiobothrys* spp.). It sometimes includes remnants of native perennial grasses, and often includes a diverse assemblage of native annual forbs (wildflowers).

California annual grasslands are found in small sections throughout the BSA in isolated, disturbed sites along SR 84, in patches between coast live oak woodland, and on steep hillsides. Common non-native grass species in these patches include various brome species, wild oats, Italian ryegrass (*Festuca perennis*), and Smilograss (*Piptatherum miliaceum*). Annual grassland comprises 1.56 acres of the BSA.

Many wildlife species use grasslands for foraging, but some require special habitat features such as cliffs, caves, ponds, or habitats with woody plants within or nearby the grassland for breeding, resting, and cover. Other species may avoid small patches of grassland, preferring larger areas of unbroken grassland. Characteristic reptiles that breed in grassland habitats include the western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), and western rattlesnake (*Crotalus oregonus*). Mammals typically found in this habitat include the black-tailed jackrabbit, California ground squirrel (*Otospermophilus beechyi*), Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), and coyote (*Canis latrans*). In sufficiently large swathes, this habitat also provides important foraging habitat for raptors (Mayer and Laudenslayer 1988).

3.3.2. California Bay/Coast Live Oak Forest

California bay/coast live oak forest is an uncommon hardwood habitat comprised of a pronounced hardwood layer dominated by California bay (*Umbellularia californica*) and coast live oak (*Quercus agrifolia*). This upland hardwood community is typically found on north- and west-facing slopes with soils derived from sandstone. Understory

vegetation is mostly scattered woody shrubs such as poison oak (*Toxicodendron diversilobum*), mountain mahogany (*Cercocarpus montanus*), manzanita (*Arctostaphylos* spp.), and ceanothus (*Ceanothus* spp.). In California, most large stands of this habitat have been cut and cleared for urban uses such as agriculture and housing over the past century.

California bay/coast live oak forest habitat occurs throughout the western and central portions of the BSA dominating the north- and west-facing slopes. Buckeye (*Aesculus californica*) is a common tree associate in this habitat. Poison oak, ocean spray (*Holodiscus discolor*), honeysuckle (*Lonicera hispidula*), and snowberry (*Symphoricarpos* spp.) were common understory associates. Approximately 5.42 acres of this habitat occurs within the limits of the BSA.

The dense understory and thick layer of leaf litter common to oak woodlands provide habitat for many common species of amphibian, reptile, and small mammal. At least 60 species of mammals may use oaks in some way, and as many as 110 species of birds have been observed during the breeding season in California habitats where oaks form a significant part of the canopy or subcanopy. Quail, turkeys, squirrels, and deer may be so dependent on acorns in fall and early winter that a poor acorn year can result in significant declines in their populations (Mayer and Laudenslayer 1988).

3.3.3. Coastal Scrub

Coastal scrub is the dominant vegetation community on the south-facing hills within the BSA. Two dominant species of coastal scrub within the BSA are coyote brush (*Baccharis pilularis*) and California buckwheat (*Eriogonum fasciculatum*). Coyote brush, common in more recently disturbed sites, is found in the ecotones between California bay/coast live oak forest and annual grasslands. Associate species include non-native grasses and small forbs. California buckwheat is found on rocky, steep slopes. Patches of the California buckwheat scrub are found in the western boundary of the BSA, above SR 84. Common species in this area include sticky monkey flower (*Mimulus aurantiacus*) and poison oak. Coastal scrub comprises approximately 4.37 acres of the BSA.

Numerous bird, mammal, and reptile species utilize coastal scrub habitats. Wildlife found in coastal scrub habitat includes species such as white-crowned sparrow (*Zonotrichia leucophrys*), western fence lizard, whipsnakes (*Masticophis* spp.), gopher snake (*Pituophis catenifer*), and deer mouse (*Peromyscus maniculatus*) (Mayer and Laudenslayer 1988).

3.3.4. Valley Foothill Riparian

The valley foothill riparian community within the BSA is characterized by mature riparian forest with 40 to 80 percent canopy cover, often dominated by winter deciduous trees. The majority of the community occurs along the edges of Alameda Creek. Dominant over-story species include California sycamore (*Platanus racemosa*), Fremont's cottonwood (*Populus fremontii*), big leaf maple (*Acer macrophyllum*), and white alder (*Alnus rhombifolia*). Sub-canopy species include arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), and narrowleaf willow (*Salix exigua*). Understory species include poison oak, Himalayan blackberry (*Rubus armeniacus*), and wild grape (*Vitis californica*). Valley foothill riparian comprises approximately 7.76 acres of the BSA.

Riparian habitats provide food, water, migration and dispersal corridors, escape, nesting, and thermal cover for an abundance of wildlife. At least 50 amphibians and reptiles occur in lowland riparian systems throughout California. Many are permanent residents, while others are transient or temporary visitors. Hundreds of bird and mammal species may also use riparian communities, which are particularly attractive due to the presence of nearby water (Mayer and Laudenslayer 1988).

3.3.5. Fresh Emergent Wetland

The fresh emergent wetland vegetation community is typically characterized by colonial hydrophytic vegetation in areas that are perennially wet, or inundated to the point of creating anaerobic soils. The fresh emergent wetlands within the BSA are restricted to areas where the riparian and riverine habitats converge. Dominant species within the fresh emergent wetland in the BSA include monocots such as common tule (*Schoenoplectus acutus* var. *occidentalis*), torrent rush (*Carex nudata*), and bur reed (*Sparganium eurycarpum* ssp. *eurycarpum*). Fresh emergent wetland comprises approximately 0.03 acre of the current BSA.

Common wildlife that could be expected to occur in freshwater marsh habitat include wading birds such as great blue heron (*Ardea herodias*) and great egret (*Ardea alba*), as well as passerines such as sparrows and towhees. Fresh emergent wetland can provide breeding habitat for many amphibian species, including Sierran tree frog (*Pseudacris sierrae*) and western toad (*Bufo boreas*). Reptiles such as aquatic garter snakes (*Thamnophis atratus*) spend the majority of their life cycles in and around freshwater marsh habitats (Mayer and Laudenslayer 1988).

3.3.6. Creek Channel

Creek channel habitat is typically characterized by intermittent or continually running water. The creek channel within the BSA is restricted to the active channel of Alameda Creek at the two bridge crossings and the active channel of Stonybrook Creek. Creek habitat may contain vegetation such as torrent sedge shadowed by over-story trees, including white alder (*Alnus rhombifolia*), Northern California black walnut (*Juglans hindsii*), Fremont cottonwood (*Populus fremontii*), and California sycamore. Tules, sedges (*Carex* spp.), rushes (*Juncus* spp.), and a variety of strictly hydrophytic vegetation may also occur within this habitat. Creek channel comprises approximately 0.43 acre of the BSA.

Open waters provide foraging habitat for many species of birds, including wading birds such as herons and egrets, belted kingfisher (*Ceryle alcyon*), and American dipper (*Cinclus mexicanus*). Many bird species will also capture small insects over water, including swallows, swifts, and flycatchers. Mammals found in creek habitats include river otter (*Lutra canadensis*), mink (*Mustela vison*), muskrat (*Ondatra zibethicus*), and beaver (*Castor canadensis*) (Mayer and Laudenslayer 1988). Bats are also highly associated with open creek areas, where they hunt nocturnal insects that congregate over water.

3.3.7. Urban

Within the BSA, urban areas include unpaved road shoulders that are maintained by Caltrans. These areas may include limited landscaping vegetation or may be relatively barren. The railroad tracks pass through the BSA near the intersection of Niles Canyon Road and Palomares Road, and are also considered an urban habitat type. A barren lot adjacent to Palomares Road is also considered an urban habitat type. Urban areas total 13.26 acres of the current BSA.

As it exists within the BSA, urban habitat is not likely to be used by wildlife species due to the lack of vegetation and the continual disturbance from traffic on the immediately adjacent Niles Canyon Road.

3.3.8. Road

Paved road surfaces comprise 28.30 acres of the BSA. The majority of the paved road surface within the BSA is SR 84, though some short sections of adjacent roads are also included where they intersect with SR 84.

Wildlife species are not expected to use paved road surfaces due to the constant presence of traffic. Wildlife may be forced to cross the road during dispersal, and it is likely that traffic causes mortality during these movements.

3.4. Regional Species and Habitats of Concern

Appendix C presents an assessment of the likelihood of special-status species and their habitats to occur within the BSA based on a characterization of habitats on-site and in the surrounding region. Species that were determined to have potential to occur, including species that may only occur during migration and while foraging, are evaluated in more detail in Chapter 4. Species that are not likely to occur within the BSA are not considered further in this report. CNDDB occurrences of special-status species within five miles of the BSA and pertinent critical habitat units for federally listed plant species are shown in Figure 4, and for wildlife species in Figure 5. Based on the results of biological studies conducted for the project and recent queries of the CNDDB and USFWS species lists, the proposed project could potentially affect several special-status species.

Chapter 4. Results: Biological Resources, Discussion of Impacts and Mitigation

4.1. Natural Communities of Special Concern

Impacts to land cover types are shown in Figure 7 and in Table 3 below.

Table 3. Impacts to Land Cover Types within the BSA

Land Cover Type	Total within BSA (Acres)	Temporary Impacts (Acres)	Permanent Impacts (Acres)	Total Impacts (Acres)
Barren	0.24	0.24	0.00	0.24
California Annual Grassland	1.56	0.07	0.01	0.08
California Bay/Coast Live Oak	5.42	0.66	0.68	1.34
Coastal Scrub	4.37	2.75	0.47	3.22
Valley Foothill Riparian	7.76	1.61	0.35	1.96
Fresh Emergent Wetland	0.03	0.01	0.00	0.01
Creek Channel	0.43	0.00	0.01	0.01
Urban-Landscaped	12.85	2.14	0.95	3.09
Urban-Railroad	0.17	0.00	0.00	0.00
Road	28.30	0.00	0.00	0.00
Total	**61.13**	**7.48**	**2.47**	**9.95**

4.1.1. Wetlands and Water Features

This section discusses waters of the United States, including wetlands, their potential to be affected by project activities, specific avoidance and minimization measures to protect them, possible compensatory mitigation, and cumulative impacts.

4.1.1.1. SURVEY RESULTS

A total of approximately 3.09 acres of potential waters of the U.S., including wetlands, were delineated within the 61.13 acres of the BSA. This includes one wetland feature (FE-2) and one water feature (PC-4) previously surveyed by URS in 2009 and subsequently verified by the USACE in 2010 (USACE File Number SPN-

2010-00203S), as well as new features identified by GANDA on September 5, 2014 and in March 1 and 22, and July 14, 2016. These newly identified features have not yet been verified by the USACE. The preliminary determination of jurisdictional waters is presented in Appendix E.

One wetland type, fresh emergent wetland, and one water feature type, perennial creek, were mapped. Field investigations identified three fresh emergent wetland features (totaling 0.0347 acre), and nine water features (totaling 3.059 acres) within the BSA (Table 4, Figure 6). Eight of the water features are segments of Alameda Creek that pass through the BSA, and one of the water features is Stonybrook Creek. For these wetland and water features, a preliminary evaluation of jurisdiction is presented in Appendix E. The combined area of FE-2 and PC-4 totaling 0.2301 acre has already been verified by the USACE, and all of the remaining 2.8639 acres of potential waters of the U.S. mapped within the BSA are also proposed to be jurisdictional.

The field delineation was conducted during September 2014, March 2016, and July 2016. The winter of 2013-2014 was among the top three driest water years on record in California, and 2013 was the all-time driest calendar year. However, the identification of wetlands is based on hydric soil characteristics, direct hydrologic indicators, and vegetation types. This combination of criteria allowed investigators to determine presence of wetlands under the low-precipitation conditions.

4.1.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

Caltrans standard BMPs would be implemented to protect all waters of the U.S., including wetlands, from indirect effects. Minimizing project design, in combination with the avoidance and minimization measures described in Section 1.3 and proposed mitigation would compensate for impacts to wetland and water features to a negligible amount.

4.1.1.3. PROJECT IMPACTS

Within the BSA, there are 3.0937 acres of potentially jurisdictional wetland or water features. Implementation of the project will result in 0.2671 acres of temporary impacts and 0.0341 acres of permanent impacts to these features as shown in Figure 7 and in Table 4 below. Although there are no temporary impacts to the creek channel land cover type (see Figure 7), there are impacts to jurisdictional water features

because the criteria for identifying jurisdictional features are different from those used to identify land cover types.

Table 4. Impacts to Wetlands and Other Waters

Feature Name	Total Area (Acres)	Temporary Impacts (Acres)	Permanent Impacts (Acres)	Total Impacts (Acres)
Water Features				
IC-1	0.2413	0.0669	0.0316	0.0984
PC-1	0.0225	0.0000	0.0000	0.0000
PC-2	0.2459	0.0388	0.0000	0.0388
PC-3	1.3262	0.0000	0.0000	0.0000
PC-4*	0.2117	0.0000	0.0000	0.0000
PC-5	0.2569	0.0078	0.0013	0.0092
PC-6	0.0549	0.0000	0.0000	0.0000
PC-7	0.1240	0.0000	0.0000	0.0000
PC-8	0.5755	0.1454	0.0000	0.1454
Total Waters	**3.0590**	**0.2589**	**0.0329**	**0.2918**
Wetland Features				
FE-1	0.0082	0.0063	0.0012	0.0075
FE-2*	0.0184	0	0	0
FE-3	0.0081	0.0019	0	0.0019
Total Wetlands	**0.0347**	**0.0082**	**0.0012**	**0.0094**
Total				
Total Waters of the U.S.	**3.0937**	**0.2671**	**0.0341**	**0.3012**

*Features verified by the USACE in 2010 (see Appendix E)

4.1.1.4. COMPENSATORY MITIGATION

Compensatory mitigation at a minimum 1:1 ratio is required for all permanent impacts to jurisdictional features unless the USACE District Engineer determines and states in writing that other forms of mitigation are more appropriate. Options include mitigation banks, in-lieu fee arrangements, or separate project-specific activities such as on-site restoration. Caltrans proposes to mitigate through on-site restoration. Final requirements will be established during the permit phase. A Mitigation Proposal will be submitted to the USACE. Because the proposed project would remove impervious structures from the creek bank to restore access to additional habitat in Stonybrook Creek, no compensatory mitigation is proposed for the impacts sustained by the Stonybrook culvert replacement.

4.1.1.5. CUMULATIVE IMPACTS

The resource study area of jurisdictional wetlands and other waters analysis includes Alameda Creek upstream to its confluence with Calaveras Reservoir and downstream to the San Francisco Bay and its tributaries. Cumulative projects that would have an impact on wetland and water features include those that have both direct and indirect impacts leading to an overall reduction in quantity, functionality, and longevity of jurisdictional features. Several past, current, or future projects in the area around Alameda Creek and its tributaries had, or have, the potential to affect jurisdictional wetland and water features. A brief summary of the known projects is provided, as well as planned or completed impacts to jurisdictional wetlands or waters and the associated mitigation provided for each project. Identified Caltrans projects include:

- Niles I Project - Widening of lanes and shoulder to meet current standards on SR 84 through Niles Canyon from Alameda Creek Bridge to Mission Boulevard [Project terminated in 2011 by Caltrans]. This project was terminated in 2011 prior to impacting wetlands.

- Niles Minor Safety Improvements Project - Safety improvements along the Niles Canyon corridor with all improvements occurring on existing paved surfaces [Construction planned in 2015]. This project will occur on pavement only and will have no effects to jurisdictional wetlands or other waters.

- Alameda Creek Bridge Replacement Project – The existing Alameda Creek Bridge (Bridge No. 33-0036) will be removed and replaced with a new structure that meets current Caltrans design standards [Construction planned to begin in 2017]. Four different design alternatives are being considered, and the maximum potential wetland impact will be 1.509 acres. Proposed compensation for wetland impacts include removal or breach of the concrete weir upstream of the existing bridge, removal of current in-stream bridge columns for the existing bridge, removal of stands of invasive giant reed (*Arundo donax*) along the banks of Alameda Creek, and restoring and revegetating all temporarily impacted wetlands.

- Interstate 680 Northbound High Occupancy Vehicle Lane Project - Construction of high-occupancy vehicle lanes, auxiliary lanes, and ramp metering equipment along northbound I-680 from Milpitas to Pleasanton [Construction planned to begin in 2017]. The impacts to USACE jurisdictional features are less than 0.3 acres and will be mitigated through on-

site restoration and off-site purchase of credits at an approved mitigation bank, as needed. The project impacts and associated mitigation are documented in a project-specific Natural Environment Study, which was completed late 2014.

- Arroyo de La Laguna Bridge Project - Widening of the current SR 84 bridge over Arroyo de La Laguna by three feet and bridge scour repair [Construction year unknown]. This project is in the early planning phase and the impacts to jurisdictional wetlands and other waters of the U.S have not yet been determined. The project impacts and associated mitigation will be documented in a project-specific Natural Environment Study and during the permitting process.

In addition to the above highway projects, several local agencies and private entities had or have projects in the Alameda Creek watershed that have affected or may affect jurisdictional wetlands and waters. Identified projects include:

- Sunol Valley Golf Course Maintenance, Facility, and Irrigation Pond Improvement Project - Stream channel restoration as mitigation for irrigation pond improvements [completed around 2004 by Sunol Valley Golf Course]. This project had a Mitigated Negative Declaration CEQA document which included proposed avoidance and minimization measures to avoid impacts to jurisdictional wetlands or waters. Mitigation proposed in the document was 0.45 acre of wetland compensation at a mitigation bank such as Springtown Natural Communities Reserve to be completed in coordination with the resource agencies.

- Sunol and Niles Dam Removal Project - Partial removal of Sunol and Niles Dams to restore fish passage [completed in 2006 by SFPUC]. This project was covered under an Environmental Impact Report (EIR), and had less than 0.5 acre of temporary and permanent impacts to wetlands and other waters. These impacts were mitigated through restoration of all temporarily disturbed jurisdictional features and compensatory mitigation for jurisdictional features permanently disturbed. Additional information on specific mitigation was not available.

- Arroyo de la Laguna Stream Restoration Project - Restoration of the hydrologically altered Arroyo de la Laguna [completed in 2011 by Alameda County Resource Conservation District (ACRCD)]. This project was covered under a Mitigated Negative Declaration CEQA document which included

avoidance and minimization measures to avoid impacts to jurisdictional wetlands or waters.

- Geary Road Bridge Replacement Project - Construction of a new 150 foot long concrete and steel bridge across Alameda Creek [completed in 2013 by SFPUC]. This project was covered under a Mitigated Negative Declaration CEQA document. Approximately 0.01 acre of permanent impacts and 0.5 acre of temporary impacts occurred to jurisdictional features during this project. Because the old bridge structure was removed as part of this project, more fill was removed than was added in for the new project, thus the permanent fill impacts were considered less than significant. Temporary impacts were restored to result in no net loss of wetlands within the project area.

- Kaiser Fish Screen Project - Construction of a new diversion pipe and cylindrical fish screen near Alameda County Water District's (ACWD) Rubber Dam 1 where the BART Bridge crosses Alameda Creek [completed in 2014 by ACWD]. This project was covered under a Mitigated Negative Declaration CEQA document which included avoidance and minimization measures to avoid impacts to jurisdictional wetlands or waters.

- ACWD Alameda Creek Pipeline No. 1 and Lago Los Osos Pipeline Project - Installation of fish screens at an existing water diversion, removal of an inflatable rubber fabric dam, modification of the dam's foundation to improve fish passage, and construction of a pipeline under Alameda Creek to connect recharge basins [completed in 2014]. This project was covered under a Mitigated Negative Declaration CEQA document which included avoidance and minimization measures to avoid impacts to jurisdictional wetlands or waters.

- Bay Division Pipeline Reliability Upgrade Project - The project constructed a 21 mile pipeline, parallel to, and within the existing right-of-way of the Bay Division Pipeline (BDPL) Nos. 1 and 2, which originate at the Irvington Tunnel Portal in Fremont and end in San Mateo County [Construction completed in 2014 by SFPUC as the BDPL Reliability Upgrade Project]. This project was covered under the Water System Improvement Program Programmatic EIR. The specific wetland and waters impacts of this project are unknown, however SFPUC's mitigation measures include that as a first priority they will implement (1) avoidance measures. For unavoidable

impacts, the SFPUC will implement (2) minimization of unavoidable impacts, (3) restoration procedures, and (4) compensatory creation or enhancement to ensure no net loss of wetland extent or function.

- Mission Valley Rock Expansion - Expansion of the amount and volume of material removed from the Mission Valley Rock Company by moving the footprint of the quarry to include six acres located closer to Alameda Creek [environmental review completed in 2012 by Quarry Lakes, quarry operation ongoing through 2045]. This project has a draft EIR and could have a substantial adverse effect on federal or state protected wetlands. All temporary and permanent wetlands or waters losses would be fully compensated for by participation in and contribution of funding to local and regional habitat planning and restoration efforts pursuant to the proposed Conservation Plan. The compensation will include restoration and enhancement of riparian habitat along Alameda Creek and San Antonio Creek.

- The New Irvington Tunnel Project - Construction of a new, seismically sound, water distribution tunnel adjacent to Alameda Creek [Construction started in 2010 with estimated completion in fall 2015 by SFPUC]. This project's impacts and mitigation to wetlands are summarized in an EIR. For this project temporary impacts to 0.33 acre of wetlands and other waters will occur as well as 0.02 acre of permanent impacts to wetlands. These impacts will be mitigated through post-construction on-site restoration and will result in no net loss of wetlands.

- Mission Clay Quarry Reclamation Project – The project will clean up and restore a 19-acre parcel in the west end of Niles Canyon that has remnants of a long-abandoned quarry and brick factory. Impervious surfaces and a small number of remaining structures are being removed, and the site is to be regraded into a form that blends with the natural hillside [Reclamation to be completed by October 2015]. This project was covered under an Initial Study/Mitigated Negative Declaration CEQA document. A full wetland delineation was required to ensure that the project met agency requirements, and any on-site wetlands were to be avoided during reclamation.

- Ward Creek Flood Control Project - Installation of floodwalls along approximately 1,630 linear feet of Ward Creek between Huntwood Avenue and the Union Pacific Railroad [environmental review completed in 2014 by

ACWD]. This project was covered under an Initial Study/Mitigated Negative Declaration CEQA document. There were no permanent impacts to wetlands, and temporary impacts to 271 square feet of wetlands will be restored post-construction.

- Vallecitos Channel Repair Project - Repair of bank damage at Vallecitos Creek and SR 84 to prevent further erosion, restore channel hydraulics, and improve water conveyance efficiency [Construction anticipated in 2015 by ACWD]. This project has a Mitigated Negative Declaration CEQA document which includes proposed avoidance and minimization measures to avoid impacts to jurisdictional wetlands or waters.

- Niles Mixed-Use Project – The project will build 98 residences and 3,620 square feet of commercial and community space on an abandoned lot that once housed an industrial site in the Niles district of Fremont adjacent to Alameda Creek [Construction planned in 2015]. This project was covered under an Initial Study/Mitigated Negative Declaration CEQA document which states that no adverse effects to wetlands will occur.

- Appian Tank Seismic Upgrade Project - Replacement of a storm drain outfall at an existing water storage tank site in Fremont [Construction planned in 2015 by ACWD]. This project has a Mitigated Negative Declaration CEQA document which includes proposed avoidance and minimization measures to avoid impacts to jurisdictional wetlands or waters.

- Sunol Yard and Alameda Creek Watershed Center Project – SFPUC proposes to redevelop and improve an existing corporation yard adjacent to Arroyo de la Laguna just upstream from the confluence with Alameda Creek. SFPUC will also construct a public interpretive center adjacent to the Sunol Water Temple and Alameda Creek [Construction anticipated in late 2015/early 2016]. This project is still in its planning phase and does not yet have a published CEQA document, so potential impacts to wetlands and waters are unknown.

- Little Yosemite Fish Passage Project – Modify existing high-gradient streambed to facilitate fish passage in the Little Yosemite area of Sunol Regional Wilderness [Construction planned in April 2016 by SFPUC]. This project is covered under a Mitigated Negative Declaration CEQA document. It will take place within 0.84 acre of potentially jurisdictional waters in the

streambed of Alameda Creek, and includes mitigation measures to minimize impacts to jurisdictional features.

- ACWD-Alameda County Flood Control Joint Lower Alameda Creek Fish Passage Improvements - Construction of two new fish ladders, replacement of an existing rubber dam, and construction of a new Shinn diversion and fish screening facility [Construction planned in 2017 or later]. This project will be covered under a Mitigated Negative Declaration CEQA document which states that no adverse effects on wetlands will occur. This project is improving fish passage and no mitigation will be required.

- Old Canyon Bridge Replacement Project - Stabilization of the Old Canyon Bridge footings through replacement of the existing rip-rap and installation of cobble in Alameda Creek [in planning phase by City of Fremont, construction start date unknown]. A draft Mitigated Negative Declaration has been written for this project. It proposes no mitigation for jurisdictional wetlands or other waters, because only temporary impacts will occur within Alameda Creek and the site will be restored to original conditions post-construction.

All of these projects went through, or are required to undergo, an environmental review to identify, account for, and mitigate potential adverse impacts. The amount and quality of wetland habitat being impacted by the proposed project is expected to be minimal. Impacts from the proposed project will be mitigated through on-site restoration activities or, if required, mitigation at an off-site location will be completed. All other projects analyzed for cumulative effects have met or will meet the USACE standard of no net loss of jurisdictional wetlands or waters. Caltrans does not anticipate any cumulative impacts to jurisdictional wetland or water features as a result of the proposed project.

4.2. Special-Status Plant Species

4.2.1. Rare Plants

Based on literature and database searches, prior botanical surveys, and familiarity with the region, a total of 38 plant species were initially evaluated, and 25 species were determined to have the potential to occur within the BSA (Appendix D). Figure 4 shows all CNDDB occurrences of special-status plants within five miles of the BSA. Rare plant species occurrences within five miles of the BSA include alkali

milk-vetch (*Astragalus tener* var. *tener*), San Joaquin spearscale (*Atriplex joaquinana*), chaparral harebell (*Campanula exigua*), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), Santa Clara red ribbons (*Clarkia concinna* ssp. *automixa*), Diablo helianthella (*Helianthella castanea*), Contra Costa goldfields (*Lasthenia conjugens*), hairless popcorn flower (*Plagiobothrys glaber*), Oregon polemonium (*Polemonium carneum*), most beautiful jewelflower (*Streptanthuus albidus* ssp. *peramoenus*), and slender-leaved pondweed (*Stuckenia filiformis* ssp. *alpina*). In 2007, GANDA completed a rare plant survey within portions of the BSA for a previous project that did not go to construction, and no rare plants were documented (GANDA 2007). Late season protocol-level surveys were conducted for the current project on August 7 and 8, 2014 by GANDA in areas of natural vegetation types (which excludes paved roadways and urban/railroad areas). This range of survey dates only encompasses the blooming times of late blooming special-status plants potentially occurring within the project area. Another site visit was conducted on December 2, 2014 in areas totaling 2.78 acres that were added to the BSA after the late season surveys were completed. Supplemental protocol-level surveys were conducted on December 2, 2014, March 10-11, 2015, May 6 and 19, 2015, August 5 and 17, 2015, March 1-3, 2016, May 9, May 11, and August 2 and 22, 2016. No federally listed plants, state listed plants, or plants with California Rare Plant Ranks were observed in the sections of the BSA in which protocol-level surveys were completed. Two areas of extreme cut slopes (4.12 acres) were not surveyed on foot due to safety concerns. However, indirect observations were made of these hillsides from adjacent accessible areas, and observations were assisted by using binoculars. These indirect observations were sufficient to determine that no special-status plant species were present. The completion of this survey indicates there is a low potential for rare plants to be in the BSA.

If protected species are discovered, appropriate agency coordination and protective measures will be established. The full special-status plant survey report is presented in Appendix D.

4.2.2. Trees

4.2.2.1. SURVEY RESULTS

A total of 1,201 trees with a DBH of four inches or greater were recorded within the BSA (Table 5). GANDA biologists recorded data for 464 new trees in August and December 2014, March 2016, and July 2016 and used data on an additional 737 trees that had been marked during surveys conducted in 2012 and 2014 for other projects.

It is important to note that this represents the total number of trees within the BSA, and not the number of trees that will be removed or otherwise impacted. Thirty-five different tree species were identified within the BSA, 20 of which are native to California. The bulk of the trees observed during the survey were native species (1,121 trees). The area immediately surrounding Alameda Creek was dominated by valley foothill riparian species, including arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), white alder (*Alnus rhombifolia*), Fremont cottonwood (*Populus fremontii*), and western sycamore (*Platanus racemosa*). Upland habitat was dominated by coastal oak woodland species with coast live oak (*Quercus agrifolia*) by far the most abundant tree in the BSA. Other native upland species included big leaf maple (*Acer macrophyllum*) and California bay laurel (*Umbellularia californica*). The remaining 80 non-native trees (15 species) included tree of heaven (*Ailanthus altissima*), olive (*Olea* sp.), and black locust (*Robinia pseudoacacia*) (Table 5). The full tree survey report is presented in Appendix F.

4.2.2.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance and minimization measures listed in Section 1.3 will reduce the effects to trees during project construction. These measures include revegetation of temporarily impacted areas (Measure #24), which consists of planting of trees where appropriate. Specific tree preservation measures will be addressed during the permitting phase of the project.

4.2.2.3. PROJECT IMPACTS

The number of trees located within temporary or permanent impact areas are shown in Figure 8 and in Table 5 below. Trees located in permanent impact areas are likely to be removed during project activities. Some trees located in temporary impact areas may be preserved depending on the specific activity occurring near them. To be conservative, Caltrans is accounting for removal of all trees in temporary impact areas. During construction, Caltrans will make an effort to reduce impacts to trees in temporary impact areas to the greatest extent possible. Table 6 identifies the native trees that are within the permanent and temporary impact areas that have a DBH of 20 or greater.

Table 5. Tree Abundance and Impacts within the Biological Study Area

Species Common Name	Species Scientific Name	Total in BSA	Temporary Impacts	Permanent Impacts	Total Impacts
Native Trees					
Arroyo willow	*Salix lasiolepis*	29	4	0	**4**
Big leaf maple	*Acer macrophyllum*	112	16	9	**25**
Bishop pine	*Pinus muricata*	2	0	0	**0**
Blue elderberry	*Sambucus mexicana*	17	4	0	**4**
Blue oak	*Quercus douglasii*	1	0	0	**0**
California bay tree	*Umbellularia californica*	104	28	15	**43**
California buckeye	*Aesculus californica*	45	7	4	**11**
Canyon live oak	*Quercus chrysolepis*	3	0	0	**0**
Coast live oak	*Quercus agrifolia*	361	66	21	**87**
Fremont cottonwood	*Populus fremontii*	50	4	0	**4**
Madrone	*Arbutus menziesii*	4	1	0	**1**
Monterey pine	*Pinus radiata*	2	0	0	**0**
Northern California black walnut	*Juglans hindsii*	67	16	0	**16**
Oak species	*Quercus* spp.	3	2	0	**2**
Ponderosa pine	*Pinus ponderosa*	3	0	0	**0**
Red willow	*Salix laevigata*	59	9	1	**10**
Valley oak	*Quercus lobata*	60	18	4	**22**
Western sycamore	*Platanus racemosa*	97	36	14	**50**
White alder	*Alnus rhombifolia*	76	2	0	**2**
Willow	*Salix* spp	26	0	0	**0**
	Total Native Trees	**1,121**	**213**	**68**	**281**
Non-Native Trees					
Almond	*Prunus dulcis*	5	0	0	**0**
Black acacia	*Acacia melanoxylon*	3	0	0	**0**
Black locust	*Robinia pseudoacacia*	16	2	2	**4**
Canary Islands pine	*Pinus canariensis*	1	1	0	**1**
Casuarina species	*Causarina* spp.	1	0	0	**0**
Cork oak	*Quercus suber*	1	0	0	**0**
Eucalyptus	*Eucalyptus globulus*	18	13	0	**13**
Glossy privet	*Ligustrum lucidum*	1	0	0	**0**
Italian alder	*Alnus cordata*	1	0	0	**0**
Olive	*Olea* spp.	11	6	0	**6**
Other-unknown	n/a	5	1	0	**1**
Peruvian pepper	*Schinus molle*	4	1	0	**1**
Plum	*Prunus* sp.	1	0	0	**0**
Red bud	*Cercis canadensis*	3	0	0	**0**
Tree of heaven	*Ailanthus altissima*	9	3	0	**3**
	Total Non-Native Trees	**80**	**27**	**2**	**29**
Total Trees		**1,201**	**240**	**70**	**310**

Table 6. Impacts to Native Trees with DBH of 20 or Greater.

Species Common Name	Temporary Impacts	Permanent Impacts	Total Impacts
California bay tree	3	0	**3**
California buckeye	1	0	**1**
Coast live oak	4	0	**4**
Fremont cottonwood	2	0	**2**
Northern California black walnut	1	0	**1**
Red willow	1	0	**1**
Valley Oak	4	2	**6**
Western Sycamore	22	10	**32**
TOTAL	**38**	**12**	**50**

4.2.2.4. COMPENSATORY MITIGATION

Caltrans will provide tree replacement on-site to the maximum extent possible and an off-site planting strategy will be developed in coordination with CDFW and RWQCB during the permitting process to address the balance of the tree mitigation needs. Trees removed from the riparian zone will be included in the CDFW 1602 Lake and Streambed Alteration Agreement application. Trees in the upland areas will be compensated for under CEQA on-site and off-site as described above.

4.2.2.5. CUMULATIVE IMPACTS

The resource study area of the tree cumulative effect analysis includes the Niles Canyon corridor from SR 84 PM 10.8 to 18.0. Cumulative projects that would have an impact on trees include those that have both direct and indirect impacts leading to an overall reduction in quantity and functionality of trees within the resource study area. Several past or planned future projects had, or have, the potential to affect trees in addition to those in the proposed project. A brief summary of the known projects is provided, as well as planned or completed impacts to trees and the associated mitigation provided for each project. Identified Caltrans projects include:

- Niles I Project [described in Section 4.1.1.5, project terminated in 2011] - Approximately 143 trees were removed for the Niles I Project prior to it being terminated. Recent surveys of the area demonstrate canopy expansion from residual trees within the project area and stump re-sprouting. Therefore, long-term adverse effects due to the tree removal associated with this project are being minimized by natural succession through natural recruitment, epicormic sprouting, and residual canopy expansion. Caltrans is aware that this project

still has unmitigated impacts to trees, and is currently developing a plan that incorporates planting at the Alameda Creek Bridge Replacement Project listed below and an off-site location that is approved by the agencies.

- Niles Canyon Minor Safety Improvements Project [described in Section 4.1.1.5, construction planned in 2015] - This project will occur on pavement only and will have no effect on trees.

- Alameda Creek Bridge Replacement Project [described in Section 4.1.1.5, construction planned to begin in 2017] - Four different design alternatives are being considered, and the maximum potential number of trees that will be removed is 444. This is a conservative estimate that assumes the removal of all trees within temporary impact areas, although in practice some trees in temporary impact areas may be preserved depending on the type of project activity occurring. Caltrans will provide tree replacement on-site of both upland and riparian trees to the maximum extent possible as part of the remediation of the old alignment. An off-site planting strategy will be developed in coordination with CDFW and RWQCB during the permitting process to address the balance of the tree mitigation needs.

- Arroyo de La Laguna Bridge Project [described in Section 4.1.1.5, construction year unknown] - This project is in the early planning phase and the impacts to trees and mitigation associated with the project have not yet been determined. The project impacts and associated mitigation will be documented in a project-specific NES.

In addition to the above highway projects, local agencies and a private entity have projects in Niles Canyon that have affected or may affect trees. Identified projects include:

- Sunol and Niles Dam Removal Project [described in Section 4.1.1.5, completed in 2006] - It is unknown how many trees were removed for this project; however, the EIR mitigation measures include replacement of all trees at a minimum of 1.1:1 or other appropriate ratio, as agreed on by the regulatory agencies. The replacement trees will be native, and restored areas will be monitored for a minimum of five years.

- Mission Clay Quarry Reclamation Project [described in Section 4.1.1.5, reclamation in progress, to be completed by October 2015] – It is unknown if

any trees were removed for this project. The Initial Study/Mitigated Negative Declaration states that there were no mature native trees in the reclamation area, and that project is to avoid removing native trees and shrubs to the maximum extent feasible.

- Sunol Yard and Alameda Creek Watershed Center Project [described in Section 4.1.1.5, construction anticipated in late 2015/early 2016] –This project is still in its planning phase and does not yet have a published CEQA document, so potential impacts to trees are unknown. Public meeting notes indicate that no tree removal is anticipated for this project.

These projects all went through, or are required to undergo, an environmental review to identify, account for, and mitigate potential adverse impacts. All trees removed as part of the projects in the resource study area will be replaced at a minimum of 1:1 ratio and typically at a higher ratio dependent on the resource agency requirements. The specific tree removal area and tree replacement area may not be the same or within the resource study area for all of the projects due to various reasons including limited tree planting space within the canyon, safety issues with planting trees close to SR 84, and limitations due to property ownership. The trees being impacted by the proposed project will be mitigated through replanting on-site to the maximum extent possible and off-site if additional planting areas are required. This project in addition to all other projects analyzed for cumulative impacts have or will meet resource agency requirements for tree mitigation. Caltrans does not anticipate any cumulative impacts to trees as a result of the proposed project.

4.3. Special-Status Animal Species

Based on the literature and database review, 67 special-status wildlife species were initially considered to have potential to occur within the BSA (Appendix C). After the initial assessment of wildlife habitats conducted during the reconnaissance survey, 30 species are considered to have no potential to occur within the BSA, primarily due to a lack of suitable habitat. Fourteen species have a low potential to occur, and 23 species were determined to have moderate or high potential to occur. The potential for occurrence (not expected, low, moderate, or high) of species in the BSA was determined through a combination of habitat suitability, records of occurrences within the region, relative abundance of the species within the region, and the biologists' professional judgment. Those species with moderate or high potential are discussed below. The California tiger salamander, which has a low potential to occur, is also

discussed below because of its prominence in the current regulatory environment. The full wildlife habitat assessment report is presented in Appendix G.

4.3.1. California Tiger Salamander

The Central Distinct Population Segment (DPS) of California tiger salamander (*Ambystoma californiense*) is federally and state listed as a threatened species. They breed in vernal pools and other seasonal or permanent ponds, and spend almost all of their lives underground in upland habitats. California tiger salamanders typically occur in grassland and oak savanna habitats where rodent burrows or deep soil crevices are used as long-term refuge sites. Adults migrate from upland habitats to breeding ponds on rainy nights during late fall and early winter. The aquatic larvae hatch and develop in pools during winter and spring, and typically take four to five months to complete their development and metamorphosis. The juveniles leave the pools to disperse into upland habitats during late spring to early summer (Bolster 2010). Individuals have been found in upland refuge sites as far as 2.2 kilometers (1.36 miles) from breeding ponds, though most individuals are found within 800 meters (0.5 miles) (Orloff 2011).

4.3.1.1. SURVEY RESULTS

There are a total of 56 CNDDB occurrences of California tiger salamander recorded within five miles of the BSA (CDFW 2016a, Figure 5), ten of which are within the species' known 1.3-mile dispersal range (CDFW 2016a, USFWS 2004). The majority of these occurrences are located in the hills south of Niles Canyon Road or in the hills east of I-680. Table 7 shows a total of ten occurrences within the species' recognized 1.3-mile dispersal range (USFWS 2004). The closest occurrence (296) was recorded in 1994, approximately 0.4 mile south of the BSA, just east of Sunol. Alameda Creek and the railroad separate this occurrence from the BSA. The most recent occurrences within the 1.3-mile dispersal range were in 2011 (1107, 1140, and 1141). The three occurrences are more than a mile from the BSA and separated from the BSA by Interstate 680.

Table 7. California Tiger Salamander CNDDB Occurrences within 1.3 Miles of the BSA

Occurrence Number	Year(s) of Observation	Distance from BSA	Summary
296	1994	0.4 mile	Twenty larvae observed in a seasonal pond in non-native grassland in hills south of Niles Canyon.
581	1988	0.5 mile	One individual found alive on Vallecitos Road approximately 0.5 miles northeast of Scotts Corner.
297	1994	0.7 mile	Greater than 20 larvae observed in a seasonal stock pond in grazed, non-native grassland north of the Sunol Valley Golf Course.
705	2000	0.9 mile	One larva collected in a vernal pool in grazed grassland in hills south of Niles Canyon.
654	2001	0.9 mile	One individual collected in oak/scrub/grassland mosaic in hills south of Niles Canyon.
298	1994	0.9 mile	Greater than 75 larvae observed in a stock pond in grazed, non-native grassland adjacent to Sunol Valley Golf Course.
1140	2008, 2010, 2011	1.0 mile	One adult in 2008, fewer than 1000 eggs/egg masses in 2010, and eight larvae in 2011 were observed in a stock pond surrounded by annual grassland/oak savanna northeast of Scotts Corner.
1141	2010, 2011	1.2 mile	At least ten eggs/egg masses observed in 2010 and 20 larvae observed in 2011 in stock ponds northeast of Scotts Corner.
1107	2010, 2011	1.3 mile	One adult found dead on Calaveras Road in 2010, one adult found in burrow in 2011 during SFPUC construction in annual grassland/oak woodland approximately 0.6 miles west of San Antonio Reservoir.
709	1960, 2000, 2006	1.3 mile	One larva collected in 1960, 24+ larvae observed and one collected in 2000, two larvae and one metamorph caught in 2006 in large stock pond in grazed grassland northeast of Sunol.

Despite an abundance of occurrences in the region, California tiger salamanders are not expected to occur within the western portions of the BSA due to the heavily wooded land cover and steep walls of Niles Canyon. The steep, densely wooded canyon walls likely represent a passage barrier for this species, which is typically

found in flat areas or rolling hills dominated by grasslands. Alameda Creek is not suitable breeding habitat for California tiger salamander as this species requires still, ponded water for larval development. The pool immediately downstream of the Stonybrook Creek culvert is also not suitable for breeding due to the presence of flowing water through this area. During a June 4, 2014 technical assistance meeting with Caltrans for the Alameda Creek Bridge Project, representatives from USFWS and CDFW concurred with this assessment of the Niles Canyon area.

California tiger salamanders are also not expected to occur in the eastern portion of the BSA (along Paloma Way) due to barriers between known California tiger salamander occurrences and the BSA. California tiger salamanders are very unlikely occur in the grassland areas adjacent to Paloma Way, just outside the east end of the BSA, since this area has been isolated from known occurrences and suitable breeding ponds by the large gravel mining operation to the south and by I-680 to the north. The nearest occurrence to the Paloma Way segment is 0.5 miles northeast of the BSA and is from 1988 (581). An individual was found on Vallecitos Road/SR 84. There are several stock ponds north of SR 84 and east of I-680 where California tiger salamanders could potentially be breeding. This CNDDB occurrence and the stock ponds are separated from the BSA by I-680. It is very unlikely that an individual could successfully disperse across or underneath I-680 due to the large volume of traffic and that there is only one culvert that spans approximately 700 feet underneath the I-680 and SR 84 intersection. California tiger salamanders are unlikely to locate the culvert and disperse that long of a distance on a paved surface underground. The next nearest occurrence to the Paloma Way segment is 0.7 miles southwest of the BSA and is from 1994 (297). Larvae were found in a stock pond on SFPUC land. This CNDDB occurrence is separated from the BSA by Alameda Creek and a large gravel mining operation. This gravel mining operation would be unsuitable dispersal habitat and would likely prevent any California tiger salamanders from accessing the BSA from the stock ponds located southwest of the BSA.

The Paloma Way section of the BSA encompasses only the gravel road shoulder and urban landcover types, which could be used by California tiger salamanders dispersing between other areas of more suitable habitat. Since this section of the BSA along Paloma Road is isolated from potential breeding ponds and other areas of more suitable upland habitat, the species is unlikely to disperse through the BSA at this location. Based on the lack of breeding habitat, isolation from known occurrences, and the presence of only marginally suitable dispersal habitat, California

tiger salamanders are considered to have a low potential to occur within the Paloma Way segment of the BSA.

4.3.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

The general avoidance and minimization measures listed in Section 1.3 will avoid any potential for effects to California tiger salamander during project construction. These measures include biological monitoring (Measure #3), worker environmental awareness training (Measure #4), pre-construction surveys (Measure #5), prevention of wildlife entrapment (Measure #6), wildlife exclusion fencing (Measure #7), seasonal work window (Measure #9), and the prohibition of monofilament plastic (Measure #22).

4.3.1.3. PROJECT IMPACTS

Since this project will occur in highly disturbed habitat that is only marginally suitable as dispersal habitat for the species, and because avoidance and minimization measures will be implemented to prevent individuals from entering the BSA, this project will have no measurable impact on California tiger salamander. By following the avoidance and minimization efforts, direct harm or injury from construction equipment and activities would be avoided. No breeding habitat is present in or near the BSA, and the project will not create any new barriers to dispersal for the species.

4.3.1.4. COMPENSATORY MITIGATION

Caltrans is not proposing compensatory mitigation for California tiger salamander, because the potential for effect is discountable and immeasurable.

4.3.1.5. CUMULATIVE IMPACTS

Because the proposed project will have no measurable impacts to California tiger salamander, Caltrans does not anticipate any contributions to cumulative impacts. The potential impacts to marginal dispersal habitat are negligible due to the known barriers present between breeding ponds and the BSA. There is no anticipated disturbance of burrows or other suitable upland habitat. Caltrans does not anticipate any disturbance to California tiger salamanders as a result of this project.

4.3.2. California Red-legged Frog

The California red-legged frog was federally listed as a threatened species on May 23, 1996 (USFWS 1996b). Revised critical habitat for this species was designated by USFWS on March 17, 2010 (USFWS 2010). It is also a California Species of Special Concern.

This species occurs in California and Baja California from sea level to 5,000 feet. Within California, they have been recorded from Riverside County to Mendocino County along the Coast Range and from Calaveras County to Butte County in the Sierra Nevada. The species is common along parts of the central coast, but has been extirpated from most of the Sierra Nevada, northern Coast, and northern Transverse ranges. The species is believed to have been extirpated from the southern Transverse and Peninsular ranges, but is still present in Baja California, Mexico (USFWS 2010).

California red-legged frogs have been found breeding in ponds and slow-moving or still sections of streams. Ideal ponds have a mix of deep sections for escaping from predators and shallow sections which warm quickly and help the rearing of tadpoles and juveniles. Some emergent vegetation or shoreline vegetation such as cattails, bulrushes, or willows is also required for attachment of egg masses (USFWS 2002a). Often adults will stay within the breeding habitat year-round if sufficient water is present, but some will move into adjacent uplands or other non-breeding aquatic habitat. Migrating individuals will disperse from breeding sites in straight-line movements, without regard to vegetation or topography (Bulger et al. 2003, Fellers and Kleeman 2007). Radio tagged individuals have been found as far as two miles from suitable aquatic breeding habitat (USFWS 2002a).

Introduced species such as bullfrogs (*Lithobates catesbeianus*), largemouth bass (*Micropterus salmoides*), common carp (*Cyprinus carpio*), and mosquitofish (*Gambusia affinis*) may prey upon one or more life stages (eggs, tadpoles, or adults) of California red-legged frog (Stebbins and McGinnis 2012).

4.3.2.1. SURVEY RESULTS

The BSA is within the historic and current range of California red-legged frog (USFWS 2002a). The proposed project is also within the boundary of the South and East San Francisco Bay Recovery Unit, based on the core area maps provided in the California Red-legged Frog Recovery Plan (USFWS 2002a). The proposed project is located outside of critical habitat for California red-legged frog, the nearest of which

is critical habitat Unit ALA-2 located approximately 1.7 miles southeast of the BSA. There are 18 occurrences of California red-legged frog recorded in the CNDDB that are within five miles of the BSA (CDFW 2016a, Figure 5). The closest occurrence (CNDDB Occurrence #657) was recorded in 2002 approximately 0.1 mile to the south, in a shallow pond near the nursery at the east end of Niles Canyon. Although this species has been documented within Alameda Creek upstream of the BSA (CNDDB Occurrence #829, recorded in 1999), the majority of occurrences are located in ponds in upland areas. Occurrences within two miles of the BSA, which is the maximum dispersal distance of California red-legged frog recognized by the USFWS (USFWS 2002a) are shown in Table 8.

Table 8. California Red-legged Frog CNDDB Occurrences within Two Miles of the BSA

Occurrence Number	Year(s) of Observation	Distance from BSA	Summary
657	2002	0.15 mile	Maximum of 15 individuals observed in a shallow pond between Sunol Dam access road and the nursery.
569	2000	0.3 mile	One juvenile collected in a stock pond in grazed grassland in hills south of Niles Canyon.
581	2000	0.4 mile	Two larvae collected in a stock pond in grazed grassland in hills south of Niles Canyon.
568	2000	0.8 mile	One larva collected in a stock pond in grazed grassland in hills south of Niles Canyon.
829	1999	0.8 mile	One adult observed in Alameda Creek adjacent to Sunol Valley Golf Course.
662	2003	1.3 mile	Unknown number of larvae observed in a shallow pond surrounded by grassland approximately one mile west of San Antonio Reservoir.
305	1999	1.9 mile	One adult collected from a dirt-lined canal on the edge of Fremont. Area has subsequently been developed.

No protocol-level surveys for California red-legged frog were conducted within the BSA, and no California red-legged frogs were observed during the technical field studies related to the development of this document. Within the BSA, Alameda Creek is generally too swift-flowing to provide suitable breeding habitat for California red-legged frogs, though slower-moving eddies and pools at the margins may provide places for egg attachment. However, egg masses placed in these areas are still

susceptible to being washed away during high flows, and breeding habitat for California red-legged frogs is generally marginal in the main channel of Alameda Creek. The pool on the south side of SR 84 at the Stonybrook Creek culvert is relatively still compared to the flow rate of the main Alameda Creek channel, and could represent suitable breeding habitat for California red-legged frog. However, this pool has limited connectivity to more suitable habitat on the north side of SR 84 due to the presence of the road itself, which would likely cause substantial mortality of any frogs attempting to cross. The vertical drop at the culvert is a barrier to frogs attempting to move upstream, forcing them up the adjacent embankment and onto the road should they attempt to disperse northward. Additionally, any frogs using the adjacent riparian corridor for cover would be relegated to a narrow band between SR 84 and Alameda Creek, much of which is subject to winter flooding. For these reasons, if any California red-legged frogs use the pool for breeding, they likely do so in low numbers and with limited success compared to those using stock ponds in nearby upland areas. Several non-native fish species are present in Alameda Creek including common carp (*Cyprinus carpio*), green sunfish (*Lepomis cyanellis*), and largemouth bass (*Micropterus salmoides*) (Leidy 2007), along with red swamp crayfish (*Procambarus clarkii*), all of which may prey upon California red-legged frogs at various life stages. Because the BSA does not contain suitable breeding habitat it is unlikely to support a high density of California red-legged frogs. However, California red-legged frogs may be present in low numbers during periods of movement in the aquatic and upland habitats of the BSA. Upland communities suitable for California red-legged frog within the BSA include California annual grassland, oak woodlands, coastal scrub, and valley foothill riparian areas within the BSA as cover.

Although this species has been documented within Alameda Creek upstream of the BSA (CNDDB Occurrence #829, recorded in 1999), the majority of occurrences are located in stock ponds in upland areas. California red-legged frogs originating from more suitable breeding habitat in nearby areas could potentially enter the BSA during overland movements. Given the proximity of recent CNDDB records to the BSA and the presence of suitable aquatic and upland refuge and dispersal habitat, the California red-legged frog has a moderate potential to occur within the BSA.

4.3.2.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance and minimization measures listed in Section 1.3 will reduce the potential for effects to California red-legged frog during project construction. These

measures include biological monitoring (Measure #3), worker environmental awareness training (Measure #4), pre-construction surveys (Measure #5), prevention of wildlife entrapment (Measure #6), wildlife exclusion fencing (Measure #7), seasonal work window (Measure #9), and the prohibition of monofilament plastic (Measure #22).

4.3.2.3. PROJECT IMPACTS

Direct effects to individual California red-legged frogs may occur throughout the PCA as a result of construction activities, including site preparation, use of heavy equipment, excavation, grading, and other ground disturbance within dispersal and upland habitat. Activities during construction could result in injury or death to individual California red-legged frogs. All efforts to minimize direct effects will be made with the implementation of avoidance and minimization measures listed in Section 1.3. Indirect impacts may result from habitat exclusion, and construction activities could include water quality degradation from erosion or sediment loading. The water quality impacts are unlikely, given the proposed avoidance and minimization measures and Caltrans BMPs.

Direct effects to habitat for California red-legged frog could occur. Habitat effects are summarized in Table 9 and shown in Figure 7. The urban and paved areas within the BSA are not considered suitable habitat for the species. Caltrans does not anticipate any effects to breeding habitat, due to absence of suitable breeding habitat within the BSA. The work will be conducted during the dry season, when adult California red-legged frogs are not expected to be dispersing. Work will be conducted on the decks and railings of bridges within the BSA and temporary impacts to area within the OHWM are expected during the dry season. No in-water work in Alameda Creek will be conducted as part of this project. Very limited impacts to non-breeding aquatic habitat will occur due to temporary impacts to a small roadside wetland. California red-legged frog is not expected to occur in this wetland since it is located between SR 84 and a steep rock wall.

Table 9. Summary of Impacts to California Red-legged Frog Habitat

Land Cover Type	Temporary Impacts (Acres)	Permanent Impacts (Acres)	Total Impacts (Acres)
California Annual Grassland	0.07	0.01	0.08

California Bay/Coast Live Oak	0.66	0.68	1.34
Coastal Scrub	2.75	0.47	3.22
Valley Foothill Riparian	1.61	0.35	1.96
Fresh Emergent Wetland	0.01	0.00	0.01
Total	**5.10**	**1.51**	**6.61**

4.3.2.4. COMPENSATORY MITIGATION

Caltrans proposes mitigation for California red-legged frog through on-site restoration of temporarily impacted areas (at a 1:1 ratio), and off-site compensation for permanently impacted areas (at a 3:1 ratio). Proposed compensatory mitigation is shown in Table 10. Caltrans believes the avoidance and minimization measures, in conjunction with the proposed mitigation and on-site restoration activities, will reduce effects to a negligible level. This mitigation may be used to satisfy the conditions of multiple agencies and jurisdictions including FESA, CESA, and the CEQA process. The final mitigation may be subject to change during the consultation and permitting processes.

Table 10. Proposed Mitigation for Impacts to California Red-legged Frog

Impacts	Impacts (Acres)	Compensation Ratio	Compensation (Acres)
Temporary	5.10	1:1	5.10
Permanent	1.51	3:1	4.53
Total	**6.61**	**n/a**	**9.63**

4.3.2.5. CUMULATIVE IMPACTS

The California red-legged frog resource study area for this analysis was defined by the maximum dispersal distance of individuals (two miles) around the BSA (USFWS 2002a), excluding those projects occurring in highly urban areas where this species is not likely to occur. Cumulative projects that would have an impact on California red-legged frog include those that have both direct and indirect impacts leading to an overall reduction in quantity and functionality of California red-legged frog habitat. Several past or planned future projects had, or have, the potential to affect California red-legged frog. Planned or completed impacts to California red-legged frog and the

associated mitigation are provided for each project. Identified Caltrans projects include:

- Niles I Project [described in Section 4.1.1.5, project terminated in 2011 by Caltrans] – This project did not have impacts to California red-legged frog because it was terminated prior to going to construction.

- Niles Canyon Minor Safety Improvements Project [described in Section 4.1.1.5, construction planned in 2015] - This project will occur on pavement only and will have no effect on California red-legged frog.

- Alameda Creek Bridge Replacement Project [described in Section 4.1.1.5, construction planned to begin in 2017] - Four different design alternatives are being considered, and the maximum potential impact to California red-legged frog habitat will be 6.42 acres. The maximum potential mitigation requirement for these impacts will be 11.37 acres. Removal of the existing bridge columns from the channel of Alameda Creek, along with revegetation of roadway sections that will be removed during roadway realignment, may satisfy portions of the project's mitigation requirements. Off-site compensatory mitigation and restoration of temporarily impacted areas will satisfy remaining mitigation requirements. Caltrans anticipates the purchase of USFWS approved mitigation bank credits for permanent impacts to California red-legged frog habitat.

- Arroyo de la Laguna Bridge Project [described in Section 4.1.1.5, construction year unknown] - This project is in the early planning phase and the impacts to California red-legged frog and mitigation associated with the project have not yet been determined. The project impacts and associated mitigation will be documented in a project-specific Natural Environment Study.

In addition to the above highway projects, several local agencies and private entities had or have projects within the area of analysis. These include:

- Sunol and Niles Dam Removal Project [described in Section 4.1.1.5, completed in 2006] - Impacts to California red-legged frog habitat were mitigated through restoration of all temporarily disturbed areas. The EIR noted that SFPUC would consult with the USFWS to determine the need for any additional mitigation.

- Mission Valley Rock Expansion [described in Section 4.1.1.5, environmental review completed in 2012 covering quarry operation ongoing through 2045] – This project will impact 3.8 acres of marginal habitat for California red-legged frog. The project is covered under a draft EIR that includes several avoidance and minimization measures for the species, as well as requirements for riparian restoration along Alameda Creek within the mine area that will be beneficial to the species.

- Mission Clay Quarry Reclamation Project – [described in Section 4.1.1.5, reclamation in progress, to be completed by October 2015]. This project was covered under an Initial Study/Mitigated Negative Declaration CEQA document. Protocol-level surveys for California red-legged frog were conducted with negative results prior to the start of work on this project. No mitigation was proposed, although the reclamation of this site will provide an overall positive benefit to the species.

- Sunol Fire Station Project - Construction of a pre-fabricated 2,000 square foot fire station and 2,500 square foot garage in Sunol [Environmental review completed by Alameda County in July 2014, construction to begin 2015/2016]. This project had a Mitigated Negative Declaration CEQA document which stated that 2 to 3 acres of upland habitat suitable for California red-legged frog would be impacted. The document proposed to offset these impacts either through conservation easements or through mitigation bank credits. The document also included avoidance and minimization measures for California red-legged frog including pre-construction surveys and biological monitoring.

- Sunol Yard and Alameda Creek Watershed Center Project [described in Section 4.1.1.5, construction anticipated in late 2015/early 2016] –This project is still in its planning phase and does not yet have a published CEQA document, so potential impacts to California red-legged frog are unknown.

- Old Canyon Bridge Replacement Project [described in Section 4.1.1.5, in planning phase, construction start date unknown] - A draft Mitigated Negative Declaration has been written for this project. It proposes no mitigation for California red-legged frog, because only temporary impacts will occur within Alameda Creek and the site will be restored to original conditions post-construction.

All of these projects went through, or are required to undergo, an environmental review to identify, account for, and mitigate potential adverse impacts to California red-legged frog. Alameda Creek provides only upland and aquatic dispersal habitat for the species within the BSA. Caltrans did not identify any suitable breeding habitat within the project limits. The amount and quality of habitat being impacted by the proposed project will be mitigated through a combination of on-site restoration and off-site compensation as determined during the Section 7 Consultation process. Impacts from the proposed project will not affect the persistence of local populations of California red-legged frog in the Alameda Creek watershed. Impacts from the proposed projects within the resource study area discussed above are not anticipated to impact breeding habitat or create additional wildlife barriers. The majority of the described projects are expected to have a beneficial effect on Alameda Creek and the riparian habitat. Caltrans does not anticipate any cumulative impacts to California red-legged frog as a result of the proposed project.

4.3.3. Alameda Whipsnake

The Alameda whipsnake is listed as threatened under both the FESA and CESA. It was federally listed in 1997 (USFWS 1997), and state listed in 1971. The range of this species is primarily restricted to the inner Coast Range in western and central Contra Costa and Alameda Counties, though there are also records in San Joaquin and Santa Clara Counties (USFWS 2002b). Alameda whipsnakes are 30 to 60 inches long, with dark brown or black on the back and wide orange stripes down the sides. The underside is also orange, becoming pink toward the tail (Stebbins and McGinnis 2012).

Alameda whipsnakes typically occur on south-, southwest-, and southeast-facing slopes. They require open coastal shrub or chaparral, with small mammal burrows as retreat sites (Stebbins and McGinnis 2012). Lizards, in particular western fence lizards, are the primary prey species for Alameda whipsnakes. Rocky outcrops are of importance to this species as cover and also to provide hunting opportunities (USFWS 2011).

Alameda whipsnakes will also venture into adjacent habitats, including grassland, oak savanna, and occasionally oak woodland (USFWS 2002b). Individual whipsnakes have been located over four miles from coastal scrub or chaparral habitat, though they have been found to occur more regularly within 500 meters (1,640 feet) of scrub habitats (USFWS 2011).

4.3.3.1. SURVEY RESULTS

Due to the sensitivity of the species, the specific locations of Alameda whipsnake occurrences are suppressed in the CNDDB, and only the quad in which each occurrence is located is given. There are ten occurrences of Alameda whipsnake within five miles of the BSA (CDFW 2016a). During trapping surveys for the Caltrans Tyler Ranch Project, 12 individual Alameda whipsnakes were captured and released between May 8 and May 29, 2012. This trapping was conducted approximately one mile north of the BSA, in the hills northwest of Sunol. Caltrans reported these Alameda whipsnake occurrences to the CNDDB, but this data has not yet been entered into the public database.

Critical habitat was designated for Alameda whipsnake in 2006, and parts of the BSA along the north side of SR 84 are located within designated critical habitat Unit 3 for Alameda whipsnake (USFWS 2006). A total of 3.12 acres of the BSA are within critical habitat (Figure 4). These areas are located in the western portion of the BSA, primarily on very steep scrub-covered slopes where the project proposes to install either rock fall drapery systems or rock fall fences. Total area for Critical Habitat Unit 3 is approximately 25,965 acres, which includes most of the land bounded by Niles Canyon Road, I-680, I-580, and the edge of urban development of the Fremont/Hayward area.

When designating critical habitat, USFWS is required to list the known primary constituent elements (PCEs), which are habitat components essential to the conservation of the species and which may require special management considerations and protection (50 CFR §424.12). The PCEs for the Alameda whipsnake include the following:

1. PCE 1 – Scrub/shrub communities with a mosaic of open and closed canopy
2. PCE 2 – Woodland and annual grassland plant communities contiguous to lands containing PCE 1
3. PCE 3 – Lands containing rock outcrops, talus, and small mammal burrows within or adjacent to PCE 1 and or PCE 2

The USFWS considers all areas finalized as critical habitat for the Alameda whipsnake to be occupied, within the subspecies' historic geographic range, and to contain sufficient PCE's to support at least one life history function (USFWS 2006). Critical habitat within the BSA contains all three PCEs (Figure 3). The steep slopes in the western portion of the BSA are dominated by scrub habitat and also have large

rock outcrops. A small amount of oak woodland inside of critical habitat is present within the BSA near the intersection of SR 84 and Palomares Road.

No protocol-level surveys for Alameda whipsnake were conducted in the BSA, and no Alameda whipsnakes were observed during the technical field studies related to the development of this document. The wildlife habitat assessment determined that suitable Alameda whipsnake habitat exists within the BSA. These areas may be used for all life functions of the Alameda whipsnake including foraging, refuge, dispersal, and breeding. The remaining upland communities within the BSA including coastal oak woodland, valley foothill riparian, and California annual grassland provide suitable dispersal, foraging, and limited breeding habitat for the species. All of these communities likely provide suitable refuge areas, including limited small mammal burrows and rock outcrops, which the Alameda whipsnake may use during overland movements from March through November. These communities also likely support a population of western fence lizards that could serve as a prey base for Alameda whipsnake. Although the species is unlikely to use the riverine and fresh emergent wetland communities for reproduction or foraging, Alameda Creek has been noted as a movement corridor connecting populations on either side of I-680 (USFWS 1997). Alameda whipsnake may access Alameda Creek and travel east-west along the stream corridor from areas immediately outside of the BSA.

Given the proximity of CNDDB records, the presence of suitable habitat within the BSA, and the proposed project activity occurring within Critical Habitat Unit 3, the Alameda whipsnake has a high potential to occur within the BSA.

4.3.3.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance and minimization measures listed in Section 1.3 will reduce the potential for effects to Alameda whipsnake during project construction. These measures include biological monitoring (Measure #3), worker environmental awareness training (Measure #4), pre-construction surveys (Measure #5), prevention of wildlife entrapment (Measure #6), wildlife exclusion fencing, (Measure #7), work windows (Measure #9), and the prohibition of monofilament plastic (Measure #22).

4.3.3.3. PROJECT IMPACTS

Direct effects to individual Alameda whipsnakes may occur throughout the BSA as a result of construction activities, including site preparation, use of heavy equipment, excavation, grading, and other ground disturbance within suitable habitat. Activities

during construction could result in injury or death in the construction area. All efforts to minimize direct effects will be made with the implementation of avoidance and minimization measures. Although direct mortality of individual Alameda whipsnakes is not anticipated, it is possible due to the cryptic nature of the species. Indirect impacts may result from temporary habitat exclusion and degradation for the duration of construction activities. Degradation of habitat from the proposed project will be offset through on-site restoration.

The Niles Canyon corridor intersects a large tract of relatively undisturbed habitat within Alameda County that contains suitable habitat and is known to support Alameda whipsnake. Because they are a highly mobile species and use a wide variety of habitats adjacent to scrub habitat, all vegetated upland communities within the BSA have the potential to be used by Alameda whipsnake. Within the PCA, temporary and permanent impacts to Alameda whipsnake habitat are anticipated. These impacts are summarized in Table 12. The impacts by land cover type are also shown in Figure 7. The urbanized areas within the BSA are not included in this calculation, because these areas do not provide habitat for the species.

Table 11. Summary of Impacts to Alameda Whipsnake Habitat

Land Cover Type	Temporary Impacts (Acres)	Permanent Impacts (Acres)	Total Impacts (Acres)
California Annual Grassland	0.07	0.01	0.08
California Bay/Coast Live Oak	0.66	0.68	1.34
Coastal Scrub	2.75	0.47	3.22
Valley Foothill Riparian	1.61	0.35	1.96
Fresh Emergent Wetland	0.01	0.00	0.01
Total	**5.10**	**1.51**	**6.61**

Impacts to critical habitat must not adversely modify the critical habitat to the point that it can no longer aid in the species' recovery. The proposed project is anticipated to cause 1.05 acres of temporary impacts to Alameda whipsnake Critical Habitat Unit 3 (Figure 7). Less than 0.001 acre of permanent impacts to critical habitat in the California Bay/Coast Live Oak landcover type is expected. The 1.05 total acres of temporary impacts are a very small percentage of the roughly 25,965 acres of Unit 3. Due to the nominal disturbance to critical habitat within the proposed PCA, Caltrans does not anticipate an adverse modification to critical habitat for Alameda whipsnake.

4.3.3.4. COMPENSATORY MITIGATION

Caltrans proposes compensation for impacts to Alameda whipsnake Critical Habitat Unit 3 through on-site restoration of temporarily impacted areas (at a 1:1 ratio) and through compensation for permanently impacted areas outside Critical Habitat (at a 3:1 ratio). Proposed compensatory mitigation is shown in Table 13. Caltrans believes the avoidance and minimization measures, in conjunction with the proposed mitigation, will reduce effects to a negligible level. This mitigation may be used to satisfy the conditions of multiple agencies and jurisdictions including FESA, CESA, and the CEQA process. The final mitigation requirements will be established during the consultation and permitting processes. These estimates are subject to change.

Table 12. Proposed Mitigation for Impacts to Alameda Whipsnake

Impacts	Impacts (Acres)	Compensation Ratio	Compensation (Acres)
Temporary	5.10	1:1	5.10
Permanent	1.51	3:1	4.53
Total	**6.61**	**n/a**	**9.63**

4.3.3.5. CUMULATIVE IMPACTS

The Alameda whipsnake resource study area for this analysis was defined by the maximum dispersal distance of individuals from scrub habitat (four miles) (USFWS 2011), excluding those projects occurring in highly urban areas where this species is not likely to occur. Cumulative projects that would have an impact on Alameda whipsnake include those that have both direct and indirect impacts leading to an overall reduction in quantity and functionality of Alameda whipsnake habitat. Several past or planned future projects had, or have, the potential to affect Alameda whipsnake. Planned or completed impacts to Alameda whipsnake and the associated mitigation are provided for each project. Identified Caltrans projects include:

- Niles I Project [described in Section 4.1.1.5, project terminated in 2011] – This project did not have impacts to Alameda whipsnake because it was terminated prior to going to construction.

- Niles Canyon Minor Safety Improvements Project [described in Section 4.1.1.5, construction planned in 2015] - This project will occur on pavement only and will have no effect on Alameda whipsnake.

- Alameda Creek Bridge Replacement Project [described in Section 4.1.1.5, construction planned to begin in 2017] - Four different design alternatives are being considered, and the maximum potential impact to Alameda whipsnake habitat will be 6.081 acres. The maximum potential impact to Alameda whipsnake Critical Habitat Unit 3 is 2.010 acres. The maximum potential mitigation requirement for these impacts will be 11.044 acres. Removal of the existing bridge columns from the channel of Alameda Creek, along with revegetation of roadway sections that will be removed during roadway realignment, may satisfy portions of the project's mitigation requirements. Off-site compensatory mitigation and restoration of temporarily impacted areas will satisfy remaining mitigation requirements.

- Interstate 680 Northbound High Occupancy Vehicle Lane Project [described in Section 4.1.1.5, construction planned to begin in 2017] - The permanent and temporary impacts to Alameda whipsnake are expected to be approximately 26 acres and will be mitigated through on-site restoration and off-site purchase of credits at an approved conservation bank. Project impacts and associated mitigation are documented in a project-specific Natural Environment Study and Biological Assessment for USFWS which were completed in late 2014 and early 2015, respectively.

- Arroyo de la Laguna Bridge Project [described in Section 4.1.1.5, construction year unknown] - This project is in the early planning phase and the impacts to Alameda whipsnake and mitigation associated with the project have not yet been determined. The project impacts and associated mitigation will be documented in a project-specific Natural Environment Study.

In addition to the above Caltrans projects, several local agencies and private entities had or have projects within the area of analysis. These include:

- Sunol Golf Course Maintenance and Facility and Irrigation Pond Improvement Project [described in Section 4.1.1.5, completed around 2004] - This project had a Mitigated Negative Declaration CEQA document which included proposed avoidance and minimization measures to avoid impacts to special-status species. The document determined that habitat was not present to support Alameda whipsnake within the project site.

- Sunol and Niles Dam Removal Project [described in Section 4.1.1.5, completed in 2006] - This project was covered under an EIR, and mitigation

measures were in place to avoid and/or minimize impacts to Alameda whipsnake habitat. These measures included restoration of all temporarily disturbed habitats. Additional information on specific mitigation was not available, and compensatory mitigation for Alameda whipsnake was likely completed through consultation with the resource agencies USFWS and CDFW.

- Arroyo de la Laguna Stream Restoration Project [described in Section 4.1.1.5, completed in 2011] - This project was covered under a Mitigated Negative Declaration CEQA document which included avoidance and minimization measures to avoid impacts to special-status species. Alameda whipsnake had a low potential to occur and no Alameda whipsnake was observed during the project.

- Alameda Siphon #4 Project – SFPUC built a 3,000-foot long water delivery pipeline underneath Calaveras Road and Alameda Creek south of I-680 [Construction completed in 2012]. The project resulted in 1.4 acres of permanent impacts and 22.9 acres of temporary impacts to Alameda whipsnake habitat. This was mitigated under the broader Hetch Hetchy Water System Improvement Program's habitat compensation plan, which will provide approximately 1,800 acres of total mitigation covering several SFPUC projects.

- Alameda Creek Pipeline No. 1 Fish Screen and Lago Los Osos Pipeline Project [described in Section 4.1.1.5, completed in 2014] – This project was covered under a Mitigated Negative Declaration CEQA document which made no mention of Alameda whipsnake.

- Mission Valley Rock Expansion [described in Section 4.1.1.5, environmental review completed in 2012 covering quarry operation ongoing through 2045] – The project is covered under a draft EIR which states that habitat for Alameda whipsnake within the project area is highly fragmented, isolated, and disturbed. No avoidance and minimization measures specific for the species were proposed.

- Mission Clay Quarry Reclamation Project [described in Section 4.1.1.5, reclamation in progress, to be completed by October 2015] - This project was covered under an Initial Study/Mitigated Negative Declaration CEQA document. Avoidance and minimization measures were required, including

exclusion fencing to keep Alameda whipsnakes out of active work areas and biological pre-construction surveys. No mitigation was proposed, although the reclamation of this site should provide an overall positive benefit to the species.

- New Irvington Tunnel Project [described in Section 4.1.1.5, construction started in 2010 with estimated completion in fall 2015] - This project's impacts and mitigation to Alameda whipsnake are summarized in an EIR. Mitigation measures include implementing a Groundwater Management Plan to avoid and/or minimize impacts to special-status wildlife. These impacts will be mitigated through post-construction on-site restoration and local compensatory mitigation in coordination with resource agencies.

- Vallecitos Channel Repair Project [described in Section 4.1.1.5, construction planned in 2015] - This project has a Mitigated Negative Declaration CEQA document and has no potential to affect Alameda whipsnake due to distance from suitable habitat.

- Appian Tank Seismic Upgrade Project [described in Section 4.1.1.5, construction planned in 2015] - This project has a Mitigated Negative Declaration CEQA document and has no potential to affect Alameda whipsnake due to distance from suitable habitat.

- Sunol Yard and Alameda Creek Watershed Center Project [described in Section 4.1.1.5, construction anticipated in late 2015/early 2016] –This project is still in its planning phase and does not yet have a published CEQA document, so potential impacts to Alameda whipsnake are unknown.

- Sunol Fire Station Project - [described in Section 4.3.2.5, environmental review completed July 2014, construction start 2015/2016] - This project had a Mitigated Negative Declaration CEQA document which included proposed mitigation measures to avoid and minimize impacts to special-status species. The project will have no effect on Alameda whipsnake.

- ACWD-Alameda County Flood Control Joint Lower Alameda Creek Fish Passage Improvements [described in Section 4.1.1.5, construction planned in 2017 or later]. This project will be covered under a Mitigated Negative Declaration CEQA document and will have no effect on Alameda whipsnake.

- Old Canyon Road Bridge Foundation Protection Repair Project [described in Section 4.1.1.5, in planning phase, construction start date unknown] - A draft Mitigated Negative Declaration has been written for this project. This project will have no effect on Alameda whipsnake. The document does not mention Alameda whipsnake as a potential species to occur within the project area.

All these projects went through, or are required to undergo, an environmental review to identify, account for, and mitigate potential adverse impacts to Alameda whipsnake. The proposed project would impact less than one thousandth of a percent of Alameda whipsnake Critical Habitat Unit 3. The habitat being impacted by the proposed project will be mitigated through a combination of on-site restoration for temporarily impacted areas, and off-site compensation at a local conservation bank. Based on the review of the identified projects and the limitations of available documents Caltrans has to assume that each of these projects is appropriately offsetting the impacts to Alameda whipsnake through compensation and avoidance and minimization measures. Caltrans anticipates impacts to Alameda whipsnake during the construction of the Niles Canyon Safety Improvement Project, and will ensure impacts are fully mitigated through the federal Section 7 process and State 2081 Incidental Take Permit process. Caltrans does not anticipate the project contributing to cumulative impacts for Alameda whipsnake.

4.3.4. Steelhead – Central California Coast DPS

The Central California Coast DPS steelhead (*Oncorhynchus mykiss irideus*) is federally listed as a threatened species. Their range is defined by the National Marine Fisheries Service (NMFS) as all naturally spawned populations from the Russian River south to Aptos Creek in Santa Cruz County, including drainages of San Francisco, San Pablo, and Suisun Bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin Rivers. Steelhead employ a variety of life history strategies that take advantage of the diversity of river systems and regional conditions to which they are adapted. Central California Coast DPS steelhead have a typical “winter” immigration pattern and an “ocean-type” gamete development, which means that adults arrive at their spawning grounds with their eggs close to maturity, and are therefore ready to spawn within a short period of arriving (Moyle 2002). Steelhead typically choose steeper-gradient stream reaches and can spawn in either the mainstems of rivers or far upstream in tributaries. Steelhead typically begin returning to San Francisco Bay in late fall, with most immigration occurring from December through February. Spawning takes place from January through April. Adults spawn in

clean gravels and cobbles, typically at tail crests or riffles where surface waters are forced into the gravel, thereby keeping the gravels clean and the eggs well oxygenated. Juvenile steelhead are found in all habitat types, and habitat preferences change with seasonal changes to stream conditions. Steelhead require cool water temperatures, and are excluded from streams where summer water temperatures exceed 23-27° Celsius (73.4-80.6° Fahrenheit) for extended periods of time. In California, most juvenile steelhead remain in their natal streams for two years before emigrating to the ocean during the late spring or early summer, although strategies from one to four years of freshwater residence are known to occur in California. Estuaries are often an important rearing area for juvenile steelhead on their way to the ocean.

4.3.4.1. SURVEY RESULTS

Currently, fish passage between Alameda Creek and San Francisco Bay is blocked within the City of Fremont by a concrete grade control structure operated by the ACWD. This structure, located approximately 1.2 miles downstream from the western extent of the BSA, is commonly referred to as “the BART weir” because of its proximity to the Bay Area Rapid Transit (BART) system tracks. *O. mykiss* are known to occur within the Alameda Creek watershed (Leidy et al. 2005, CDFW 2016a). Because these fish are prevented from leaving the watershed by the BART weir, they are not currently considered to be anadromous Central California Coast DPS steelhead and do not receive protection under the federal Endangered Species Act. Instead, they are considered to be landlocked rainbow trout. However, ACWD is scheduled to install a fish ladder that will circumvent this structure, although the anticipated start of construction has been delayed and it is unknown when this project will be completed (ACWD 2014). However, if the fish ladder is installed as planned, fish passage between San Francisco Bay and the Alameda Creek watershed would be restored, and *O. mykiss* within Alameda Creek may be included by NMFS as part of the federally threatened Central California Coast steelhead DPS.

In a genetic study by Nielsen (2003), rainbow trout within Alameda Creek were found to be most closely related to naturally-occurring steelhead spawning in Lagunitas Creek, Marin County, which is part of the federally threatened Central California Coast steelhead DPS. Rainbow trout in Arroyo Mocho, a stream which runs through urbanized areas of the Livermore Valley in the northern part of the Alameda Creek watershed, were found to be genetically distinct from other trout in the watershed. These fish are more closely related to stock from the Mount Whitney

Hatchery in Inyo County, though it is unknown if this genetic association is due to historic undocumented stocking activities in Arroyo Mocho, or if the fish in Arroyo Mocho are a natural resident population from which the Mount Whitney Hatchery stock was originally derived (Nielsen 2003). Both the Alameda Creek population and the Arroyo Mocho population would require movement through the BSA to access San Francisco Bay and further oceanic waters in the event that passage is restored at the BART weir.

Stonybrook Creek is a tributary that runs generally southward and parallel to Palomares Road, and flows into Alameda Creek within the BSA just west of the Farwell Underpass railroad bridge. Stonybrook Creek is a steep-gradient stream containing suitable spawning and rearing habitat for steelhead (Gunther et al 2000). It flows under SR 84 via a large concrete culvert with a steep dropoff on its downstream side, which is located approximately 100 feet upstream of the confluence with Alameda Creek. This dropoff represents a barrier to fish passage, though apparently not a complete one, as evidenced by the radio tracking in 1999 of a female *O. mykiss* that moved from Alameda Creek into a pool in Stonybrook Creek one mile upstream from the culvert (Alameda Creek Alliance 1999).

Suitable habitat for steelhead is present at the Stonybrook Creek culvert replacement location. Immediately south of SR 84, there is a pool into which the culvert empties that provides suitable rearing habitat for steelhead. Low-gradient riffles suitable for spawning are present immediately upstream of the culvert, and also downstream of the pool, just before the confluence of Stonybrook Creek and Alameda Creek. However, due to warm temperature conditions and the availability of more suitable habitat further upstream in Stonybrook Creek, the quality of the spawning and rearing habitat within the BSA is marginal at best. The bed of Stonybrook Creek immediately upstream and downstream of the culvert would be recontoured with a natural bottom in order to minimize the tall, vertical step on the south side of the culvert, thereby improving fish passage under SR 84 at this location. The restoration of fish passage will allow greater connectivity to higher quality habitat further upstream in Stonybrook Creek.

Suitable habitat for steelhead is also present in the channel of Alameda Creek underneath the Alameda Creek Bridge and the Alameda Creek Bridge Overhead. Project activity at these locations is restricted to work on the railings, which will all occur on the bridge deck and will not include any in-water work. Although they may

be present in the creek channel below, no impacts to steelhead or their habitat are expected as a result of work at these locations.

Downstream of the BSA, Alameda Creek has been extensively modified for flood control and groundwater recharge. Upstream of the BSA, the creek has been modified by quarry activity and reservoir construction. The SFPUC also regulates flow in Alameda Creek for flood protection and water management, which typically moderates flows during rain events (Caltrans 2012). These actions may influence the suitability of habitat for various life stages of steelhead.

4.3.4.2. AVOIDANCE AND MINIMIZATION EFFORTS

The general avoidance and minimization measures listed in Section 1.3 will reduce the potential for direct and indirect effects to protected *O. mykiss* during project construction. These measures include biological monitoring (Measure #3), worker environmental awareness training (Measure #4), work window (Measure #9), water quality inspections (Measure #14), and implementation of standard water quality BMPs (Measure #21).

4.3.4.3. PROJECT IMPACTS

Direct effects to steelhead are not anticipated from the proposed project. Potential habitat for steelhead within the BSA occurs in the channel of Alameda Creek below the two bridges and within the main channel of Stonybrook Creek. Project activity at the bridge locations over Alameda Creek is restricted to work on the railings, which will occur entirely on the bridge decks well above the creek channel. No in-water work is anticipated as part of this project. No impacts to steelhead or their habitat are expected here. Temporary construction access is required in the floodplain of Alameda Creek, however no in-water work will occur, and therefore indirect impacts are not anticipated from water quality degradation from erosion or sediment loading. During the replacement of the existing box culvert at Stonybrook Creek, 0.03 acre of the creek channel will be permanently impacted as the new bridge is constructed, the creek bottom is recontoured with a natural bottom, and the passage barrier is removed. There will be 0.07 acre of temporary impacts to the creek channel due to the installation of the creek diversion and regrading of the creek bed. Caltrans will implement Standard Water Quality BMPs to ensure there will be no adverse impact to steelhead habitat.

4.3.4.4. COMPENSATORY MITIGATION

There will be minimal permanent impacts of 0.03 acre to habitat for steelhead during the replacement of the existing Stonybrook Creek box culvert. However, recontouring of the existing Stonybrook Creek channel to a natural bottom and the removal of the fish passage barrier will improve fish passage under SR 84 and allow access to the upper reaches of Stonybrook Creek. Because the proposed project would allow improved fish passage to additional habitat in Stonybrook Creek, no compensatory mitigation is proposed for steelhead.

4.3.4.5. CUMULATIVE IMPACTS

Because the proposed project would minimally affect steelhead habitat and improve fish passage to aquatic habitat in the upper reaches of Stonybrook Creek, Caltrans does not anticipate that the proposed project will contribute to cumulative impacts to steelhead.

4.3.5. River Lamprey and Pacific Lamprey

The river lamprey (*Lampetra ayersi*) is a California Species of Special Concern, and the Pacific lamprey (*Entosphenus tridentatus*) is on CDFW's Special Animals List. Both of these species are anadromous fish. Adults are predatory, attaching to and feeding on other fish (most commonly herring and salmon) while inhabiting marine coastal and estuarine waters (Moyle 2002). Spawning takes place in gravelly riffles during the spring, with adults dying after spawning. Ammocetes (lamprey larvae) partially bury themselves in silty backwaters and eddies to feed on algae and microorganisms (Leidy 2007). Although they are generally anadromous, river lampreys and Pacific lampreys are thought to be capable of completing their life cycle in fresh water in cases where they are landlocked (Moyle 2002).

4.3.5.1. SURVEY RESULTS

The most recent confirmed observation of a river lamprey in Alameda Creek occurred in 1966. However, anadromous Pacific lampreys have been regularly documented in the Alameda Creek watershed both upstream and downstream of the BART weir (Leidy 2007). Pacific and river lamprey are difficult to differentiate from one another morphologically, and therefore it is possible that some of the sightings of Pacific lamprey in Alameda Creek may have been river lamprey. Based on the presence of suitable spawning and rearing habitat within Alameda Creek, both species are considered to have a moderate potential to occur within the BSA. The planned

restoration of fish passage at the BART weir, as discussed in Section 4.3.4.1, would allow these species greater access to Alameda Creek. The current Stonybrook Creek culvert under SR 84 represents a complete passage barrier to these species. The replacement of this structure with a single-span bridge and contoured creek will allow these species to access upstream reaches of Stonybrook Creek that contain additional spawning areas.

4.3.5.2. AVOIDANCE AND MINIMIZATION EFFORTS

Avoidance and minimization measures listed in Section 1.3 for other species will reduce the potential for effects to lamprey during project construction. These measures include biological monitoring (Measure #3), worker environmental awareness training (Measure #4), water quality inspections (Measure #14), and implementation of standard water quality BMPs (Measure #21).

4.3.5.3. PROJECT IMPACTS

Direct effects to lamprey species are not anticipated from the proposed project. Habitat for lampreys within the BSA only occurs in the channel of Alameda Creek below the two bridges. Project activity at these locations is restricted to work on the railings of the bridges, which will all occur on the bridge deck well above the creek channel. No in-water work is anticipated as part of this project. Although they may be present in the creek channel below, no impacts to lamprey species or their habitat are expected. Temporary construction access is required in the floodplain of Alameda Creek, although no in-water work will occur, and therefore indirect impacts are not anticipated from water quality degradation from erosion or sediment loading. During the replacement of the existing box culvert at Stonybrook Creek, 0.03 acre of the creek channel will be permanently impacted as the new bridge is constructed, the creek bottom is recontoured with a natural bottom, and the passage barrier is removed. There will be 0.07 acre of temporary impacts to the creek channel due to the installation of the creek diversion and regrading of the creek bed. Caltrans will implement Standard Water Quality BMPs to ensure there will be no adverse impact to lamprey.

4.3.5.4. COMPENSATORY MITIGATION

There will be minimal impacts of 0.03 acre to habitat for lamprey during the replacement of the existing Stonybrook Creek box culvert. However, recontouring of the existing Stonybrook Creek channel to a natural bottom and the removal of the

passage barrier would improve passage for aquatic species like lamprey under SR 84 and allow access to the upper reaches of Stonybrook Creek. Because the proposed project would allow improved passage for aquatic species, no compensatory mitigation is proposed for lamprey.

4.3.5.5. CUMULATIVE IMPACTS

Because the proposed project would minimally affect steelhead habitat and improve fish passage to upper reaches of Stonybrook Creek, Caltrans does not anticipate that the proposed project will contribute to cumulative impacts to lamprey.

4.3.6. Western Pond Turtle

The western pond turtle is a California Species of Special Concern. Western pond turtles range throughout California, from southern coastal California and the Central Valley, east to the Cascade and Sierra Nevada mountain ranges. Western pond turtles occur in a variety of permanent and intermittent aquatic habitats, such as ponds, marshes, rivers, streams, and ephemeral pools. They require slack or slow water habitat for feeding as well as suitable dry habitat such as rocks or fallen logs for basking and hauling out. In addition to appropriate aquatic habitat, these turtles require an upland nesting site in the vicinity of the aquatic habitat, often within 200 meters (656 feet). Nests are typically dug in grassy, open fields with soils that are high in clay or silt. Egg-laying usually takes place between March and August (Jennings and Hayes 1994).

4.3.6.1. SURVEY RESULTS

There are six occurrences of western pond turtle within five miles of the BSA (CDFW 2016a). The nearest of these was recorded in a section of Alameda Creek immediately adjacent to the BSA near the Town of Sunol. This record includes two occurrences in the exact same area; one was a museum specimen collected in 1961, and the other was an adult male found near Alameda Creek in 2006. There is another occurrence that was recorded in Alameda Creek in 2007 approximately 0.3 mile southwest of the BSA. No western pond turtles were observed during field surveys conducted for the wildlife habitat assessment. Within the BSA, foraging and basking habitat is restricted to the two areas where Alameda Creek flows through the stream crossings. Heavily shaded areas under the tree canopy are generally not suitable for this species, though they may cross through during upland movements while seeking more suitable habitat. Suitable nesting habitat is also present in the BSA in south-

facing areas with low-growing vegetation and compact, dry soil with high clay or silt fractions (Bury et al. 2012). Low growing vegetation on south facing slopes occurs in several areas within the BSA, but they are immediately adjacent to the SR 84 roadway and are marginally suitable at best as nesting locations for western pond turtles due to the continual disturbance of vehicle traffic. Although habitat within the BSA is generally marginal and the probability of western pond turtles occurring in any given location is low, based on the large geographic reach of the BSA and the proximity to Alameda and Stonybrook creeks, this species is considered to have a moderate potential to occur within the BSA.

4.3.6.2. AVOIDANCE AND MINIMIZATION EFFORTS

Avoidance and minimization measures listed in Section 1.3 for other species like California red-legged frog and Alameda whipsnake also will reduce the potential for effects to western pond turtle during project construction. These measures include biological monitoring (Measure #3), worker environmental awareness training (Measure #4), pre-construction surveys (Measure #5), water quality inspections (Measure #14), and implementation of standard water quality BMPs (Measure #21).

4.3.6.3. PROJECT IMPACTS

Direct impacts to western pond turtle may result from earth-moving activities that could impact nests and the potential relocation of individuals that wander into work areas. Impacts to nests are not expected to occur due to the limited areas and roadside location of suitable nesting habitat within the PCA. The probability of individuals wandering into work areas is also very low since western pond turtles spend the majority of their lives in or immediately adjacent to aquatic habitat. Minimal permanent impacts to 0.03 acre of creek channel at Stonybrook Creek would occur as the existing box culvert is recontoured to a natural bottom and the passage barrier is removed to allow improved aquatic species passage. There will be 0.07 acre of temporary impacts to the creek channel due to the installation of the creek diversion and regrading of the creek bed. Indirect impacts may result from upland habitat exclusion and water quality degradation from erosion or sediment loading due to construction activities. The water quality impacts are highly unlikely, given the proposed avoidance and minimization measures and Caltrans BMPs. Impacts from the proposed project would not affect the persistence of local populations of western pond turtle in the Alameda Creek watershed.

4.3.6.4. COMPENSATORY MITIGATION

The western pond turtle is not protected under any regulation that would require compensatory mitigation. Since there would be very minimal potential impacts to this species and its habitat from the proposed project, Caltrans is not proposing any compensatory mitigation. The amount and quality of western pond turtle habitat being impacted by the proposed project is minimal and the project will offset impacts through restoration of temporarily impacted areas.

4.3.6.5. CUMULATIVE IMPACTS

Western pond turtles nest up to 1,500 feet from water (Holland 1994), but movements within a stream drainage are highly variable and can exceed 2.5 kilometers (1.6 miles; Holland 1994). The resource study area for this analysis is a 1.6 mile buffer around the BSA. The cumulative analysis is based on projects that would have an impact on western pond turtle, and includes those that have both direct and indirect impacts leading to an overall reduction in quantity, functionality, and longevity of habitat. Several past or planned future projects within the resource study area had, or have, the potential to affect western pond turtles. A brief summary of each known projects' planned or completed impacts to western pond turtle and the associated mitigation is provided. Identified Caltrans projects include:

- Niles I Project [described in Section 4.1.1.5, project terminated in 2011] – This project had no known effects on western pond turtle.

- Niles Canyon Minor Safety Improvements Project [described in Section 4.1.1.5, construction planned in 2015] – This project will have no effects to western pond turtle.

- Alameda Creek Bridge Replacement Project [described in Section 4.1.1.5, construction planned in 2017] - Four different design alternatives are being considered, all of which include the removal of existing bridge footings from the creek channel, the removal or breach of the upstream concrete weir, and removal of invasive giant reed stands. These actions will benefit habitat quality in Alameda Creek by allowing the stream to take on a more natural morphology and facilitating the development of linear in-stream wetlands along the banks. A substantial section of roadway will be removed and revegetated, which will provide upland habitat for the species.

In addition to the above highway projects, local agencies and private entities had or have projects within the area of analysis. These include:

- Sunol and Niles Dam Removal Project [described in Section 4.1.1.5, completed in 2006] - This project was covered under an EIR, and had avoidance and minimization measures in place to protect western pond turtles. Measures included pre-construction surveys and relocating turtles and their nests if required.

- Kaiser Fish Screen Project [described in Section 4.1.1.5, construction completed in 2014] - This project was covered under a Mitigated Negative Declaration CEQA document. The project included avoidance and minimization measures for western pond turtle, including pre-construction surveys and relocation out of active work areas.

- Alameda County Water District (ACWD) Alameda Creek Pipeline No. 1 and Lago Los Osos Pipeline Project [described in Section 4.1.1.5, completed in 2014] - This project was covered under a Mitigated Negative Declaration CEQA document. The project included avoidance and minimization measures for western pond turtle, including pre-construction surveys and relocation out of active work areas.

- Mission Clay Quarry Reclamation Project [described in Section 4.1.1.5, reclamation in progress, to be completed by October 2015] - This project was covered under an Initial Study/Mitigated Negative Declaration CEQA document that states that there will be no impacts to western pond turtle.

- Niles Mixed-Use Project [described in Section 4.1.1.5, construction planned in 2015] - This project was covered under an Initial Study/Mitigated Negative Declaration CEQA document that does not include any information on western pond turtle.

- Sunol Yard and Alameda Creek Watershed Center Project [described in Section 4.1.1.5, construction planned in late 2015/early 2016] –This project is still in its planning phase and does not yet have a published CEQA document, so potential impacts to western pond turtle are unknown.

All of these projects went through, or are required to undergo, an environmental review to identify, account for, and mitigate potential adverse impacts. All projects

stated above with potential impacts to western pond turtle implemented avoidance and minimization measures. The amount and quality of western pond turtle habitat being impacted by the proposed project is minimal and will offset impacts through restoration of temporarily impacted areas and the implementation of avoidance and minimization measures. Caltrans does not anticipate any cumulative impacts to western pond turtle as a result of the proposed project.

4.3.7. San Francisco Dusky-Footed Woodrat

The San Francisco dusky-footed woodrat is a California Species of Special Concern and is locally common in undisturbed portions of habitat throughout its range. This subspecies occurs only in the southern half of the Bay Area (south of Golden Gate through the Santa Cruz Mountains to the Pajaro River and in the East Bay, south of the Suisun Bay along the western slope of the Diablo Range). As a unique subspecies, this designation was confirmed by genetic studies based on mitochondrial DNA (Matocq 2002), although the range may extend slightly farther south along the inner coast range. Woodrats feed mostly on woody plants such as coast live oak, other oaks, big-leaf maple, coffeeberry (*Rhamnus crocea*), alder (*Alnus* spp.), elderberry (*Sambucus* spp.), toyon (*Heteromeles arbutifolia*), and poison oak (Johnston and Cezniak 2004). Woodrats are active mainly at night, when they venture out to collect food (Carraway and Verts 1991). A nocturnal lifestyle allows them to avoid high daytime temperatures and predators. They build large stick nests referred to as "houses" that are typically made of twigs and leaves at the base of a tree, within a set of large logs or tree branches, or in a shrub such as poison oak or toyon. Some houses are constructed off the ground in the lower branches of large trees, typically in coast live or blue oak. Houses are usually built under the canopy of trees and the abundance of houses may be limited by the availability of house-building materials (Bryiski et al. 1990). Dusky-footed woodrats live in loosely-cooperative societies and have a matrilineal (mother-offspring associations; through the maternal line) social structure (Kelly 1990). Females generally remain close to their birth den, while males disperse away from their birth den and are highly territorial and aggressive, especially during the breeding season. Woodrats have a maximum dispersal range of one mile (Smith 1965). The breeding season of dusky-footed woodrats can extend from February through November (Vestal 1938).

4.3.7.1. SURVEY RESULTS

Active woodrat houses are well-distributed throughout the BSA. Location data for woodrat houses was collected during three separate tree surveys: 1) A survey

conducted for this project in August 2014; 2) A tree survey conducted for the Alameda Creek Bridge Project in June 2014; 3) A tree survey conducted in January 2012 for a previous project on SR 84 in Niles Canyon. An additional tree survey was conducted for the Stonybrook culvert replacement portion of the project in March, May, and July 2016, but no additional woodrat nests were located in the expanded BSA. A total of 20 houses were located within the BSA. These houses were constructed primarily at the bases of large trees. In addition, there is a CNDDB occurrence immediately south of the BSA at the eastern end of Niles Canyon, where many houses and individuals were recorded along Alameda Creek in 2006 (CDFW 2016a). Based on the presence of numerous woodrat houses, this species is considered to have a high potential to occur within the BSA.

4.3.7.2. AVOIDANCE AND MINIMIZATION EFFORTS

Avoidance and minimization measures listed in Section 1.3 will reduce the potential for effects to woodrats during project construction. These measures include biological monitoring (Measure #3), worker environmental awareness training (Measure #4), and pre-construction surveys (Measure #5).

4.3.7.3. PROJECT IMPACTS

Riparian and oak woodland habitats within the BSA provide habitat for woodrats. There are no woodrat houses located in permanent impact areas, and there are three located in temporary impact areas. Nests located in temporary impact areas may not need to be removed depending on the type of project activities that will occur, but construction could disturb the woodrats enough to cause nest abandonment. If there is a considerable risk of nest abandonment due to project activity, then nests may have to be removed and/or relocated.

4.3.7.4. COMPENSATORY MITIGATION

The San Francisco dusky-footed woodrat is not protected under any regulation that would require compensatory mitigation. However, Caltrans will request a Memorandum of Understanding (MOU) with CDFW to develop and implement a relocation plan for woodrat houses that would be affected by the proposed project.

4.3.7.5. CUMULATIVE IMPACTS

Woodrats have a maximum dispersal range of one mile (Smith 1965). Using a one-mile buffer around the BSA as a resource study area, the projects identified as having

the potential to affect western pond turtle also apply to San Francisco dusky-footed woodrat (described in Section 4.3.6.5). Cumulative projects that would have an impact on San Francisco dusky-footed woodrat include those that have both direct and indirect impacts leading to an overall reduction in quantity and functionality of woodrat habitat. All of these projects went through, or are required to undergo, an environmental review to identify, account for, and mitigate potential adverse impacts. Three of the projects summarized above had or will have potential impacts to San Francisco dusky-footed woodrat, including the Alameda Creek Bridge Replacement Project, Sunol and Niles Dam Removal Project. These projects had or have avoidance and minimization measures in place to protect woodrat houses or provide relocation of woodrats, if necessary.

The amount and quality of San Francisco dusky-footed woodrat habitat being impacted by the proposed project is minimal, the impacts from the project would be offset through on-site restoration and a woodrat house relocation plan. Impacts from the proposed project are not anticipated to affect the persistence of local populations of San Francisco dusky-footed woodrat in the resource study area. Caltrans does not anticipate any cumulative impacts to San Francisco dusky-footed woodrat as a result of the proposed project.

4.3.8. Roosting Bats

Bats are widespread within California, and may be found in any habitat. They are nocturnal aerial predators of insects and other arthropods, and often forage over open water, marshes, and other moist, open areas where flying insects tend to congregate. Different bat species have different roosting requirements, and as such roosts can be found in a variety of habitats and locations. During the day, bats may use three types of roosts: crevices, cavities, and foliage. Crevice and cavity roosts may be found in natural and human-made features such as caves, cliffs, rock outcrops, trees, mines, buildings, bridges, and tunnels. During the breeding season (April through September), crevice and cavity roosting species typically gather in groups of mothers and young (maternity colonies) that may number in the thousands or even tens of thousands. In contrast, foliage-roosting bats may be solitary or occur in small groups while breeding. Maternity roosts and other day roosts tend to be well hidden and require precise temperature and humidity conditions that favor the growth of the young. Bats often use separate roosts at night as temporary resting locations in between foraging bouts. Night roosts are often located in more open but protected

areas such as overhangs on buildings and recessed areas on the undersides of bridges where warm air is trapped.

Eleven special-status bat species have potential to occur within the BSA based on range, habitat, and recorded occurrences in the region. CNDDB occurrences are reported in the individual species descriptions below. Bats in general are likely to be under-reported to the CNDDB relative to their actual abundance in the environment because they are nocturnal, difficult to detect, and difficult to positively identify and census even when detected. They may be present or even abundant despite a lack of reported occurrences in the region.

In July of 2014 Caltrans conducted a roosting bat survey for the Alameda Creek Bridge Replacement Project, a separate project with a BSA that partially overlaps with the current BSA for the Niles Canyon Safety Improvement Project. An additional bat survey was conducted for the Stonybrook Creek culvert in July of 2016 (Appendix H). Several bat species were detected using the Alameda Creek Bridge as either a maternity roost or a night roost, and other species were recorded acoustically nearby. These reports are referenced where appropriate in the individual species sections below. Bat surveys were not conducted at the Alameda Creek Bridge Overhead.

Pallid Bat

The pallid bat (*Antrozous pallidus*) is a California Species of Special Concern. It is a medium-sized bat that occurs throughout much of the state. They may occur in a wide variety of grasslands, shrublands, and woodlands, though they are generally found in dry, open areas at lower elevations. They typically fly low while foraging for prey, which are caught on the ground or gleaned off of foliage. Prey species include beetles, orthopterans, homopterans, moths, spiders, scorpions, and solpugids (CDFW 2008). The species is capable of taking heavy-bodied insects such as June beetles and Jerusalem crickets as well (Jameson and Peeters 2004). Pallid bats make day roosts within crevices and cavities in caves, rock outcrops, crevasses, mines, tree hollows, bridges, and buildings. Night roosts are typically in more open areas such as under porches and open buildings. Pallid bats are particularly sensitive to disturbance from humans at roost sites (CDFW 2008). There is one occurrence of pallid bat recorded within five miles of the BSA. It was recorded in 2001, but this occurrence is considered sensitive, and its specific locality is suppressed by the CNDDB. It is located within the La Costa Valley quad, which includes the San Antonio Reservoir and Sunol Regional Park areas (CDFW 2016a, Figure 5).

At least 13 pallid bats were observed using the Alameda Creek Bridge for night roosting during Caltrans' bat survey (Caltrans 2014), and the riparian corridor within the BSA is suitable foraging habitat for this species. Suitable roosting habitat may also occur in trees within the BSA. Based on their confirmed presence in the BSA and the presence of suitable foraging habitat, pallid bats are considered to have a high potential to occur.

Townsend's Big-eared Bat

Townsend's big-eared bat (*Corynorhinus townsendii*) is a California Species of Special Concern after a period of consideration as a candidate for listing as Threatened or Endangered under the California Endangered Species Act (California Fish and Game Commission 2013; CDFW 2016b). Townsend's big-eared bat is found throughout California except at high elevations. This species is dependent on cave-like roosting habitat and prefers to forage in native vegetation. Maternity colonies have been found in caves, mines, and buildings (Jameson and Peeters 2004), and they will hibernate during the winter in roosts which are cold, but not below freezing. This species feeds primarily on small moths, though beetles and other insects may be taken as well. They capture prey both in flight and by gleaning insects from foliage. This species is highly sensitive to disturbance at roost sites (CDFW 2008). The closest occurrence of Townsend's big-eared bat was recorded in 1943 approximately 3.5 miles south of the BSA, in the vicinity of Mission San Jose. There is one additional occurrence recorded in 2012 approximately 3.5 miles north of the BSA, where a solitary male was found roosting in a barn structure (CDFW 2016a, Figure 5).

Both of the abutments of the Alameda Creek Bridge contain semi-enclosed spaces with low ceilings that could be used by Townsend's big-eared bats for roosting. However, there is significant evidence of human activity in this space, including graffiti and trash, which greatly reduces the probability that this space would be used for roosting due to the species' sensitivity to disturbance. For this reason, roosting habitat on the bridge is marginal for Townsend's big-eared bat. No suitable semi-enclosed spaces for Townsend's big-eared bat were observed on the Alameda Creek Bridge Overhead, and they are not expected to roost on this bridge. However, trees within the BSA may have more suitable habitat for this species, and suitable foraging habitat is present throughout the BSA and the rest of Niles Canyon. Based on their known presence in the region and the presence of suitable foraging and roosting habitat, Townsend's big-eared bat is considered to have a high potential to occur within the BSA.

Western Mastiff Bat

The western mastiff bat (*Eumops perotis californicus*) is a California Species of Special Concern. It is found primarily within southern California, with scattered populations present within the Coast Ranges south of San Francisco and the Sierra Nevada Mountains north to Butte County. They may occur in a variety of grassland, scrub, and woodland habitats if there are suitable roost features in the vicinity. Roosts are made in crevasses in cliffs, boulders, caves, and buildings. Their main food source are moths which are caught in flight, although beetles, orthopterans, and hymenopterans may also be taken (Bolster 1998). There are no recorded occurrences of western mastiff bat in the CNDDB within five miles of the BSA (CDFW 2016a).

Western mastiff bats may forage throughout the BSA, but this species' preferred roosting habitat of crevices in cliff faces is not present. The rocky outcrops on the north wall of Niles Canyon are not high enough or vertical enough to support western mastiff bat roosts. Marginally suitable roosting habitat is present in the bridges and in trees. Based on the presence of suitable foraging habitat and marginal roosting habitat, western mastiff bats are considered to have a moderate potential to occur within the BSA.

Western Red Bat

The western red bat (*Lasiurus blossevillii*) is a California Species of Special Concern. It is widely distributed throughout California and known to occur in a variety of habitats, including forested canyons, riparian zones and arid areas where they primarily roost in trees and sometimes shrubs (Reid 2006). This non-colonial species roosts in foliage, under overhanging leaves. Western red bats are commonly associated with cottonwood/sycamore and willow riparian habitats (Pierson et al. 2006; Pierson and Rainey 2002). There are no recorded occurrences of western red bat in the CNDDB within five miles of the BSA (CDFW 2016a).

Western red bats may forage throughout the BSA, and they may roost in trees within any of the vegetated habitats. Because this species roosts in foliage, they are not expected to roost on bridges or structures. Based on the presence of suitable foraging and tree roosting habitat, western red bats are considered to have a moderate potential to occur within the BSA.

Hoary Bat

The hoary bat (*Lasiurus cinereus*) is included on CDFW's California State Special Animals List. It is a widespread species found in a variety of habitats throughout California. This solitary bat is most commonly found in association with forested habitats near water (CDFW 2016a). Roosting sites are generally in dense foliage of both coniferous and deciduous trees, at the ends of branches 10-40 feet above the ground, and with open flying space below (Bolster 1998). Moths are the primary food source for hoary bats (Black 1974). Females give birth to young in mid-May through early July. There are no recorded occurrences of hoary bat in the CNDDB within five miles of the BSA (CDFW 2016a).

Hoary bats may forage throughout the BSA, and they may roost in trees within any of the vegetated habitats. Larger, more mature trees are more likely to be used by this species than smaller trees. Because this species roosts exclusively in foliage, they are not expected to roost on bridges or structures. Based on the presence of suitable foraging and roosting habitat, hoary bats are considered to have a moderate potential to occur within the BSA.

Long-Eared Myotis

The long-eared myotis (*Myotis evotis*) is included on CDFW's California State Special Animals List. It can be found throughout California except in the Central Valley and southern deserts. They may occur in all brush, woodland, and forest habitats, though coniferous woodlands and forests seem to be preferred. Roosts are made in buildings, crevices, under tree bark, and in snags. This species roosts singly or in small groups, with nursery colonies ranging from 12-30 individuals. Long-eared myotis prey on a variety of insects and other small arthropods, which are captured in the air, gleaned from foliage, or occasionally taken from the ground (CDFW 2008). There are no recorded occurrences of long-eared myotis in the CNDDB within five miles of the BSA (CDFW 2016a).

Long-eared myotis may roost in crevices within either of the two bridges, or in tree crevices or cavities throughout the BSA. This species may also forage throughout the BSA. Five acoustic detections that are attributed to either long-eared myotis or fringed myotis were recorded within the BSA during the Alameda Creek Bridge bat survey and Stonybrook Creek culvert survey (see Section 4.3.8.1). Based on the presence of suitable roosting and foraging habitat, and the unconfirmed acoustic detection of this species, long-eared myotis is considered to have a moderate potential to occur within the BSA.

Fringed Myotis

The fringed myotis (*Myotis thysanodes*) is included on CDFW's Special Animals List. They range throughout California except for the Central Valley and southern deserts. They may occur in a wide variety of habitats, although pinyon-juniper, valley foothill hardwood, and hardwood-conifer habitats are preferred. Caves, mines, buildings, and crevices are all used for roosting, and maternity colonies can contain up to 200 individuals. Fringed myotis feed mostly on beetles, but other insects and arthropods are also taken. They feed over water, over open areas, and by gleaning from foliage (CDFW 2008). There are no recorded occurrences of fringed myotis in the CNDDB within five miles of the BSA (CDFW 2016a).

Fringed myotis may roost in crevices within either of the two bridges, or in tree crevices or cavities throughout the BSA. This species may also forage throughout the BSA. Five acoustic detections that are attributed to either long-eared myotis or fringed myotis were recorded within the BSA during the Alameda Creek Bridge bat survey and Stonybrook Creek culvert survey (see Section 4.3.8.1). Based on the presence of suitable roosting and foraging habitat, and the unconfirmed acoustic detection of this species, fringed myotis is considered to have a moderate potential to occur within the BSA.

Small-Footed Myotis

The small-footed myotis (*Myotis ciliolabrum*) is included on CDFW's Special Animals List. Along the coast they range from Contra Costa County south to Mexico, and inland they range throughout the Sierra Nevada Mountains and desert regions of southern California. They occur primarily in arid woodlands and brushy areas near water. They prey on a variety of flying insects, including moths, flies, beetles, and bugs. They roost in caves, buildings, mines, crevices, and sometimes under bridges and under tree bark. Maternity colonies typically contain 12-20 individuals roosting together (CDFW 2008). There are no recorded occurrences of small-footed myotis in the CNDDB within five miles of the BSA (CDFW 2016a).

Small-footed myotis may forage throughout the BSA, and could roost in either of the two bridges or in tree crevices. Based on the presence of suitable roosting and foraging habitat, small-footed myotis is considered to have a moderate potential to occur within the BSA.

Yuma Myotis

The Yuma myotis (*Myotis yumanensis*) is included on CDFW's Special Animals List. It is a common species occurring throughout California except in the arid Mojave and Colorado Desert regions. They feed on a variety of small insects, and generally forage over water sources such as rivers, lakes, ponds, and stock tanks, most often in open woodland or forest areas. Roosting habitat includes crevices in caves, large trees, mines, buildings, tunnels, and bridges. During the April through September breeding season the females gather into maternity colonies that number in the hundreds to thousands of individuals. Night roosts may be located in more open areas (CDFW 2008). There is one occurrence of Yuma myotis recorded within five miles of the BSA. It was recorded in 2006 approximately 0.6 miles southeast of the BSA, in a drainage in the hills just south of Niles Canyon (CDFW 2016a, Figure 5).

Three roost locations were found in expansion joints of the Alameda Creek Bridge, which are used by a maternity colony of Yuma myotis. They may also be present in the expansion joints of the Alameda Creek Bridge Overhead (see Section 4.3.8.1 below). In addition to these bridge roosts, Yuma myotis may also roost in trees within the BSA. Three acoustic detections that are attributed to either Yuma myotis or California myotis were recorded at the Stonybrook Creek culvert (see Section 4.3.8.1). This species typically feeds over water, but they may also forage in any of the vegetated habitats within the BSA. Based on their confirmed presence, the Yuma myotis is considered to have a high potential to occur.

4.3.8.1. SURVEY RESULTS

As part of a separate Caltrans project (the Alameda Creek Bridge Replacement Project), GANDA and Caltrans biologists conducted a formal bat roost survey of the Alameda Creek Bridge on July 1, 2014 (Caltrans 2014). The results of this survey are relevant to the Niles Canyon Safety Improvement Project because the Alameda Creek Bridge is included within this project's BSA. A Yuma myotis maternity colony, consisting of at least several hundred bats, was documented utilizing three expansion joints on the underside of the Alameda Creek Bridge. At the time of the survey, the majority of the bats were located in one expansion joint, with the other two used by smaller numbers. Night roosts on the bridge were found to be used by pallid bats, as well as two common bat species that do not have special status, the big brown bat (*Eptesicus fuscus*) and the Mexican free-tailed bat (*Tadarida brasiliensis*). Guano evidence indicated that myotis bats also use the underside of the bridge for night roosting. In addition, the canyon bat (*Parastrellus hesperus*), a common bat species that does not have special status, was detected with acoustical monitors but was not

observed roosting on the bridge. Calls that could be attributed either to long-eared myotis or fringed myotis were also detected in the area, though neither of these species were observed roosting on the bridge.

During the wildlife habitat assessment site visit for the Niles Canyon Safety Improvement Project on August 13, 2014, bats were detected utilizing expansion joints in the Alameda Creek Bridge Overhead as day roosts. Guano was observed in accumulations on the ground below some of the joints, and bats were calling audibly from inside. Guano deposits did not indicate as heavy use by bats as was observed at the Alameda Creek Bridge. The species of bats using these roosts is not known, though the guano was consistent with that of pallid bat or big brown bat. Project activity on the Alameda Creek Bridge Overhead will be restricted to the replacement of the railing on the deck of the bridge, and no work on the underside is proposed. Therefore no impacts to these bat roosts are expected as part of this project. Due to the lack of anticipated impacts, no formal bat roost survey was conducted at the Alameda Creek Bridge Overhead.

No bats or evidence of bat roosting (i.e. guano or urine staining) were observed in the Stonybrook Creek culvert during the wildlife habitat assessment on March 24, 2016. The ceiling of the culvert is sealed concrete and does not have any cracks or crevices that could accommodate a day roost.

A separate survey was conducted for the Stonybrook Creek culvert on July 30, 2016 (Appendix H). No bats were observed exiting cavities in trees located in a sparsely forested field approximately 500 feet east of the culvert during the survey, or in flight over Stonybrook Creek or the field. This field is within the Biological Study Area (BSA), and is proposed as a construction staging area. Distorted bat echolocation calls recorded at the Stonybrook Creek culvert were identifiable as calls at the 50 kHz range, which could be attributed either to Yuma myotis or California myotis, though is more likely the former since the species is relatively common in the region and occupies a known maternity roost in the Alameda Creek Bridge. Based on the small number of calls and their distorted nature, and the lack of visual observation of any bats flying in the creek corridor, it is unlikely that any day roosts were present in the vicinity of the culvert at the time of the survey.

Mexican free-tailed bats (*Tadarida brasiliensis*) and Yuma myotis were positively identified via acoustic detection in the field during the survey. Three calls were recorded at the 30 kHz range that were attributable either to long-eared myotis

(*Myotis evotis*) or fringed myotis (*Myotis thysanodes*). Based on the lack of visual observation of any bats emerging from the trees or in flight over the field, and the sparse temporal distribution of recorded calls, it is unlikely that there were any day roosts in the field at the time of the survey.

4.3.8.2. AVOIDANCE AND MINIMIZATION EFFORTS

Avoidance and minimization measures listed in Section 1.3 will reduce the potential for effects to roosting bats during project construction. These measures include biological monitoring (Measure #3), worker environmental awareness training (Measure #4), and pre-construction surveys for bats (Measure #13).

4.3.8.3. PROJECT IMPACTS

Project related construction work within riparian woodland habitats may have temporary and permanent impacts on roosting bats through the removal and disturbance of potential tree roosts. Larger, more mature trees are more likely to provide suitable habitat for tree-roosting bats than smaller trees. Due to the cryptic nature of these species and the difficulty in locating and identifying tree roosts, impacts are difficult to quantify. Tree-roosting bats are likely to be present in low densities within the PCA, although it is not possible to tell exactly where they will occur. Trees that are likely to be removed for this project also represent a very small portion of the overall roosting habitat in Niles Canyon and the surrounding region. No impacts to known roosts in the Alameda Creek Bridge or the Alameda Creek Bridge Overhead are expected, because all work will occur on the upper sides of the bridges (on the decks and railings). No work will occur on the undersides of these bridges, which is where the roosts are located.

4.3.8.4. COMPENSATORY MITIGATION

Since there would be very minimal potential impacts to roosting bat species and their habitat from the proposed project, Caltrans is not proposing any compensatory mitigation. The replacement of trees as described in Section 4.2.2.4 will also be beneficial to bats. The amount and quality of roosting habitat being impacted by the proposed project is minimal and will offset impacts through restoration of temporarily impacted areas and implementation of avoidance and minimization measures.

4.3.8.5. CUMULATIVE IMPACTS

Of the bat species known to roost in the BSA, the pallid bat has the largest foraging range at three miles from a roost site (CDFW 2015). A three mile buffer around the BSA was used as a resource study area for this analysis, excluding highly urbanized areas. Cumulative projects that would have an impact on bats include those that have both direct and indirect impacts leading to an overall reduction in quantity, functionality, and longevity of the bat populations. Several past or planned future projects had, or have, the potential to affect bats. A brief summary of the known projects is provided, as well as planned or completed impacts to bats and the associated avoidance and minimization measures provided for each project. Identified Caltrans projects include:

- Niles I Project [described in Section 4.1.1.5, project terminated in 2011] - Approximately 143 trees were removed in 2011 before this project was abandoned. Trees can provide roosting habitat to some bat species, however avoidance and minimization measures were in place during the removal of the trees, including pre-construction surveys. Recent surveys of the area demonstrate canopy expansion from residual trees within the project area and stump re-sprouting from the residual stumps. Temporary loss of bat roosting habitat has potentially occurred. This is very difficult to quantify due to the cryptic nature of the specific bat species. Long-term effects to bats due to the tree removal associated with this project are not anticipated. Caltrans is aware that this project still has unmitigated impacts to trees, and is currently working with the regulatory agencies to develop a plan for appropriate mitigation. This plan will be finalized through coordination and approval by the resource agencies.

- Niles Canyon Minor Safety Improvements Project [described in Section 4.1.1.5, construction planned in 2015] - This project will only occur on pavement and will have no adverse impact on bats or bat habitat.

- Alameda Creek Bridge Replacement Project [described in Section 4.1.1.5, construction planned in 2017] – This project will remove a known maternity colony of Yuma myotis and known night roosting habitat for several other bat species through the demolition of the existing Alameda Creek Bridge. The new bridge will be required to have bat habitat built into its structure, with the intention that it will provide replacement habitat appropriate for the bats

displaced by the demolition of the old bridge. The new bridge with replacement habitat will be built first, and then bats in the existing bridge will be excluded prior to demolition. The project may also disrupt potential day and night roost habitat resulting from tree removal. Avoidance and minimization measures will be in place to protect roosting bats during construction.

- Interstate 680 Northbound High Occupancy Vehicle Lane Project [described in Section 4.1.1.5, construction planned in 2017] - The impacts to bats are likely to include temporary disruption during bridge widening construction at seven bridges where night roosts were identified. The specific impacts are not expected to rise to a level that warrants mitigation and are documented in a project-specific Natural Environment Study, which was completed in late 2014. Avoidance and minimization measures for bats were included in this project.

- Arroyo de la Laguna Bridge Project [described in Section 4.1.1.5, construction year unknown] - This project is in the early planning phase and the impacts to bats associated with the project have not yet been determined. The project impacts, avoidance and minimization measures, and a potential mitigation plan will be documented in a project-specific Natural Environment Study.

In addition to the above Caltrans projects, several local agencies and private entities had or have projects within the area of analysis. These include:

- Sunol Valley Golf Course Irrigation Pond Improvement Project [described in Section 4.1.1.5, completed around 2004] - This project had a Mitigated Negative Declaration CEQA document that did not mention any impacts to bats.

- Sunol and Niles Dam Removal [described in Section 4.1.1.5, completed in 2006] - This project was covered under an EIR, and had avoidance and minimization measures in place to protect bats. Measures implemented to protect bat populations included pre-construction surveys and putting in place no work buffers if any active roosts were observed.

- Alameda Siphon #4 Project [described in Section 4.3.3.5, construction completed 2012] - Specific impacts to bats are unknown, though the project was mitigated under the broader Hetch Hetchy Water System Improvement

Program's habitat compensation plan, which will provide approximately 1,800 acres of off-site mitigation covering several SFPUC projects. Although the habitat compensation plan does not explicitly mention bats, it does include protection and restoration riparian woodland habitat that can be expected to be beneficial to bats.

- Alameda Creek Pipeline No. 1 Fish Screen and Lago Los Osos Pipeline Project [described in Section 4.1.1.5, completed in 2014] - This project was covered under a Mitigated Negative Declaration CEQA document which stated that there would be no impacts to bats.

- Mission Valley Rock Expansion [described in Section 4.1.1.5, environmental review completed in 2012 covering quarry operation ongoing through 2045] - This project has a draft EIR which included avoidance and minimization measures for bats. Loss of potential bat roosting habitat from the project was mitigated through implementation of a Reclamation Plan to restore and increase the quality of habitat available to bats.

- Mission Clay Quarry Reclamation Project [described in Section 4.1.1.5, reclamation in progress, to be completed by October 2015] - This project was covered under an Initial Study/Mitigated Negative Declaration CEQA document. Avoidance and minimization measures were required, including biological pre-construction surveys prior to the demolition of structures.

- Vallecitos Channel Repair Project [described in Section 4.1.1.5, construction anticipated in 2015] - This project has a Mitigated Negative Declaration CEQA document and has no potential to affect bats due to lack of suitable habitat.

- Appian Tank Seismic Upgrade Project [described in Section 4.1.1.5, construction planned in 2015] - This project has a Mitigated Negative Declaration CEQA document and has no potential to affect bats due to lack of suitable habitat.

- Niles Mixed-Use Project [described in Section 4.1.1.5, construction planned in 2015] - This project was covered under an Initial Study/Mitigated Negative Declaration CEQA document that does not include any information on roosting bats.

- Sunol Fire Station Project [described in Section 4.3.2.5, environmental review completed July 2014, construction start 2015/2016] - This project had a Mitigated Negative Declaration CEQA document which included proposed mitigation measures to avoid and minimize impacts to special-status species. Bats have low or no potential to occur within the project site so the project does not plan to have an effect on bats.

- Sunol Yard and Alameda Creek Watershed Center Project [described in Section 4.1.1.5, construction anticipated in late 2015/early 2016] –This project is still in its planning phase and does not yet have a published CEQA document, so potential impacts to bats are unknown.

- Old Canyon Road Bridge Foundation Protection Repair Project [described in Section 4.1.1.5, in planning phase, construction start date unknown] - Mitigation measures to conduct pre-construction surveys for bats and avoid roosts if they are found are stated in the Mitigated Negative Declaration.

All of these projects went through, or are required to undergo, an environmental review to identify, account for, and mitigate potential adverse impacts. The amount and quality of habitat being impacted by the proposed project will be offset through the restoration of temporarily impacted areas and the implementation of avoidance and minimization measures. As a result, it is anticipated that impacts from the proposed project would not affect the persistence of local populations of bats in the Alameda Creek watershed.

4.3.9. Migratory Bird Species

Under the federal Migratory Bird Treaty Act (MBTA) and California Fish and Game Code Sections 3503-3505, 3513, and 3800, migratory birds, their nests, and eggs are protected from disturbance or destruction. Removal or disturbance of active nests would be in violation of these regulations. All birds are protected under the MBTA and California Fish and Game Code except for two non-native species, the European starling (*Sturnus vulgaris*) and the house sparrow (*Passer domesticus*).

4.3.9.1. SURVEY RESULTS

Migratory bird species may nest in any of the habitat types within the BSA except for paved road surfaces and riverine aquatic areas. Riparian woodlands are particularly attractive for nesting birds, and numerous species could also nest within oak

woodlands, coastal scrub, and grassland areas. Even barren areas may be used by ground-nesting birds such as killdeer.

During a previous survey in June 2014 for the Alameda Creek Bridge Replacement Project, several mud nests constructed by cliff swallows (*Petrochelidon pyrrhonota*) were observed on the northeast side of the Alameda Creek Bridge. Cliff swallows were observed flying into and out of some of these nests, indicating that they were active and likely contained eggs or chicks at the time. Cliff swallows are colonial nesters, and return to the same nesting areas year after year. Other common bird species that may nest on bridges include but are not limited to black phoebe (*Sayornis nigricans*), northern rough-winged swallow (*Stelgidopteryx serripennis*), and house finch (*Carpodacus mexicanus*), all of which nest variously on ledges, in crevices, or on sheltered vertical surfaces. One mud nest was observed attached to the vertical concrete wall inside the Stonybrook Creek culvert during the site visit of the expanded BSA in March 2016. The nest, which was likely built by a black phoebe, was inactive at the time of the survey. However it may be re-used, or other nests constructed, in future nesting seasons in this same culvert.

In addition to common bird species, several special-status birds have at least some potential to nest and/or forage within the BSA, including those described below.

Cooper's Hawk

Cooper hawks (*Accipiter cooperii*) are included on CDFW's Special Animals List. These are relatively common hawks occurring in forested areas. There are three CNDDB occurrences of nesting Cooper's hawks recorded within five miles of the BSA. All three were recorded in 2006 in the hills just south of Niles Canyon, and the closest occurrence is approximately 0.35 mile southeast of the BSA (CDFW 2016a, Figure 5). Cooper's hawks may nest in any of the tall trees in the oak woodland and riparian habitats within the BSA, and may forage throughout the area. Based on the presence of suitable nesting and foraging habitat, Cooper's hawks are considered to have a moderate potential to occur within the BSA.

White-tailed Kite

White-tailed kites (*Elanus leucurus*) are California Fully Protected species. They inhabit open areas and forage in grasslands. There are no CNDDB records of white-tailed kites nesting within five miles of the BSA (CDFW 2016a, Figure 5). However, these are common nesting and winter resident birds in the Bay Area, and they may

nest in trees throughout the BSA. Although grasslands are present within the BSA, they are of marginal quality for foraging due to their small size. White-tailed kites typically forage in more open areas, so the relatively small patches of open grassland within the BSA are of marginal quality for foraging. Based on the presence of suitable nesting habitat and marginally suitable foraging habitat, white-tailed kites have a moderate potential to occur within the BSA.

Yellow Warbler

The yellow warbler (*Setophaga petechia*) is a California Species of Special Concern that typically inhabits riparian areas. There are no occurrences of yellow warbler recorded in the CNDDB within five miles of the BSA (CDFW 2016a, Figure 5). However, riparian woodland along Alameda Creek constitutes suitable nesting habitat for this species, and they may forage in trees and shrubs anywhere within the BSA. Based on the presence of suitable nesting and foraging habitat, yellow warblers are considered to have a moderate potential to occur within the BSA.

Heron and Egret Rookeries

There are several heron and egret species whose nesting colonies are included on CDFW's Special Animals List and are tracked by the CNDDB. These include:

- Great blue heron (*Ardea herodias*)
- Great egret (*Ardea alba*)
- Snowy egret (*Egretta thula*)
- Black-crowned night heron (*Nycticorax nycticorax*)

These are relatively common wading bird species that nest in tall trees near open water. Their colonial nesting sites, referred to as rookeries, may have multiple species with dozens or even hundreds of nesting pairs in the same clump of trees.

There are two occurrences of great blue heron rookeries recorded in the CNDDB within five miles of the BSA. The first is located approximately 0.1 mile to the south near the east end of Niles Canyon, where two active nests were observed along Alameda Creek in 2002. The other is a record of nine nests observed in 1990 in the Quarry Lakes Regional Recreation Area in Fremont, approximately 1.2 miles southwest of the BSA (CDFW 2016a, Figure 5). Another great blue heron rookery with an unknown number of nests has been documented near the Sunol Water Temple, 0.5 mile south of the BSA (Audubon Canyon Ranch 2014), and a large

rookery used by over a hundred nesting pairs of black-crowned night herons, great egrets, and snowy egrets is located at Lake Elizabeth, approximately 1.8 miles to the south (Kelly et al. 2006). Suitable nesting habitat for these species is present in tall trees throughout the BSA and the rest of Niles Canyon, and suitable foraging habitat is present along the banks of Alameda Creek. No heron or egret rookeries were observed during the site reconnaissance, and there are no indications that any colonies have traditionally nested within the BSA. However, based on these species' ubiquity in the region and the presence of suitable nesting and foraging habitat, heron and egret rookeries are considered to have a moderate potential to occur within the BSA.

4.3.9.2. AVOIDANCE AND MINIMIZATION EFFORTS

Avoidance and minimization measures listed in Section 1.3 will reduce the potential for effects to migratory birds during project construction. These measures include biological monitoring (Measure #3), worker environmental awareness training (Measure #4), work windows for nesting birds (Measure #10), pre-construction nesting bird surveys (Measure #11), and implementation of nest buffers (Measure #12).

4.3.9.3. PROJECT IMPACTS

The proposed project could result in temporary loss or disturbance of habitats that are used by nesting migratory birds. During project-related construction, common migratory birds may be temporarily displaced by habitat alteration or noise from construction equipment. However, implementation of the proposed avoidance and minimization measures is anticipated to prevent direct mortality of migratory birds. The proposed project may potentially remove or disturb a small amount of habitat used by nesting or foraging migratory birds. This impact would be temporary in nature and limited to a relatively small area in relationship to the extensive nesting and foraging habitat adjacent to the BSA. Impacts to cliff swallows nesting on the underside of the Alameda Creek Bridge are not anticipated, because all work will occur on the upper side of the bridge, away from the nest locations.

4.3.9.4. COMPENSATORY MITIGATION

Caltrans does not anticipate any adverse impacts to migratory birds, and therefore no compensatory mitigation is proposed.

4.3.9.5. CUMULATIVE IMPACTS

Because the proposed project will implement avoidance and minimization measures to ensure no impacts to nesting birds, it will not contribute to cumulative impacts. The impacts to nesting habitat are minimal due to the large amount of similar nesting habitat available to birds throughout Niles Canyon. There is no anticipated disturbance of described heron and egret rookeries. Caltrans does not anticipate any cumulative impacts to migratory and or nesting birds as a result of this project. Caltrans does not anticipate any disruption to breeding behavior and nominal temporal loss of potential nesting habitat through vegetation removal.

Chapter 5. Results: Permits and Technical Studies for Special Laws or Conditions

This chapter summarizes the federal and state natural resource laws, regulations, and policies that apply to the proposed Niles Canyon Safety Improvement Project. Specific technical studies, permits, and agreements will be required to comply with these laws, regulations, and policies.

5.1. Federal Endangered Species Act Consultation Summary

Caltrans initiates consultation with USFWS or NMFS (for fish species) when a project has the potential to affect a federally listed species and/or adversely modify designated critical habitat. Formal consultation with USFWS under FESA will be initiated with the submission of a Biological Assessment (BA) prepared for the project. A BO will be obtained from the USFWS. Caltrans has determined that the project is likely to affect California red-legged frog and Alameda whipsnake. The project may affect, but is not likely to adversely affect California tiger salamander. The project will have no effect to steelhead or any other species under NMFS or USFWS jurisdiction. Refer to Appendix C for a list of all species considered in this document.

5.2. California Endangered Species Act Consultation Summary

CESA generally parallels the main provisions of FESA, but extends the take prohibitions to species proposed for listing. Section 2080 & 2081 of California Fish and Game Code prohibits the take (defined as hunting, pursuing, catching, capturing, or killing) of endangered, threatened, or candidate species unless otherwise authorized by permit. CESA allows for take incidental to otherwise lawful development projects except for those species listed as fully protected. State lead agencies are required to consult with CDFW to ensure that any action they undertake is not likely to jeopardize the continued existence of any listed or candidate species, or result in destruction or adverse modification of essential habitat. An Incidental Take Permit will be required for Alameda whipsnake.

The white-tailed kite, a fully protected species, has the potential to be affected by the project. The avoidance and minimization measures included in Section 1.3 will eliminate the potential for adverse effects to this species. CDFW cannot issue any take permit for this species.

5.3. Wetlands and Other Waters Coordination Summary

5.3.1. Section 404 of the Clean Water Act

A Section 404 permit is necessary when a project will result in fill to waters under USACE jurisdiction. A jurisdictional determination of these resources has been completed and will be submitted to USACE for verification. Based on the preliminary jurisdictional determination, there will be temporary and permanent impacts to wetland or other water features within the BSA. A Section 404, Nationwide Permit 14 will be required for the proposed project.

5.3.2. Section 401 of the Clean Water Act

A Section 401 Water Quality Certification is necessary when a project requires a 404 permit from the USACE and under other special circumstances. Because 404 permits will be required for the proposed project, a 401 Water Quality Certification from the San Francisco Bay Regional Water Quality Control Board also will be required.

5.3.3. Executive Order 11990

Executive Order 11990 was designed to protect wetlands and minimize adverse impacts associated with the destruction of wetlands. It requires all projects with a federal nexus to avoid construction in wetlands unless there is no alternative or the construction is designed in such a way that it includes all practicable measures to minimize impacts to wetlands. Compliance with this Executive Order will be attained through Caltrans coordination with the USACE and the Regional Water Quality Control Board. A preliminary jurisdictional delineation of wetlands and other waters of the U.S. within the BSA has been prepared for submission to the USACE. Permits will also be sought as appropriate as described in Sections 5.3.1 and 5.3.2.

5.3.4. California Fish and Game Code Sections 1600-1616

A Section 1600 Lake or Streambed Alteration Agreement with CDFW is necessary when a project will alter the flow, bed, channel, or bank of a stream or lake. The

proposed project will result in alterations to riparian woodland on the banks of Alameda Creek. As a result, a 1600 permit will be required from CDFW for this project.

5.4. Other Federal, State, and Local Regulations

5.4.1. Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712) makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) may be considered a "take" and is potentially punishable by fines and/or imprisonment. Any proposed project must take measures to avoid the take of any migratory birds, nests, or eggs. Caltrans will comply with the MBTA through the proposed avoidance and minimization measures.

5.4.2. California Fish and Game Code

The majority of birds and mammals found in the BSA are protected under the California Fish and Game Code. Through implementation of the proposed avoidance, minimization measures, the take of nests, eggs, young, or individuals of bird species is not anticipated. California Fish and Game Code Sections 3503-3505, 3513, and 3800 make unlawful the take or possession of all migratory nongame birds and their nests. Caltrans will comply with these code sections through the proposed avoidance and minimization measures. California Fish and Game Code Section 4150 states that all non-game mammals or parts thereof may not be taken or possessed except as provided otherwise in the code or in accordance with regulations adopted by CDFW. Activities resulting in mortality of non-game mammals or disturbances that causes the loss of maternity colonies of bats may be considered "take" by CDFW. The avoidance and minimization measures implemented to protect the special-status species discussed in this NES also protect non-game mammals.

5.4.3. Executive Order 13112

The intent of Executive Order 13112, Invasive Species, is "to prevent the introduction of invasive species and provide for their control and to minimize the economic,

ecological, and human health impacts that invasive species cause." The general avoidance and minimization measures will control invasive species introduction.

5.4.4. Native Plant Protection Act

California's Native Plant Protection Act requires all state agencies to conserve endangered and rare native plants (California Fish and Game Code § 1900-1913). Provisions of Native Plant Protection Act prohibit the taking of listed plants from the wild and require notification of the CDFW at least 10 days prior to any change of land use. As required, Caltrans has conducted a botanical survey of the BSA and will continue to consult with CDFW during project planning to comply with the provisions of this act; however, no effects to endangered or rare native plants are expected.

5.4.5. State Senate Concurrent Resolution Number 17

This Senate Concurrent Resolution 17 concerns protected trees in California, but was not signed into law. It requires State agencies to assess and determine the effects of their actions on any oak woodland (defined as five or more native oak trees per acre) and to preserve and protect native oak woodlands to the maximum extent feasible or provide replacement plantings where designated oak species are removed from oak woodlands. As part of good land stewardship, Caltrans will follow the intent of California Senate Concurrent Resolution Number 17 by planning for replacement mitigation for protected oaks and other protected native trees.

5.4.6. Alameda County & Local Municipal Tree Ordinances

The Alameda County Tree Ordinance, Ordinance No. 0-2003-23, requires that trees removed on county property must be identified and permitted prior to removal. Trees within State transportation projects are not subject to local or county regulations and ordinances. Caltrans will coordinate with local agencies in a good faith effort to address local tree issues.

5.5. Federal Highway Administration Policies

5.5.1. Mitigation for Impacts on Natural Lands (23 CFR Section 771.105)

Construction, operation and maintenance of highway projects can cause impacts to important, natural, upland ecosystems, and landscapes as well as to wetlands. According to authority established under the Intermodal Surface Transportation Efficiency Act § 1170, Surface Transportation Program (23 USC § 133 [b][1]), where such impacts are determined to be adverse or unacceptable through the NEPA compliance process, they should be mitigated by feasible and practicable measures. Adverse or unacceptable ecological impacts may be those that threaten the continued existence of species listed under FESA or cause substantial detrimental effects to, or losses of natural ecological importance, or have substantial detrimental effects to, or losses of, natural ecological communities that are biologically unique, of special ecological importance, or have substantial societal value. Feasible or practical mitigation measures include, but are not limited to, restoration of altered or degraded landscapes to replace the impacted biological resources, or preservation or enhancement of existing resources where such opportunities exist.

5.5.2. Designation of Non-Federal Representative (MAP-21)

On September 25, 2012, the Federal Highway Administration (FHWA) and Caltrans signed the Memorandum of Understanding between Federal Highway Administration and the California Department of Transportation concerning the State of California's Participation in the Project Delivery Program Pursuant to 23 USC 327, which became effective on October 1, 2012. This memorandum of understanding was signed pursuant to the Moving Ahead for Progress in the 21st Century Act (MAP-21), and allows the Secretary of Transportation to assign, and the State of California to assume all responsibilities for consultation and coordination with federal resource, regulatory, and land management agencies for most federal-aid highway projects in California. The assignment of environmental decision making to Caltrans includes the federal-aid highway projects on federal lands and the FHWA's federal lands ("direct federal") projects when Caltrans designs and constructs the projects. By statute, the State is deemed to be a federal agency for these assigned responsibilities. Detailed information about NEPA Assignment is published on-line at:
http://www.dot.ca.gov/hq/env/nepa_pilot/html/nepa_delegation_pilot_program.htm

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Appendix A Project Figures

Figure 1: Project Location

Figure 2: Biological Study Area

Figure 3: Project Elements

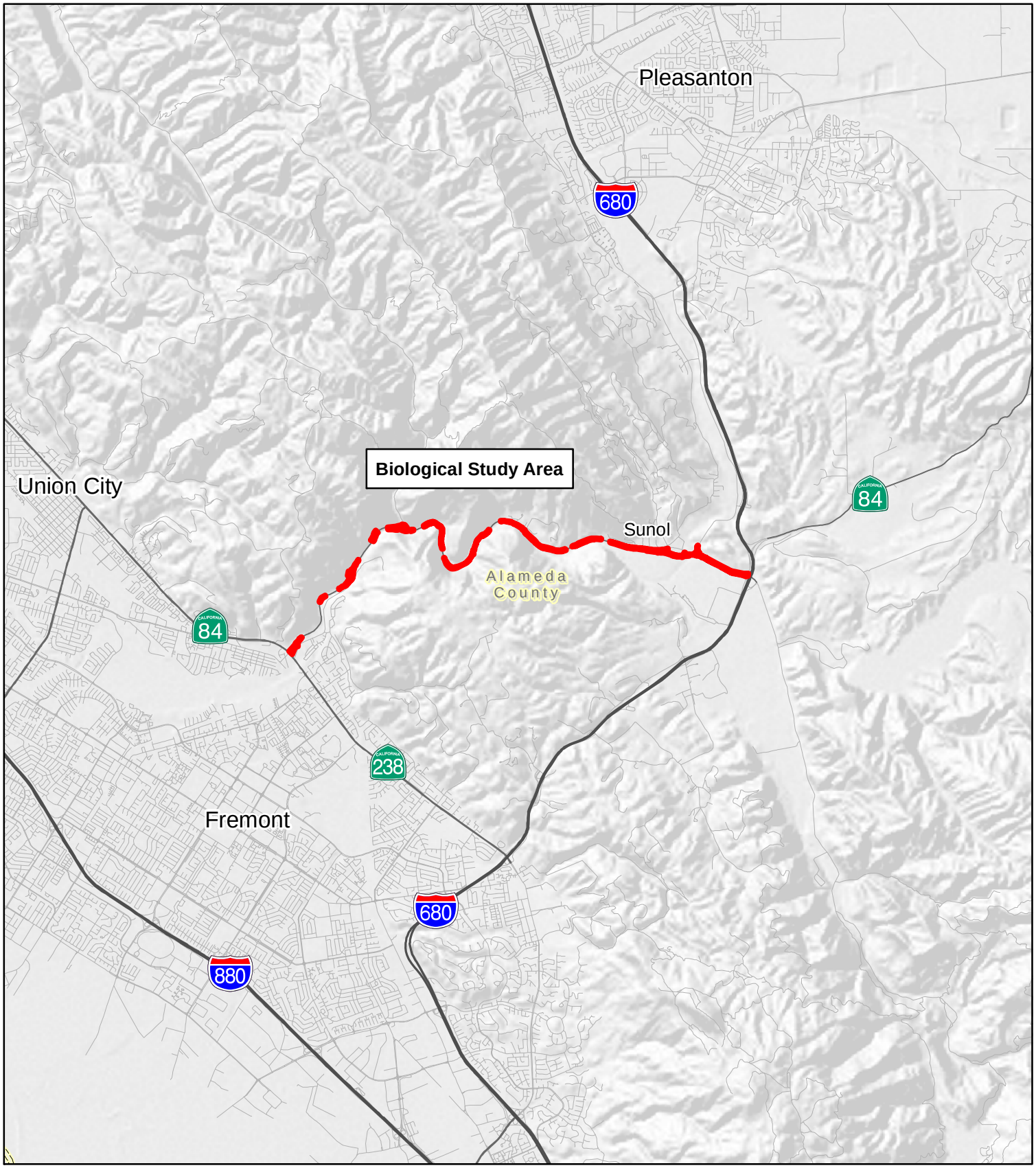
Figure 4: CNDDB Plant Species Occurrences within Five Miles of the BSA

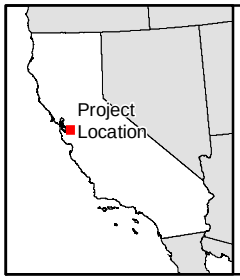
Figure 5: CNDDB Wildlife Species Occurrences within Five Miles of the BSA

Figure 6: Land Cover Types and Wetlands within the BSA

Figure 7: Project Impacts to Land Cover Types and Wetlands

Figure 8: Project Impacts to Trees





Biological Study Area

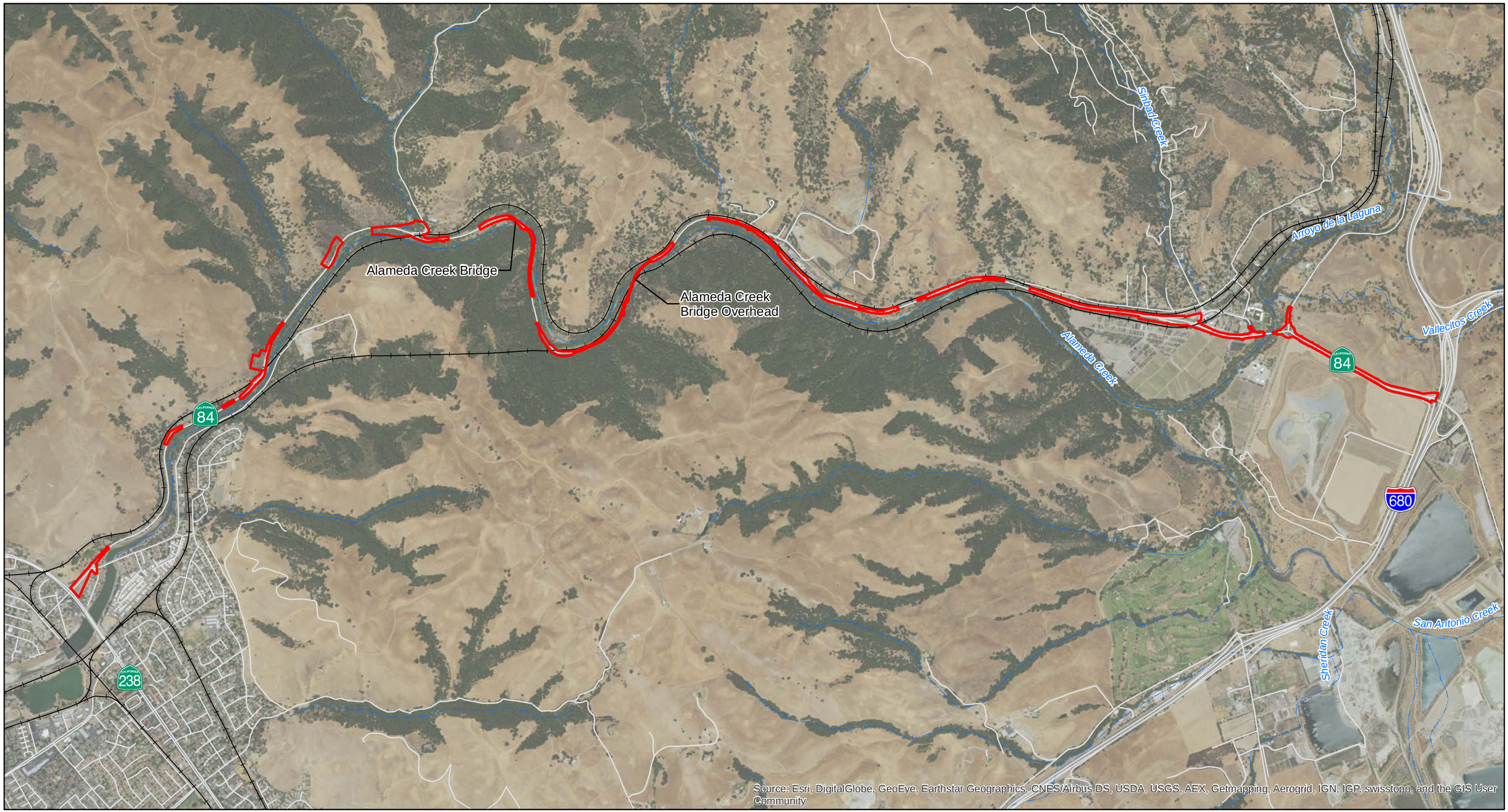
Scale: 1:100,000
1 inch = 8,333 feet

N

0 1 2 Miles

Figure 1:
Project Location Map
Niles Canyon
Safety Improvement Project

Alameda County,
California



Biological Study Area
Road
Railroad
Creek

Scale: 1:24,000
1 inch = 2,000 feet

N

0 1,000 2,000 Feet

Figure 2:
Biological Study Area
Niles Canyon
Safety Improvement Project

Biological Study Area
Railroad
Creek
Cut and Fill
Retaining Wall
Rock Wall Drapery
Rock Wall Fence
Metal Beam Guard Rail
Electrical
Sign
Tree Removal
Pole Installation/Removal
K-rail Replacement
Concrete Barrier
Stationing
New Bridge

Scale: 1:2,400
1 inch = 200 feet

0 100 200 Feet

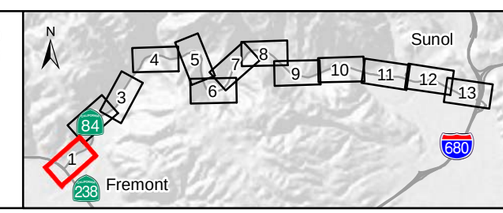


Figure 3:
Project Elements
Niles Canyon
Safety Improvement Project
Map 1 of 13

Biological Study Area
Railroad
Creek
Cut and Fill
Retaining Wall
Rock Wall Drapery
Rock Wall Fence
Metal Beam Guard Rail
Electrical
Sign
Tree Removal
Pole Installation/Removal
K-rail Replacement
Concrete Barrier
Stationing
New Bridge

Scale: 1:2,400
1 inch = 200 feet

0 100 200 Feet

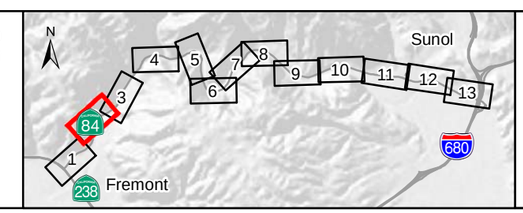


Figure 3:
Project Elements
Niles Canyon
Safety Improvement Project
Map 2 of 13

Biological Study Area
Railroad
Creek
Cut and Fill
Retaining Wall
Rock Wall Drapery
Rock Wall Fence
Metal Beam Guard Rail
Electrical
Sign
Tree Removal
Pole Installation/Removal
K-rail Replacement
Concrete Barrier
Stationing
New Bridge

Scale: 1:2,400
1 inch = 200 feet

0 100 200 Feet

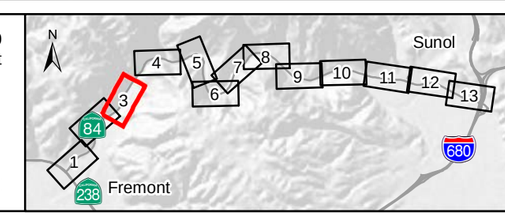


Figure 3:
Project Elements
Niles Canyon
Safety Improvement Project
Map 3 of 13

Biological Study Area
Railroad
Creek
Cut and Fill
Retaining Wall
Rock Wall Drapery
Rock Wall Fence
Metal Beam Guard Rail
Electrical
Sign
Tree Removal
Pole Installation/Removal
K-rail Replacement
Concrete Barrier
Stationing
New Bridge

Scale: 1:2,400
1 inch = 200 feet

N

0 100 200 Feet

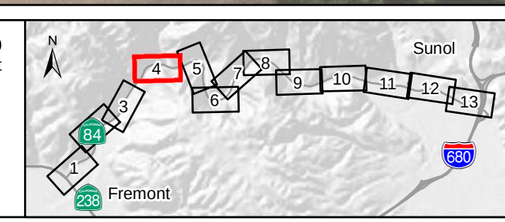
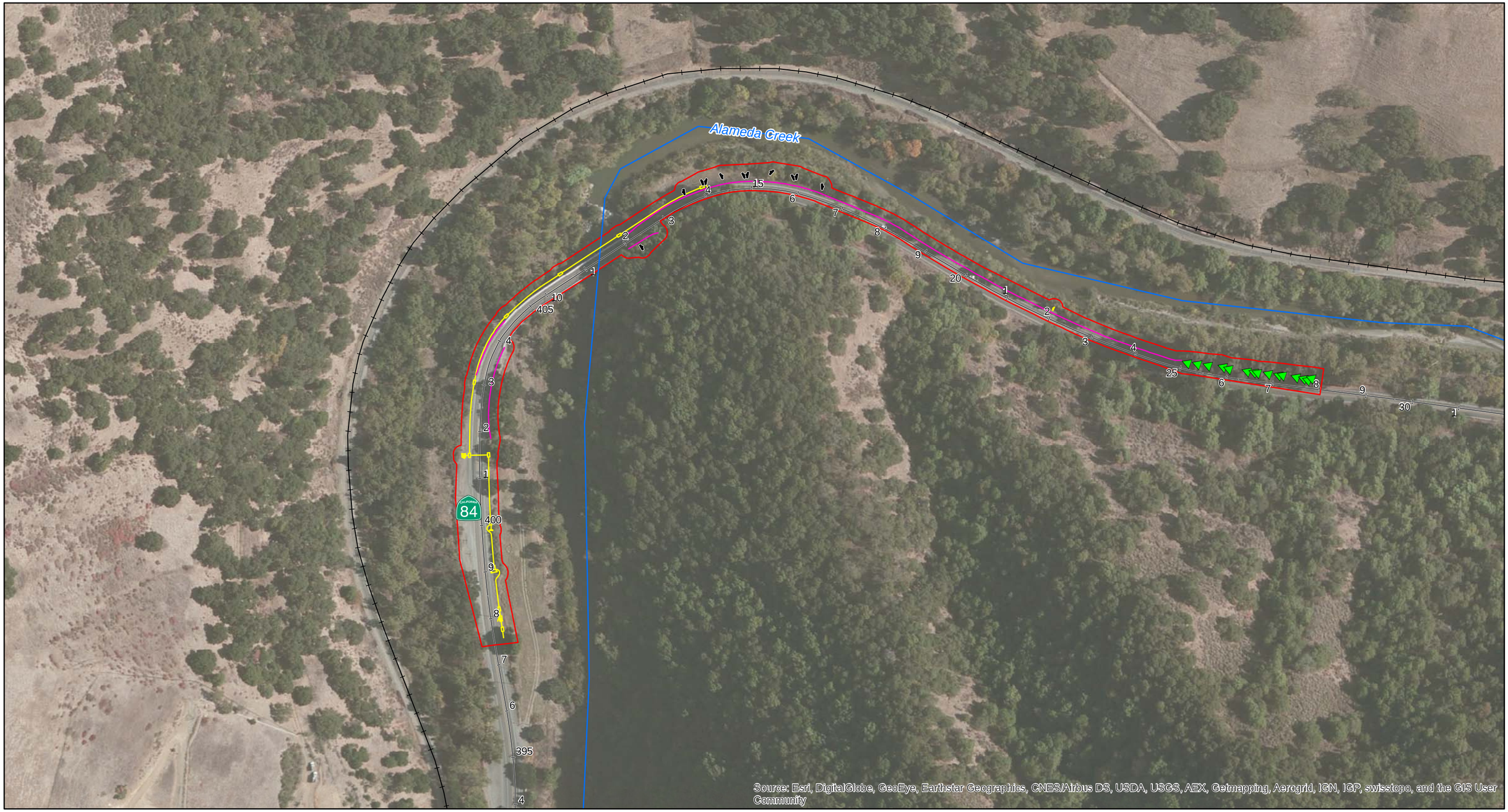


Figure 3:
Project Elements
Niles Canyon
Safety Improvement Project
Map 4 of 13



Biological Study Area
Railroad
Creek
Cut and Fill
Retaining Wall
Rock Wall Drapery
Rock Wall Fence
Metal Beam Guard Rail
Electrical
Sign
Tree Removal
Pole Installation/Removal
K-rail Replacement
Concrete Barrier
Stationing
New Bridge

Scale: 1:2,400
1 inch = 200 feet

0 100 200 Feet

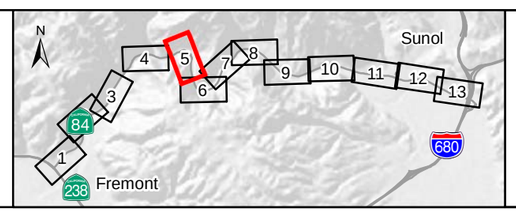


Figure 3:
Project Elements
Niles Canyon
Safety Improvement Project
Map 5 of 13

Biological Study Area
Railroad
Creek
Cut and Fill
Retaining Wall
Rock Wall Drapery
Rock Wall Fence
Metal Beam Guard Rail
Electrical
Sign
Tree Removal
Pole Installation/Removal
K-rail Replacement
Concrete Barrier
Stationing
New Bridge

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

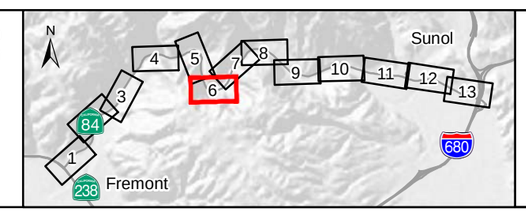


Figure 3:
Project Elements
Niles Canyon
Safety Improvement Project
Map 6 of 13

Biological Study Area
Railroad
Creek
Cut and Fill
Retaining Wall
Rock Wall Drapery
Rock Wall Fence
Metal Beam Guard Rail
Electrical
Sign
Tree Removal
Pole Installation/Removal
K-rail Replacement
Concrete Barrier
Stationing
New Bridge

Scale: 1:2,400
1 inch = 200 feet

0 100 200 Feet

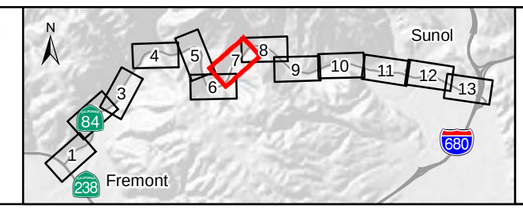


Figure 3:
Project Elements
Niles Canyon
Safety Improvement Project
Map 7 of 13

Biological Study Area
Railroad
Creek
Cut and Fill
Retaining Wall
Rock Wall Drapery
Rock Wall Fence
Metal Beam Guard Rail
Electrical
Sign
Tree Removal
Pole Installation/Removal
K-rail Replacement
Concrete Barrier
Stationing
New Bridge

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

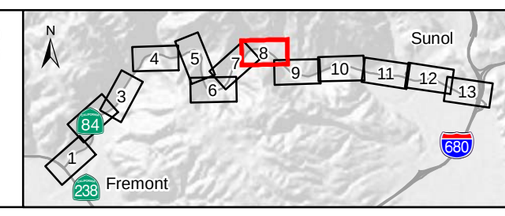


Figure 3:
Project Elements
Niles Canyon
Safety Improvement Project
Map 8 of 13

Biological Study Area
Railroad
Creek
Cut and Fill
Retaining Wall
Rock Wall Drapery
Rock Wall Fence
Metal Beam Guard Rail
Electrical
Sign
Tree Removal
Pole Installation/Removal
K-rail Replacement
Concrete Barrier
Stationing
New Bridge

Scale: 1:2,400
1 inch = 200 feet

N

0 100 200 Feet

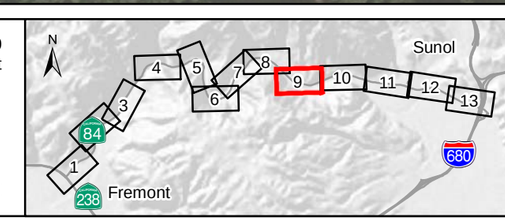
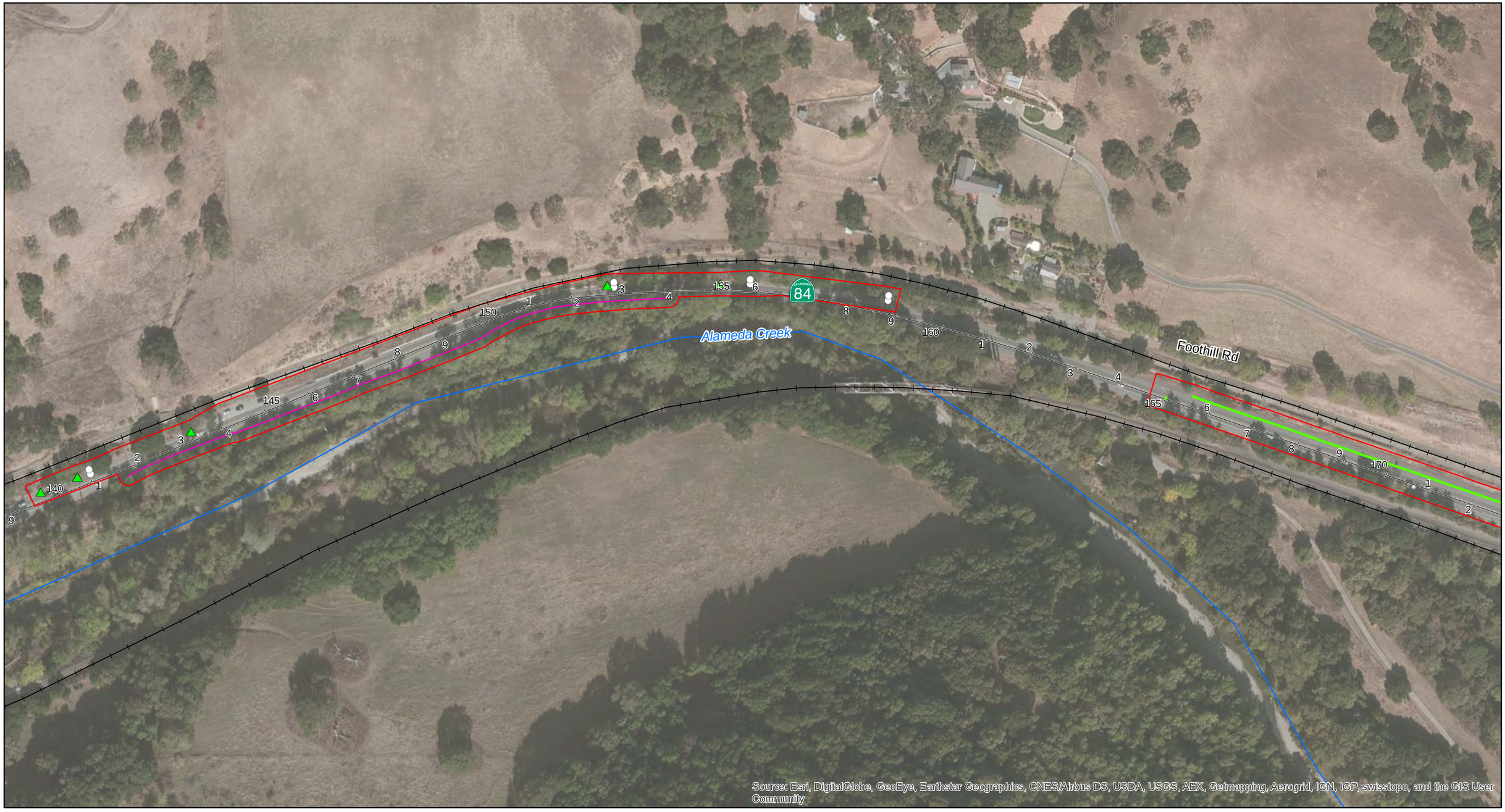


Figure 3:
Project Elements
Niles Canyon
Safety Improvement Project
Map 9 of 13



Biological Study Area
Railroad
Creek
Cut and Fill
Retaining Wall
Rock Wall Drapery
Rock Wall Fence
Metal Beam Guard Rail
Electrical
Sign
Tree Removal
Pole Installation/Removal
K-rail Replacement
Concrete Barrier
Stationing
New Bridge

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

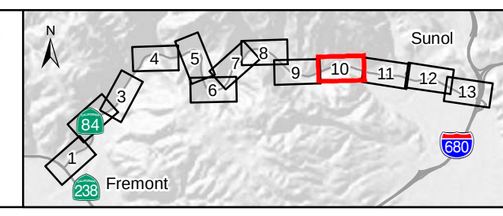


Figure 3:
Project Elements
Niles Canyon
Safety Improvement Project
Map 10 of 13

Biological Study Area
Railroad
Creek
Cut and Fill
Retaining Wall
Rock Wall Drapery
Rock Wall Fence
Metal Beam Guard Rail
Electrical
Sign
Tree Removal
Pole Installation/Removal
K-rail Replacement
Concrete Barrier
Stationing
New Bridge

Scale: 1:2,400
1 inch = 200 feet

N

0 100 200 Feet

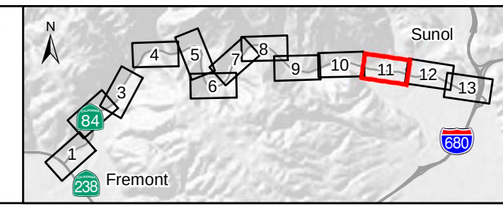


Figure 3:
Project Elements
Niles Canyon
Safety Improvement Project
Map 11 of 13

Biological Study Area
Railroad
Creek
Cut and Fill
Retaining Wall
Rock Wall Drapery
Rock Wall Fence
Metal Beam Guard Rail
Electrical
Sign
Tree Removal
Pole Installation/Removal
K-rail Replacement
Concrete Barrier
Stationing
New Bridge

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

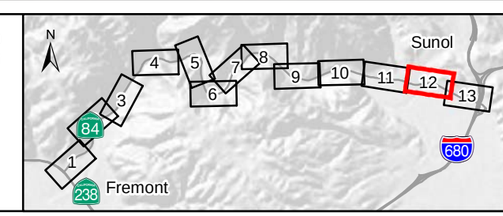


Figure 3:
Project Elements
Niles Canyon
Safety Improvement Project
Map 12 of 13

Biological Study Area
Railroad
Creek
Cut and Fill
Retaining Wall
Rock Wall Drapery
Rock Wall Fence
Metal Beam Guard Rail
Electrical
Sign
Tree Removal
Pole Installation/Removal
K-rail Replacement
Concrete Barrier
Stationing
New Bridge

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

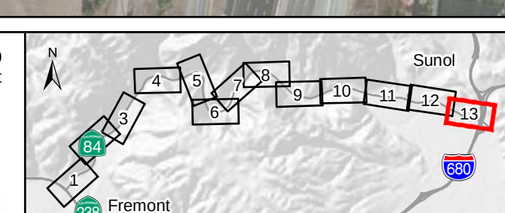
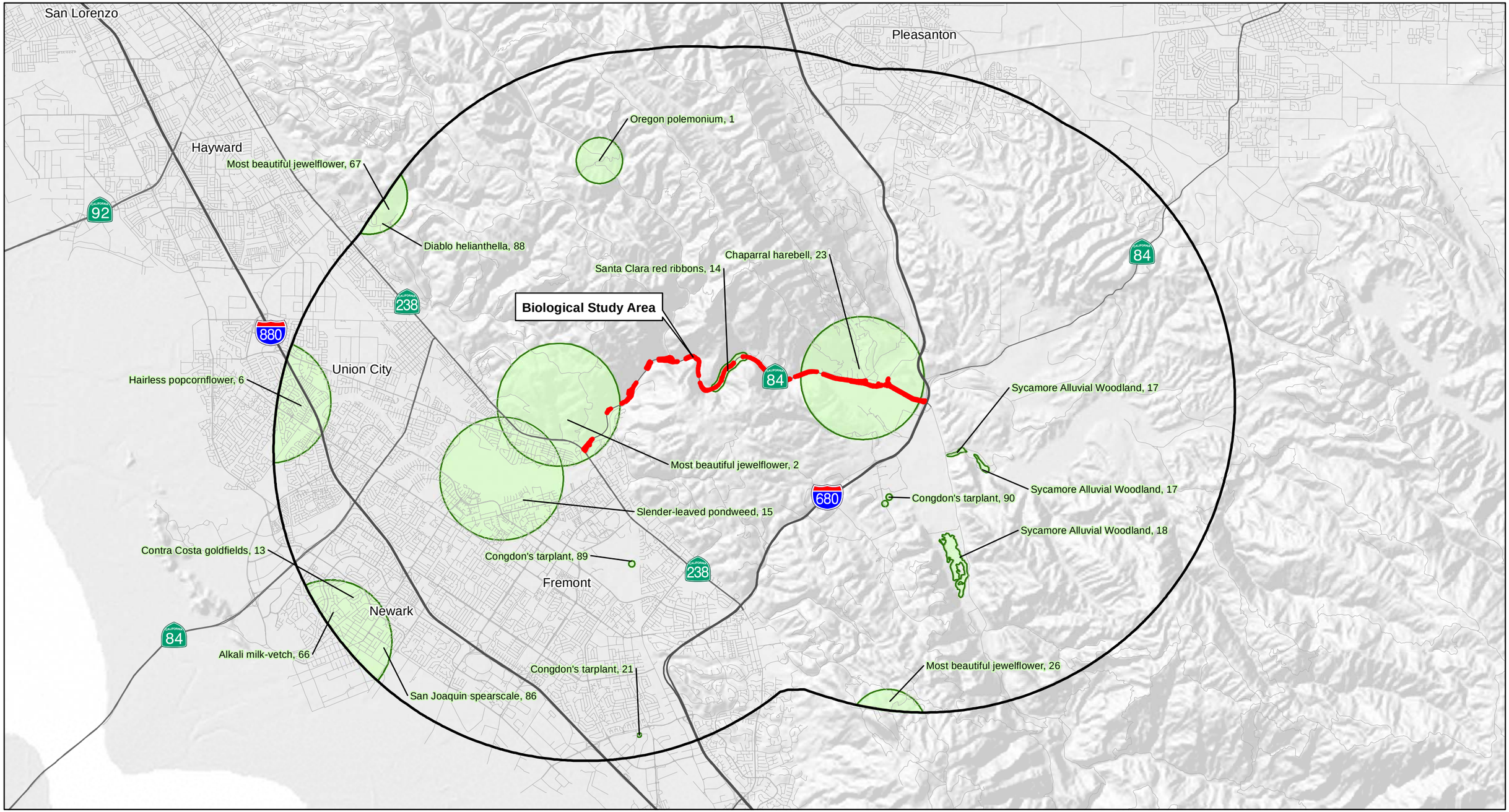


Figure 3:
Project Elements
Niles Canyon
Safety Improvement Project
Map 13 of 13



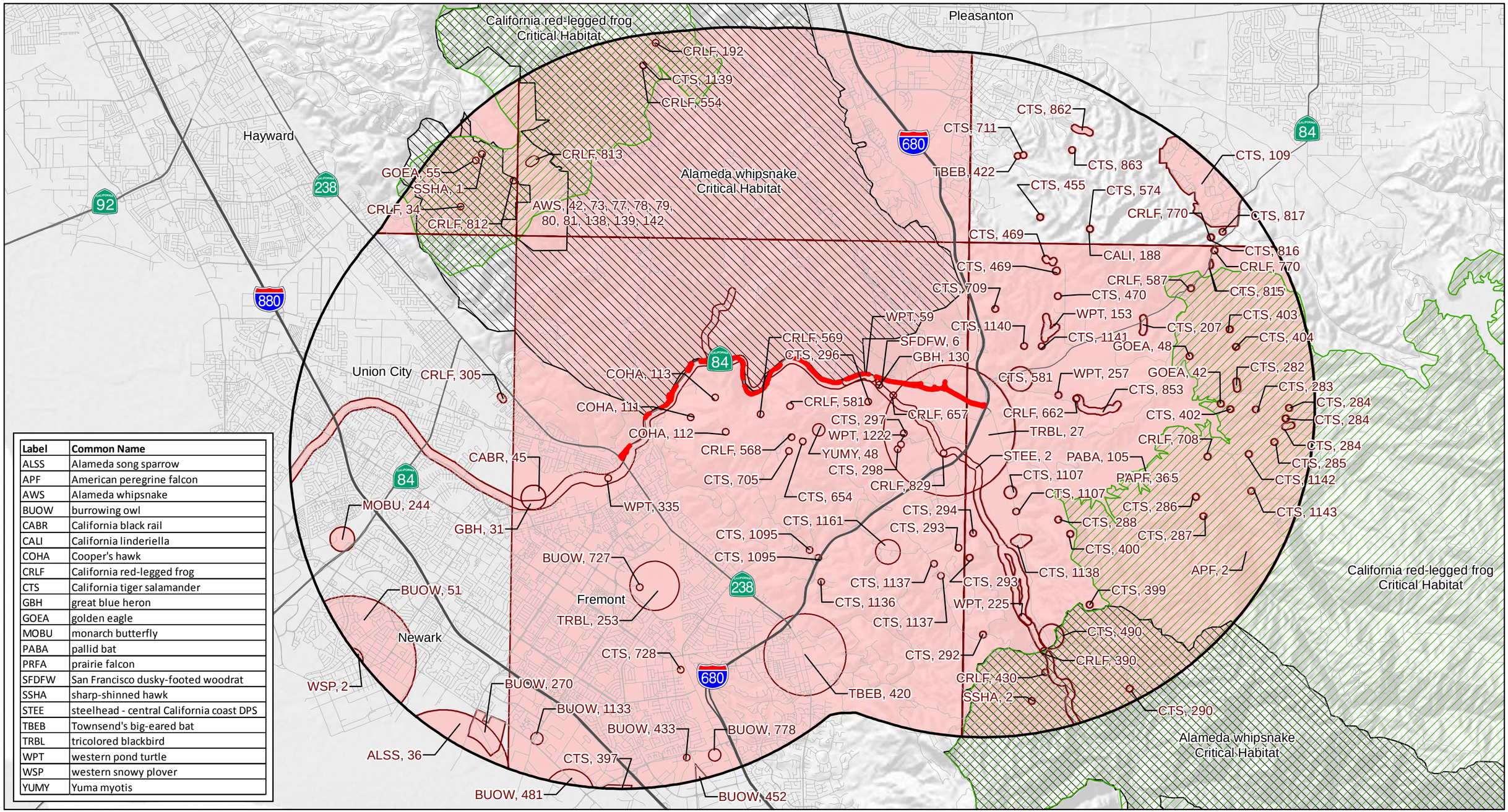
Biological Study Area
5 Mile Buffer of Biological Study Area
CNDDB Plant or Plant Community Occurrence (Species, Occurrence number)

Scale: 1:96,000
1 inch = 8,000 feet

N

0 1 2 Miles

Figure 4:
CNDDB Plant Species Within 5 Miles of the Biological Study Area
Niles Canyon
Safety Improvement Project



Label	Common Name
ALSS	Alameda song sparrow
APF	American peregrine falcon
AWS	Alameda whipsnake
BUOW	burrowing owl
CABR	California black rail
CALI	California linderiella
COHA	Cooper's hawk
CRLF	California red-legged frog
CTS	California tiger salamander
GBH	great blue heron
GOEA	golden eagle
MOBU	monarch butterfly
PABA	pallid bat
PRFA	prairie falcon
SFDFW	San Francisco dusky-footed woodrat
SSHA	sharp-shinned hawk
STEE	steelhead - central California coast DPS
TBEB	Townsend's big-eared bat
TRBL	tricolored blackbird
WPT	western pond turtle
WSP	western snowy plover
YUMY	Yuma myotis

Biological Study Area
5 Mile Buffer of Biological Study Area
CNDDB Wildlife Occurrence (Species, Occurrence number)

USFWS Critical Habitat
Alameda whipsnake
California red-legged frog

Scale: 1:90,000
1 inch = 7,500 feet

N

0 1 2 Miles

Figure 5:
CNDDB Wildlife Species Within 5 Miles of the Biological Study Area
Niles Canyon
Safety Improvement Project

Biological Study Area
Railroad
Creek
Water Features
Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Barren
Urban-Landscaped
Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

N

0 100 200 Feet

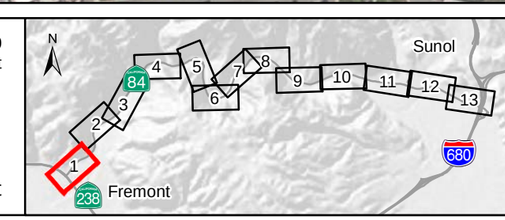


Figure 6:
Landcover Types and Waters Within the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 1 of 13

Biological Study Area
Railroad
Creek
Water Features
Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Barren
Urban-Landscaped
Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

0 100 200 Feet

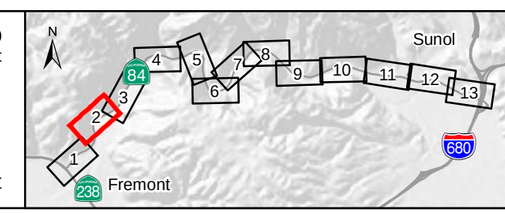


Figure 6:
Landcover Types and Waters Within the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 2 of 13

Biological Study Area
Railroad
Creek
Water Features
Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Barren
Urban-Landscaped
Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

0 100 200 Feet

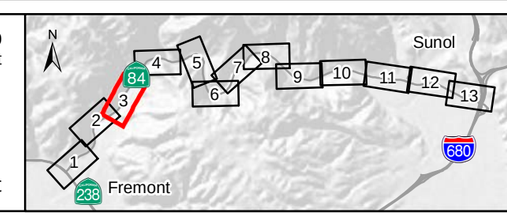
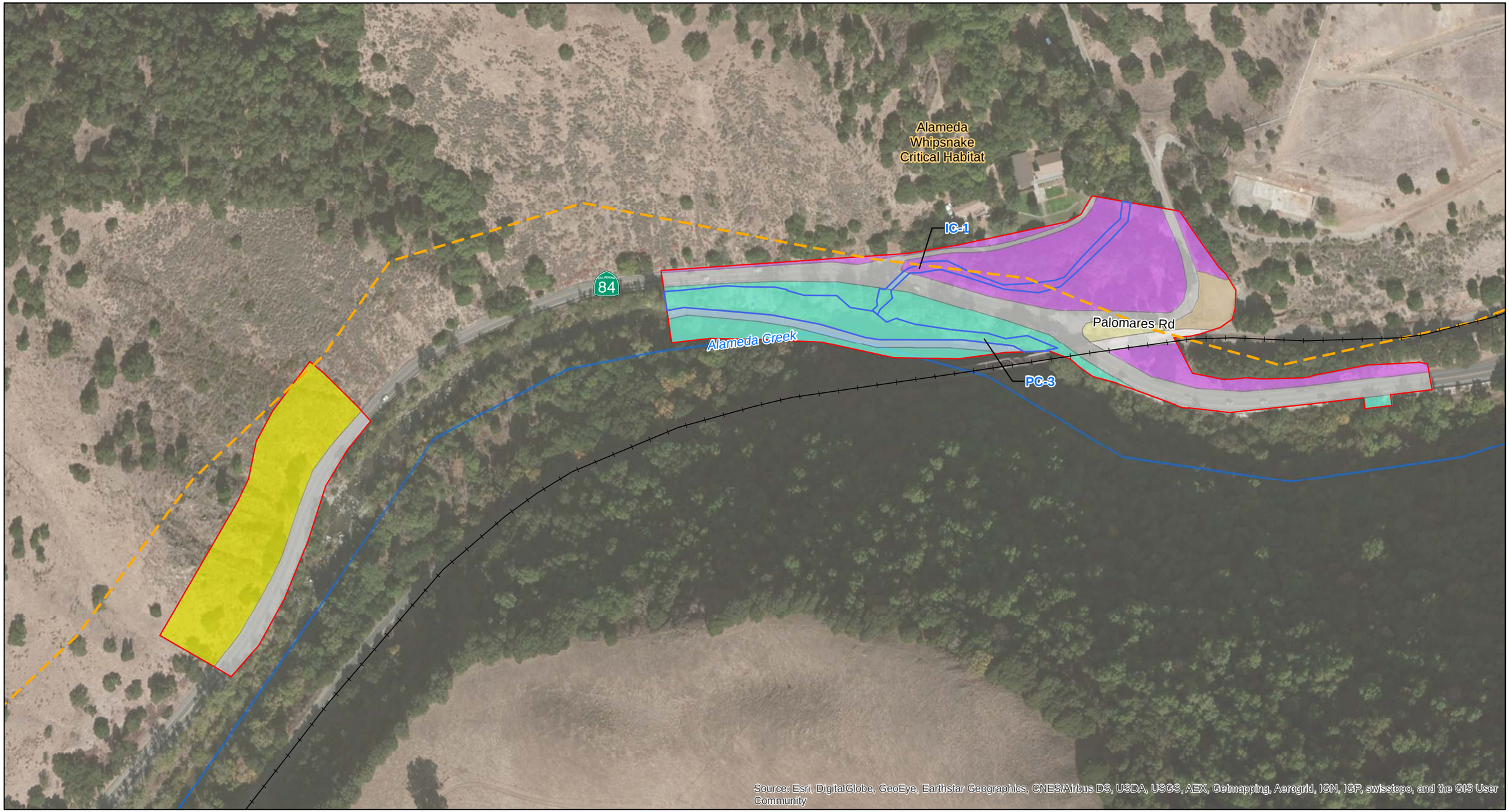


Figure 6:
Landcover Types and Waters Within the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 3 of 13



Biological Study Area
Railroad
Creek
Water Features
Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Barren
Urban-Landscaped
Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

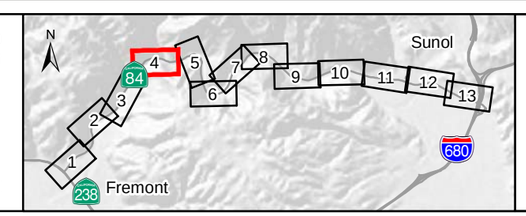
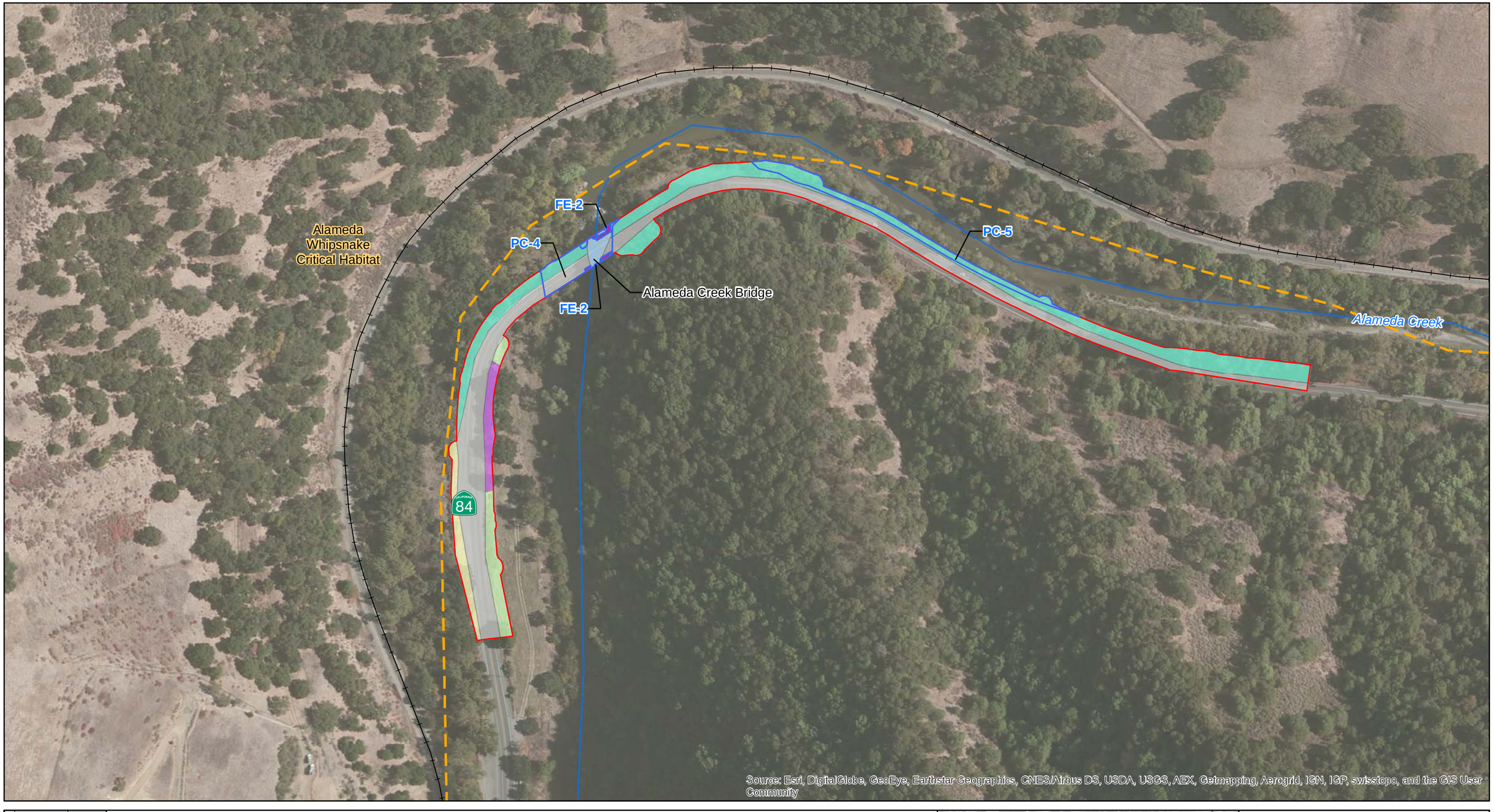


Figure 6:
Landcover Types and Waters Within the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 4 of 13



Biological Study Area
Railroad
Creek
Water Features
Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Barren
Urban-Landscaped
Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

N

0 100 200 Feet

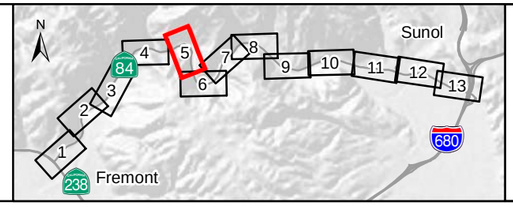


Figure 6:
Landcover Types and Waters Within the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 5 of 13

Biological Study Area
Railroad
Creek
Water Features
Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Barren
Urban-Landscaped
Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

N

0 100 200 Feet

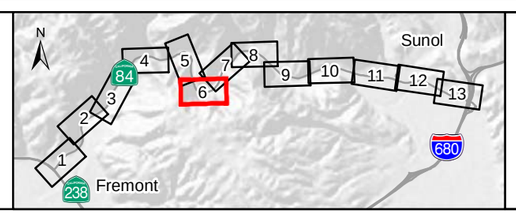


Figure 6:
Landcover Types and Waters Within the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 6 of 13

Biological Study Area
Railroad
Creek
Water Features
Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Barren
Urban-Landscaped
Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

0 100 200 Feet

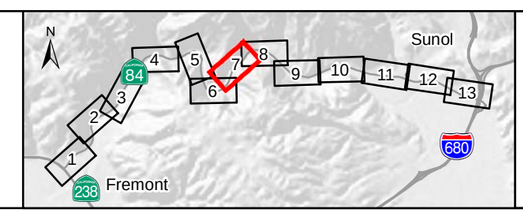


Figure 6:
Landcover Types and Waters Within the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 7 of 13

Biological Study Area
Railroad
Creek
Water Features
Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Barren
Urban-Landscaped
Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

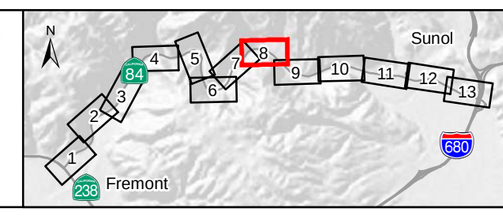


Figure 6:
Landcover Types and Waters Within the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 8 of 13

Biological Study Area
Railroad
Creek
Water Features
Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Barren
Urban-Landscaped
Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

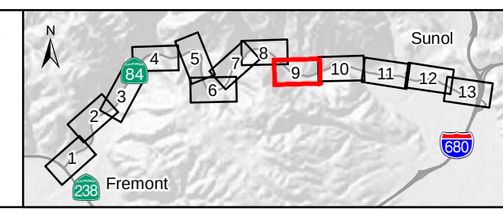
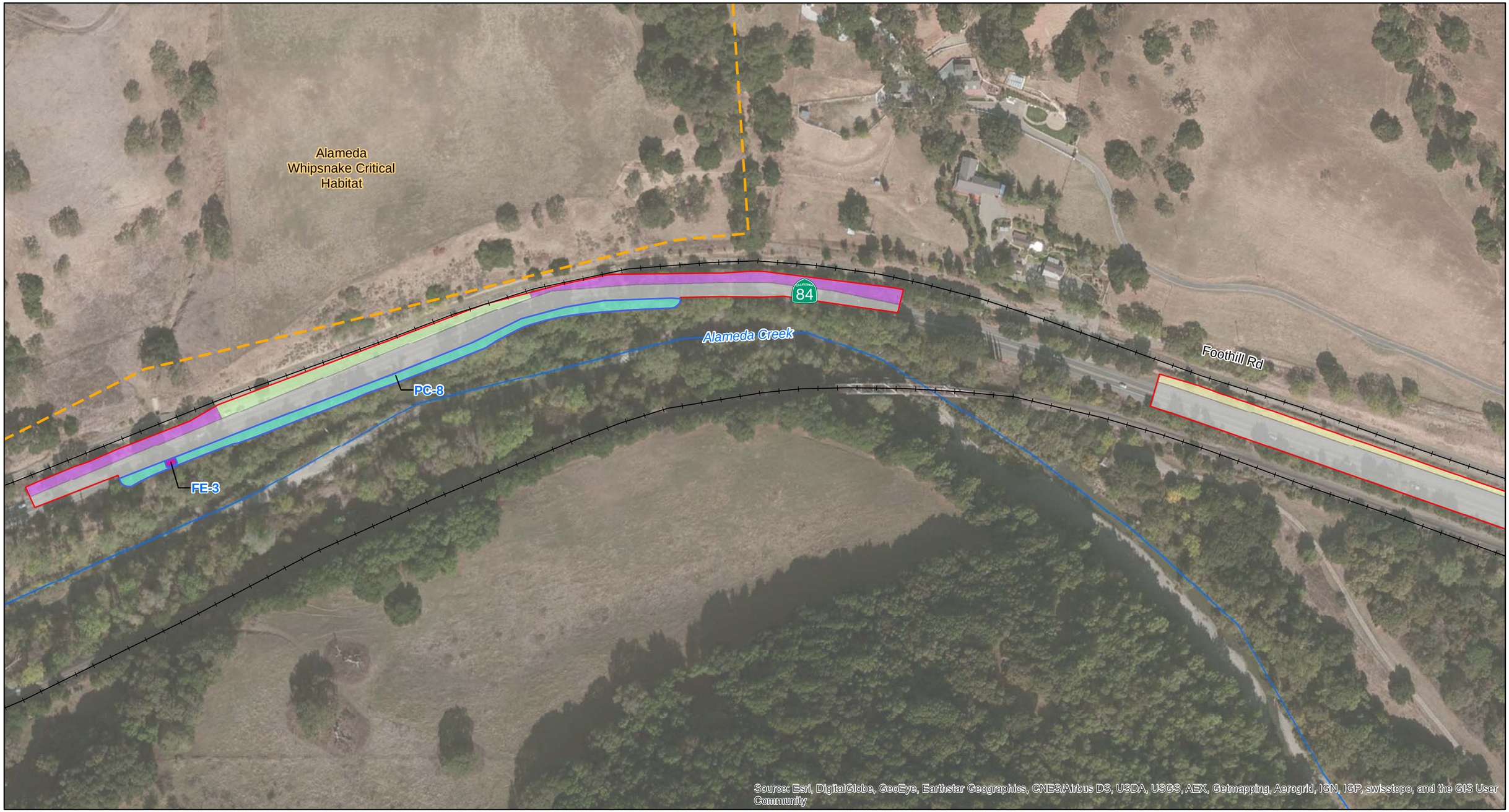


Figure 6:
Landcover Types and Waters Within the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 9 of 13



Biological Study Area
Railroad
Creek
Water Features
Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Barren
Urban-Landscaped
Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

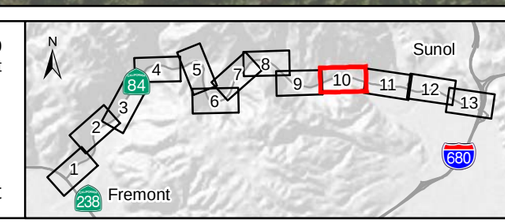


Figure 6:
Landcover Types and Waters Within the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 10 of 13

Biological Study Area
Railroad
Creek
Water Features
Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Barren
Urban-Landscaped
Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

N

0 100 200 Feet

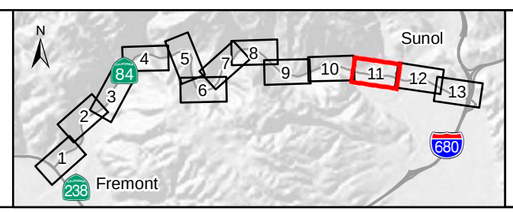


Figure 6:
Landcover Types and Waters Within the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 11 of 13

Biological Study Area
Railroad
Creek
Water Features
Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Barren
Urban-Landscaped
Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

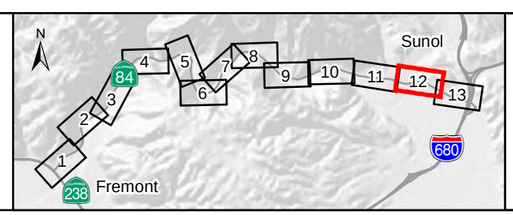


Figure 6:
Landcover Types and Waters Within the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 12 of 13

Biological Study Area
Railroad
Creek
Water Features
Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Barren
Urban-Landscaped
Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

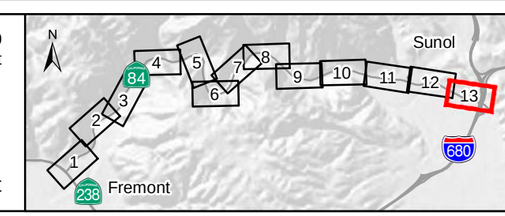


Figure 6:
Landcover Types and Waters Within the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 13 of 13

- Biological Study Area
- Railroad
- Creek
- Water Features
- Alameda Whipsnake Critical Habitat
- Permanent Impact
- Temporary Impact
- Stationing

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

0 100 200 Feet

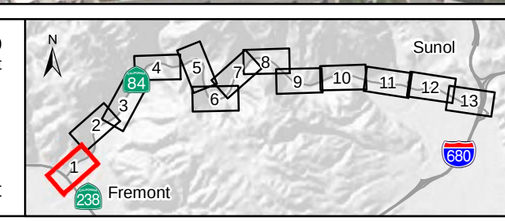


Figure 7:
Project Impacts to Landcover Types and Waters
Niles Canyon
Safety Improvement Project
Map 1 of 13

Biological Study Area
Railroad
Creek
Water Features
Alameda Whipsnake Critical Habitat
Permanent Impact
Temporary Impact
Stationing

Landcover and Vegetation Types
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Barren
Urban-Landscaped
Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet
0 100 200 Feet

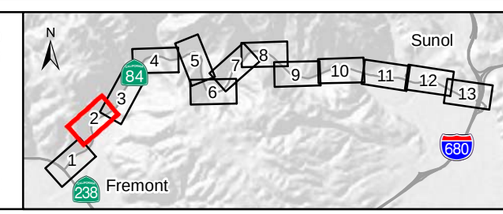


Figure 7:
Project Impacts to Landcover Types and Waters
Niles Canyon
Safety Improvement Project
Map 2 of 13

- Biological Study Area
- Railroad
- Creek
- Water Features
- Alameda Whipsnake Critical Habitat
- Permanent Impact
- Temporary Impact
- Stationing

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

0 100 200 Feet

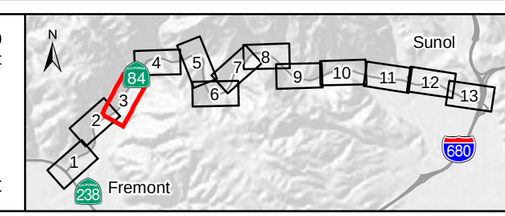
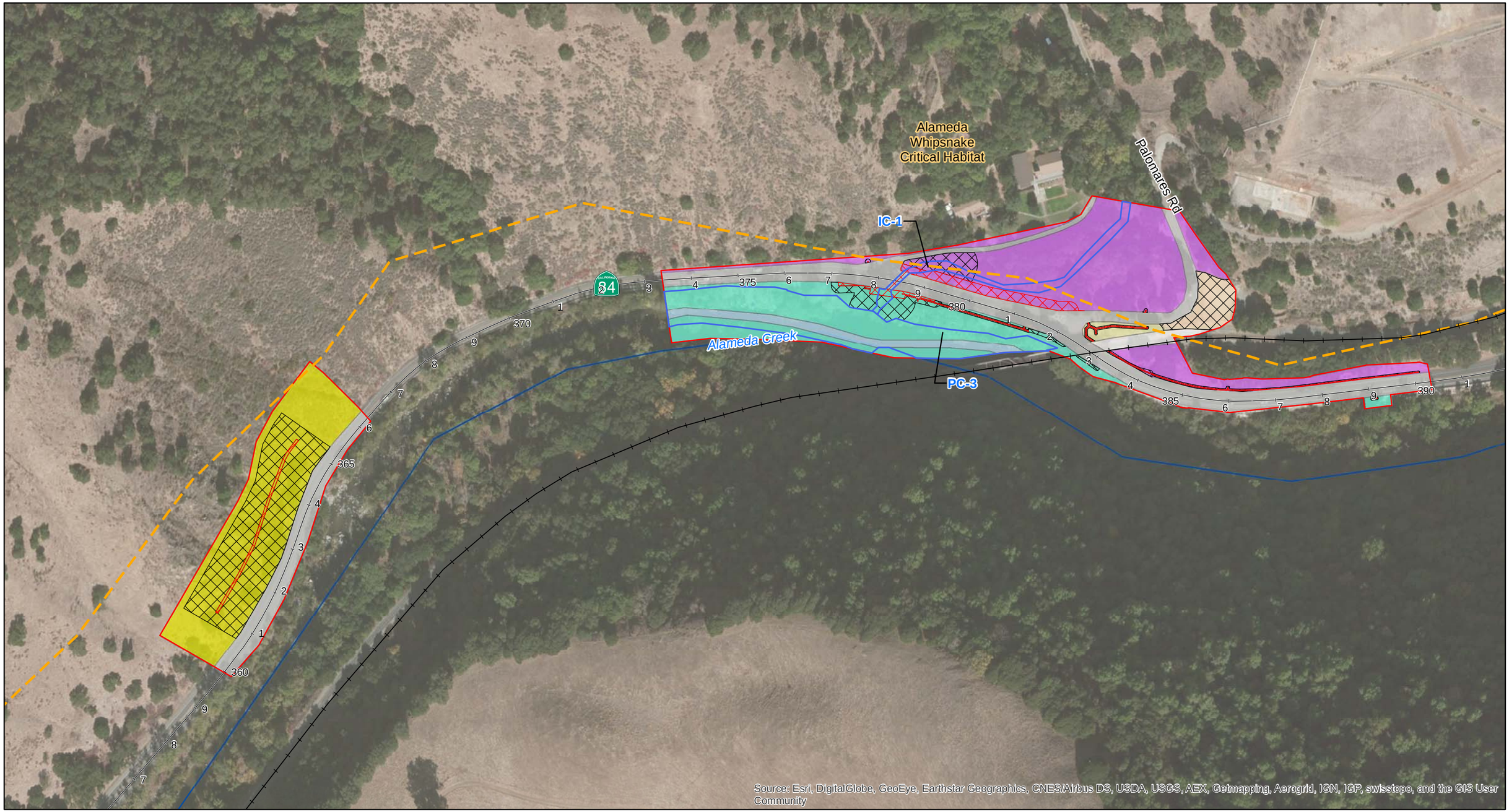


Figure 7:
Project Impacts to Landcover Types and Waters
Niles Canyon
Safety Improvement Project
Map 3 of 13



- Biological Study Area
- Railroad
- Creek
- Water Features
- Alameda Whipsnake Critical Habitat
- Permanent Impact
- Temporary Impact
- Stationing

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

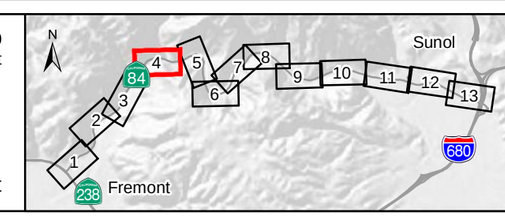
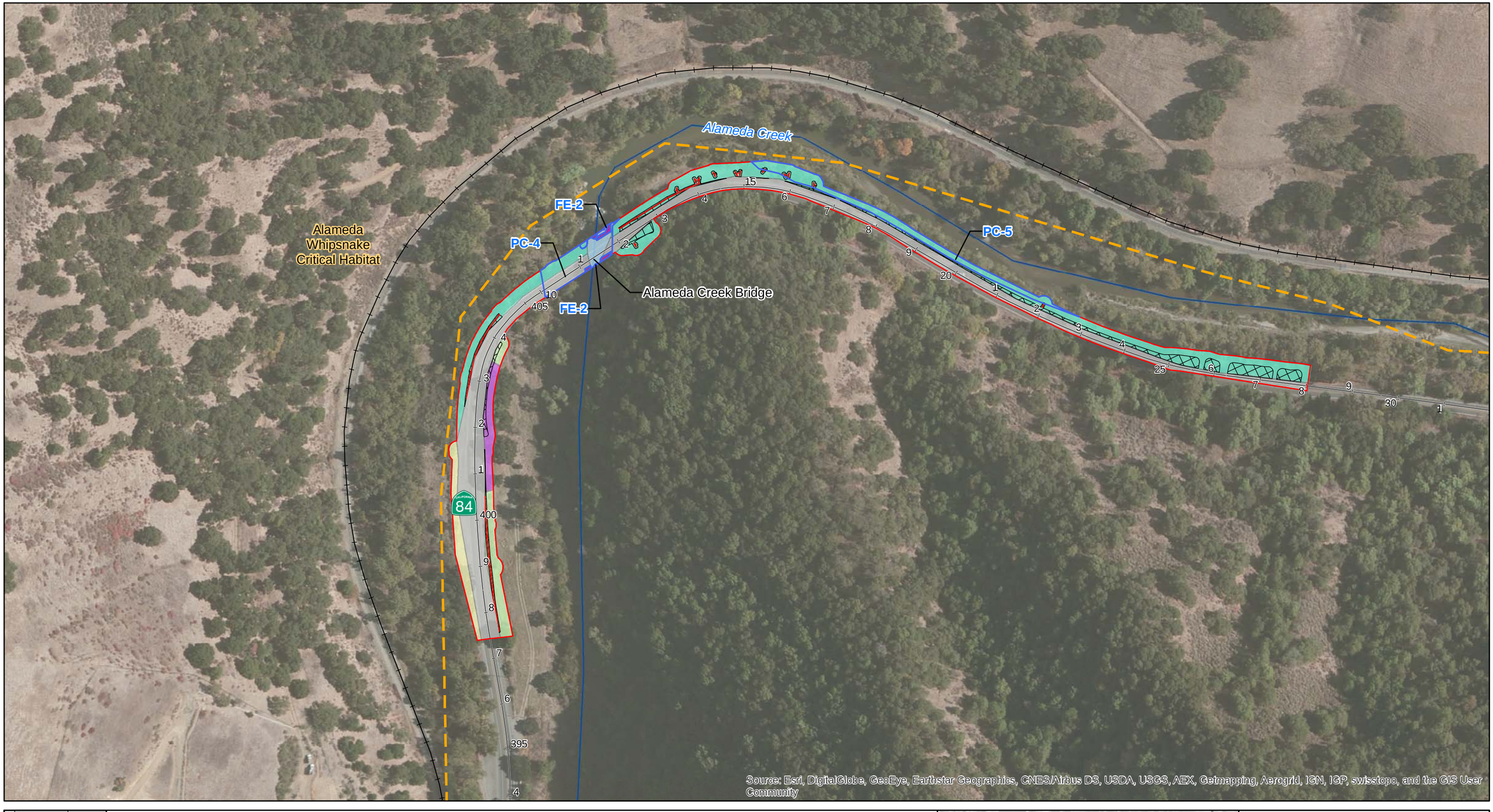


Figure 7:
Project Impacts to Landcover Types and Waters
Niles Canyon
Safety Improvement Project
Map 4 of 13



- Biological Study Area
- Railroad
- Creek
- Water Features
- Alameda Whipsnake Critical Habitat
- Permanent Impact
- Temporary Impact
- Stationing

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

0 100 200 Feet

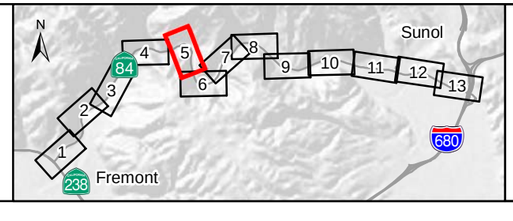


Figure 7:
Project Impacts to Landcover Types and Waters
Niles Canyon
Safety Improvement Project
Map 5 of 13

Biological Study Area
Railroad
Creek
Water Features
Alameda Whipsnake Critical Habitat
Permanent Impact
Temporary Impact
Stationing

Landcover and Vegetation Types
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Barren
Urban-Landscaped
Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

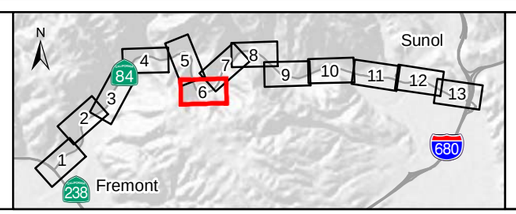


Figure 7:
Project Impacts to Landcover Types and Waters
Niles Canyon
Safety Improvement Project
Map 6 of 13

Biological Study Area
Railroad
Creek
Water Features
Alameda Whipsnake Critical Habitat
Permanent Impact
Temporary Impact
Stationing

Landcover and Vegetation Types
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Barren
Urban-Landscaped
Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet
0 100 200 Feet

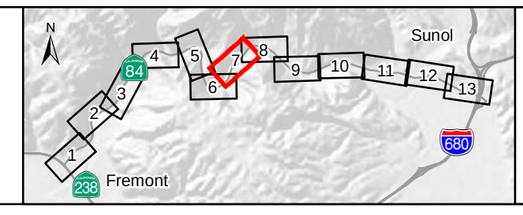


Figure 7:
Project Impacts to Landcover Types and Waters
Niles Canyon
Safety Improvement Project
Map 7 of 13

Biological Study Area
Railroad
Creek
Water Features
Alameda Whipsnake Critical Habitat
Permanent Impact
Temporary Impact
Stationing

Landcover and Vegetation Types
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Barren
Urban-Landscaped
Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

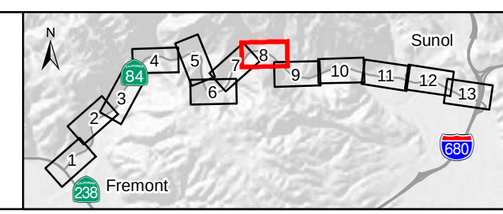


Figure 7:
Project Impacts to Landcover Types and Waters
Niles Canyon
Safety Improvement Project
Map 8 of 13

- Biological Study Area
- Railroad
- Creek
- Water Features
- Alameda Whipsnake Critical Habitat
- Permanent Impact
- Temporary Impact
- Stationing

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

N

0 100 200 Feet

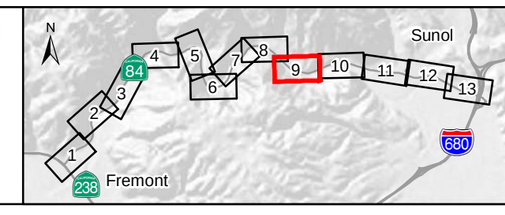


Figure 7:
Project Impacts to Landcover Types and Waters
Niles Canyon
Safety Improvement Project
Map 9 of 13

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

- Biological Study Area
- Railroad
- Creek
- Water Features
- Alameda Whipsnake Critical Habitat
- Permanent Impact
- Temporary Impact
- Stationing

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

N

0 100 200 Feet

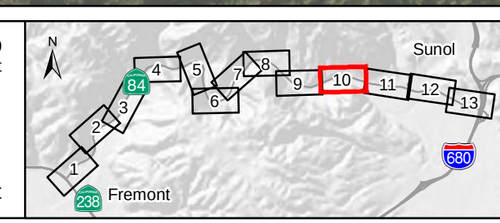


Figure 7:
Project Impacts to Landcover Types and Waters
Niles Canyon
Safety Improvement Project
Map 10 of 13

- Biological Study Area
- Railroad
- Creek
- Water Features
- Alameda Whipsnake Critical Habitat
- Permanent Impact
- Temporary Impact
- Stationing

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

N

0 100 200 Feet

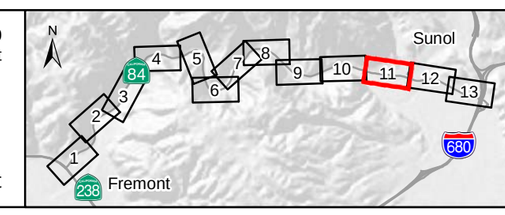
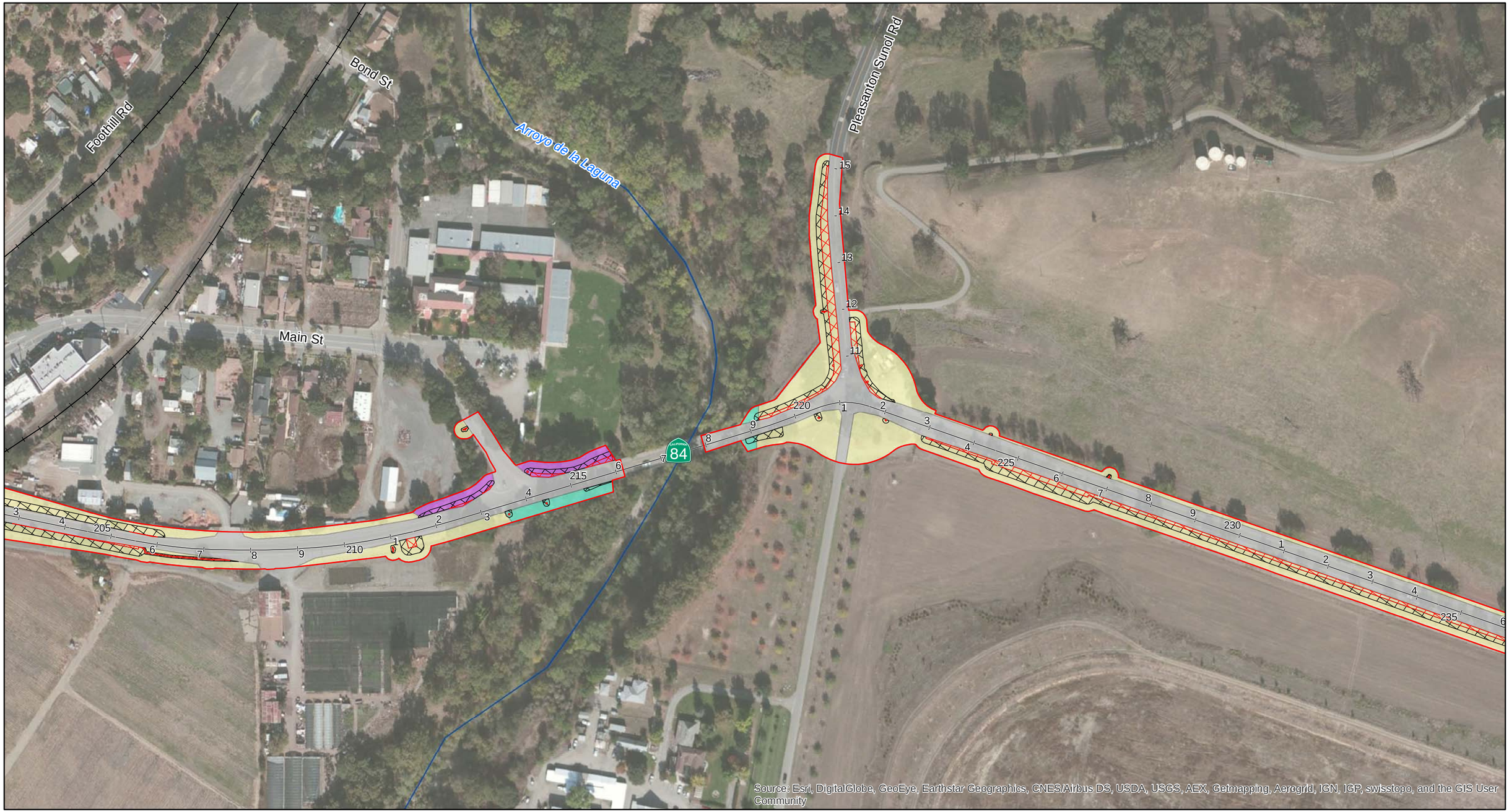


Figure 7:
Project Impacts to Landcover Types and Waters
Niles Canyon
Safety Improvement Project
Map 11 of 13



- Biological Study Area
- Railroad
- Creek
- Water Features
- Alameda Whipsnake Critical Habitat
- Permanent Impact
- Temporary Impact
- Stationing

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

N

0 100 200 Feet

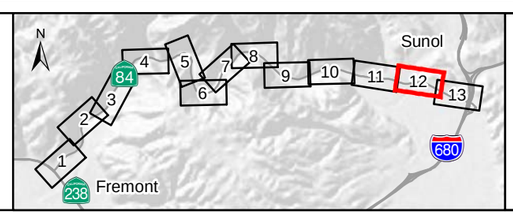


Figure 7:
Project Impacts to Landcover Types and Waters
Niles Canyon
Safety Improvement Project
Map 12 of 13

- Biological Study Area
- Railroad
- Creek
- Water Features
- Alameda Whipsnake Critical Habitat
- Permanent Impact
- Temporary Impact
- Stationing

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

N

0 100 200 Feet

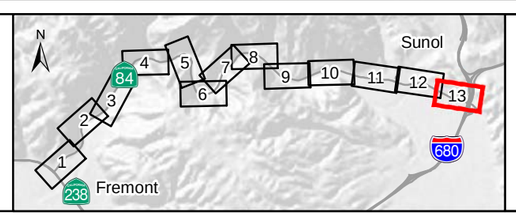


Figure 7:
Project Impacts to Landcover Types and Waters
Niles Canyon
Safety Improvement Project
Map 13 of 13

Biological Study Area
Railroad
Creek
Tree
Permanent Impact
Temporary Impact
Stationing

Scale: 1:2,400
1 inch = 200 feet

0 100 200 Feet

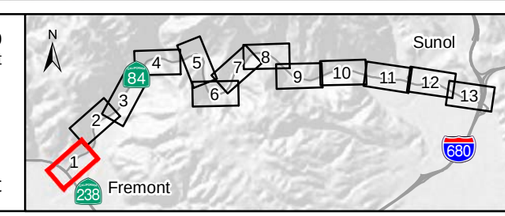


Figure 8:
Project Impacts to Trees
Niles Canyon
Safety Improvement Project
Map 1 of 13

Biological Study Area
Railroad
Creek
Tree
Permanent Impact
Temporary Impact
Stationing

Scale: 1:2,400
1 inch = 200 feet

0 100 200 Feet

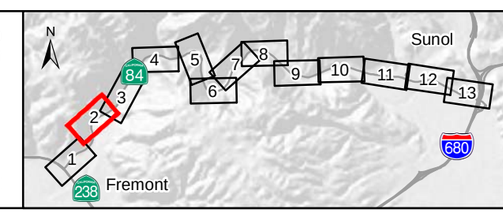


Figure 8:
Project Impacts to Trees
Niles Canyon
Safety Improvement Project
Map 2 of 13

Biological Study Area
Railroad
Creek
Tree
Permanent Impact
Temporary Impact
Stationing

Scale: 1:2,400
1 inch = 200 feet

0 100 200 Feet

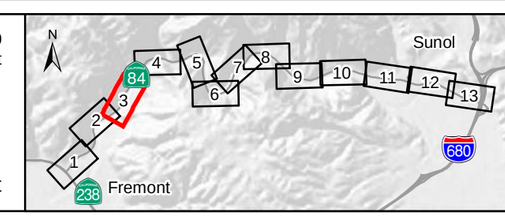
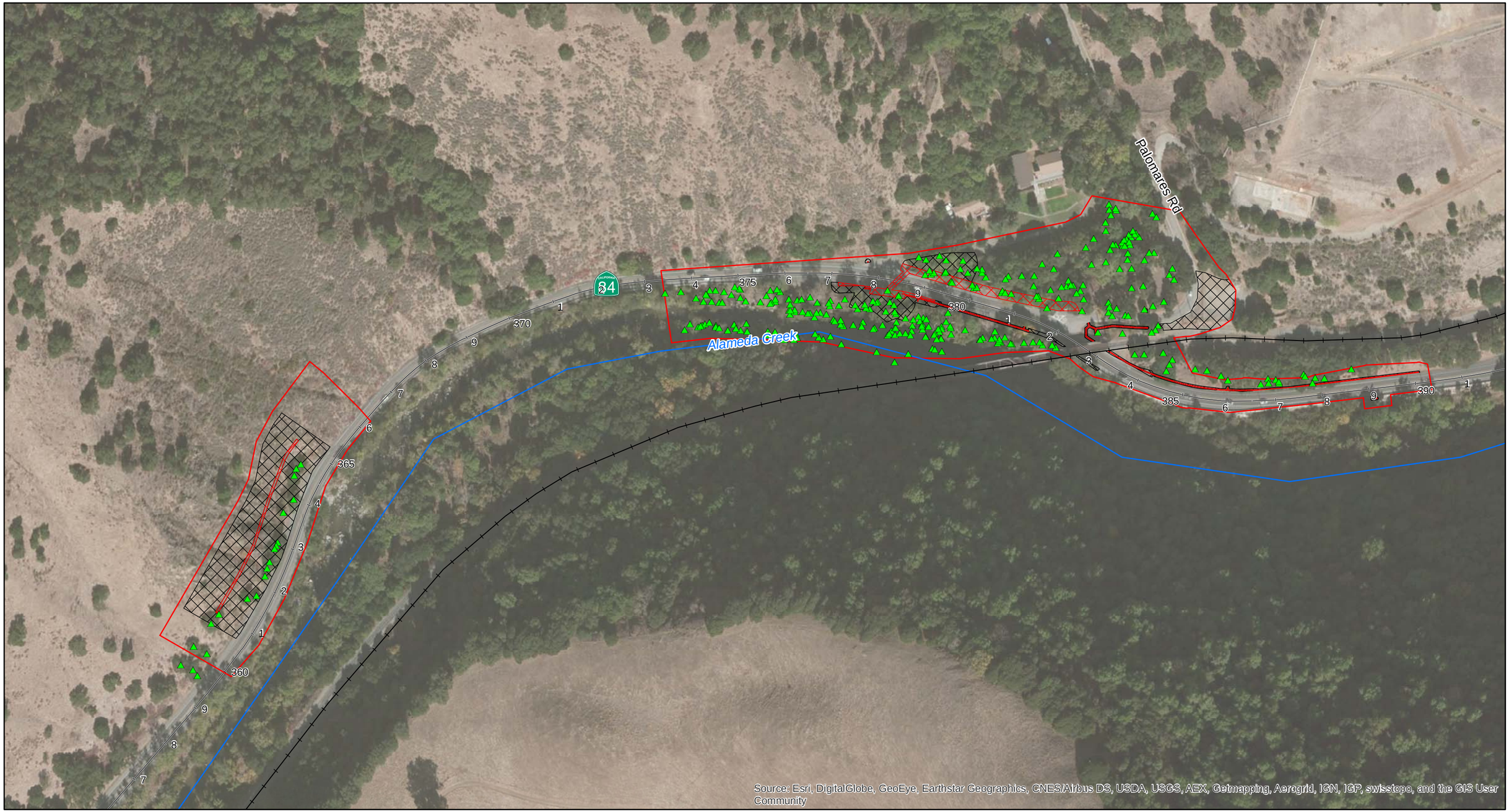


Figure 8:
Project Impacts to Trees
Niles Canyon
Safety Improvement Project
Map 3 of 13



Biological Study Area
Railroad
Creek
Tree
Permanent Impact
Temporary Impact
Stationing

Scale: 1:2,400
1 inch = 200 feet

N

0 100 200 Feet

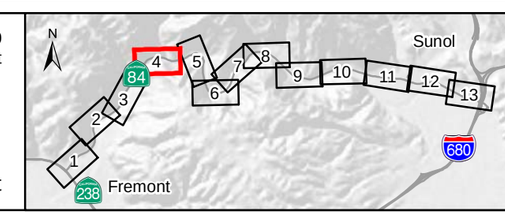
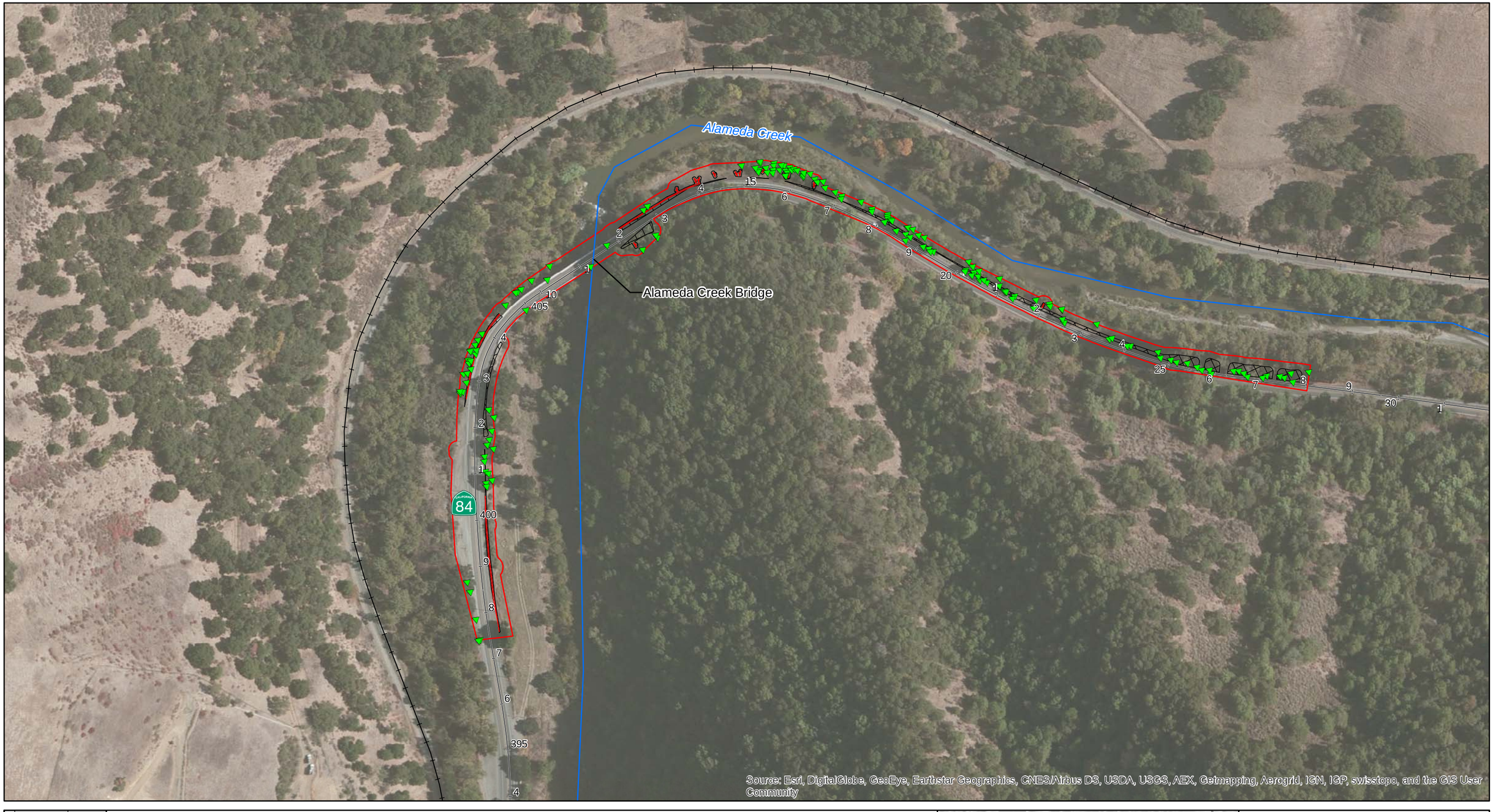


Figure 8:
Project Impacts to Trees
Niles Canyon
Safety Improvement Project
Map 4 of 13



Biological Study Area
Railroad
Creek
Tree
Permanent Impact
Temporary Impact
Stationing

Scale: 1:2,400
1 inch = 200 feet

0 100 200 Feet

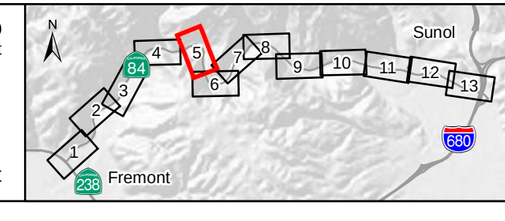
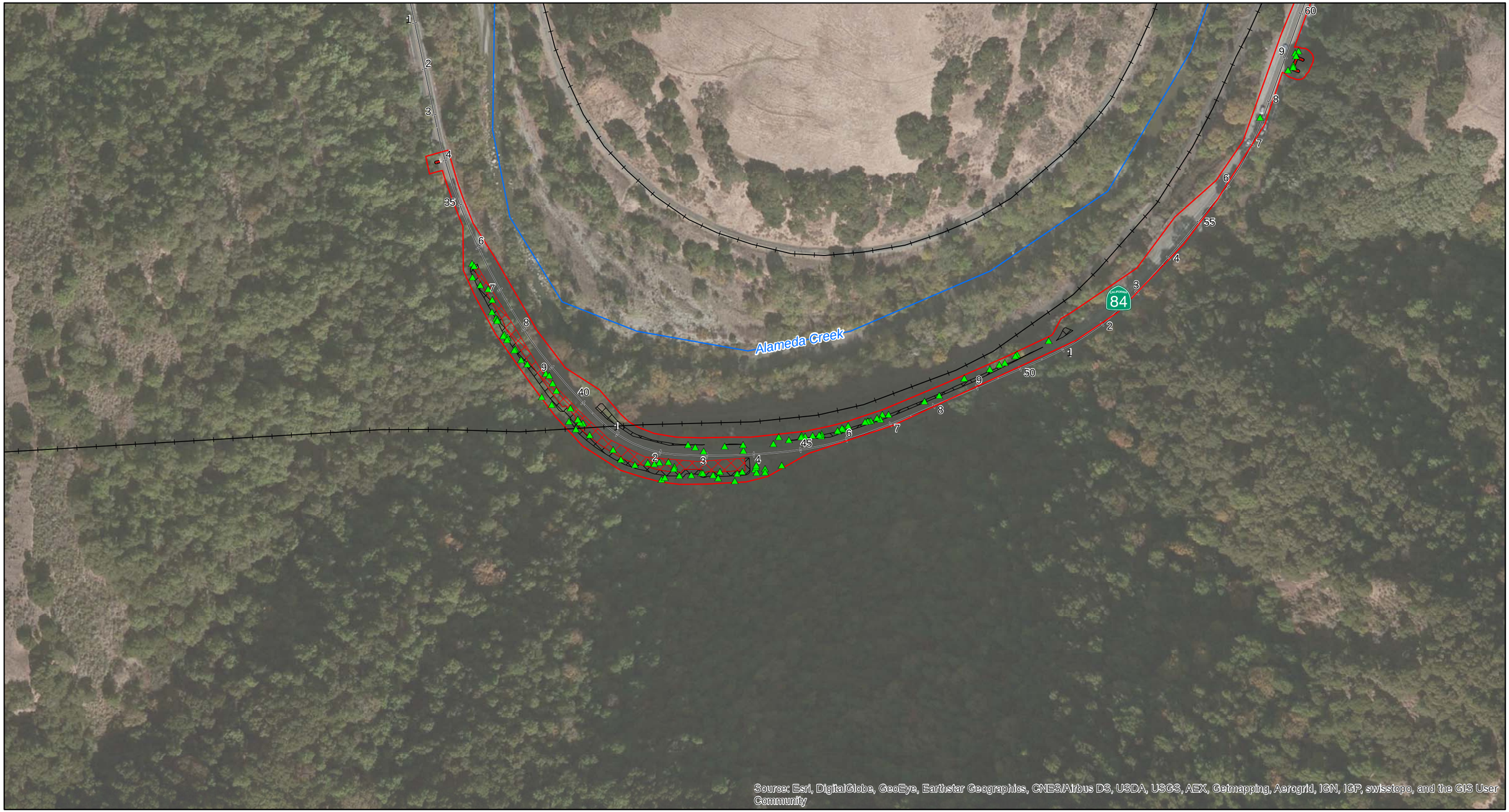


Figure 8:
Project Impacts to Trees
Niles Canyon
Safety Improvement Project
Map 5 of 13



Biological Study Area
Railroad
Creek
Tree
Permanent Impact
Temporary Impact
Stationing

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

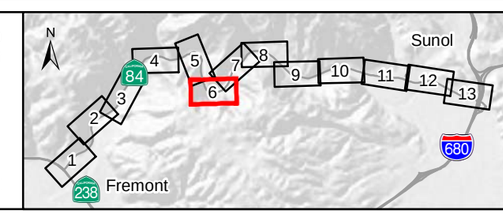
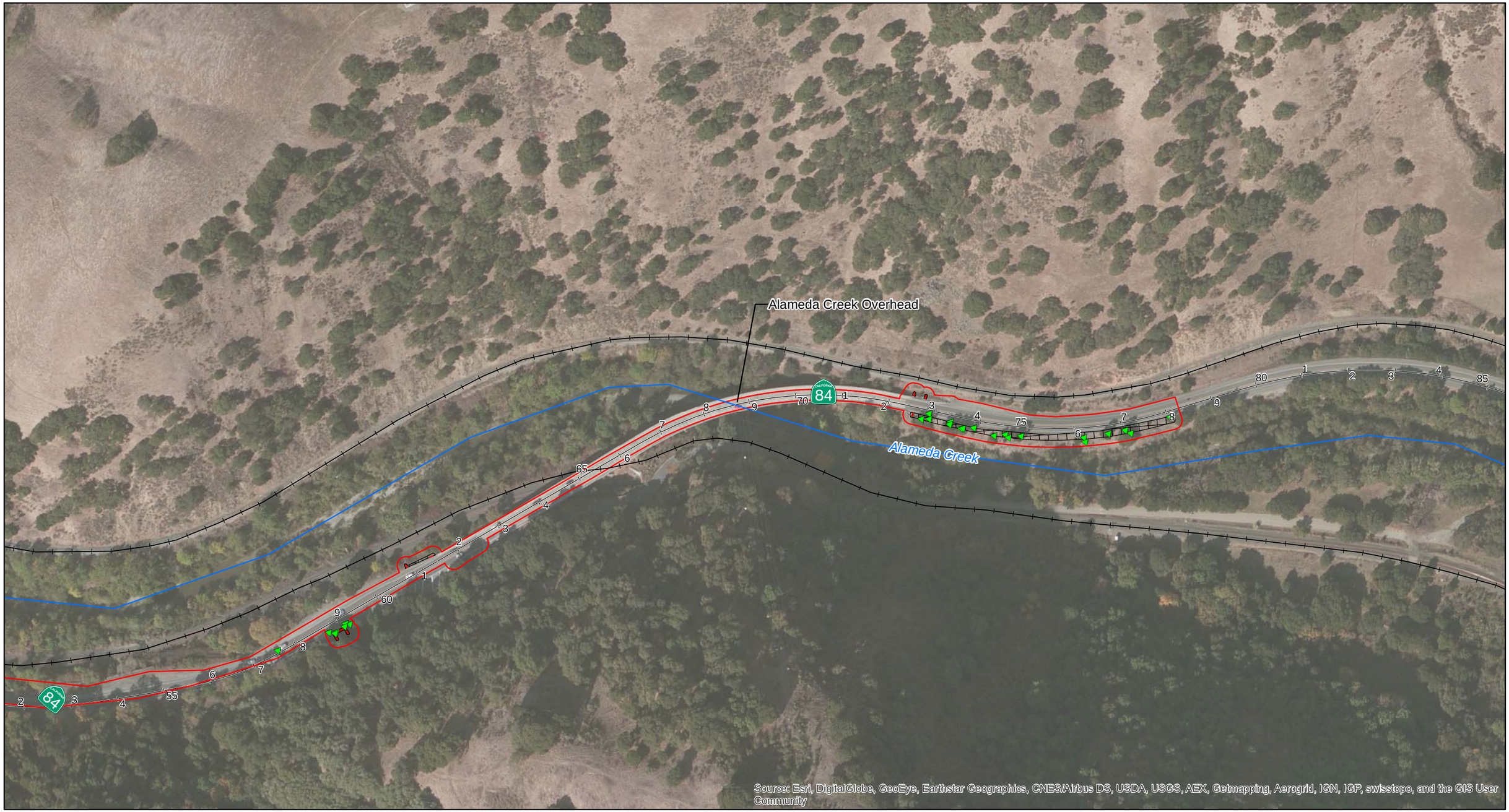


Figure 8:
Project Impacts to Trees
Niles Canyon
Safety Improvement Project
Map 6 of 13



Biological Study Area
Railroad
Creek
Tree
Permanent Impact
Temporary Impact
Stationing

Scale: 1:2,400
1 inch = 200 feet

0 100 200 Feet

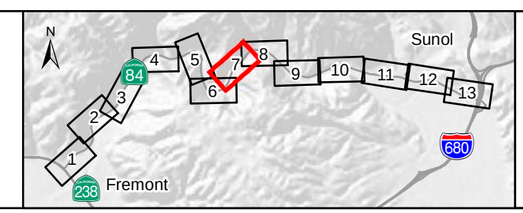


Figure 8:
Project Impacts to Trees
Niles Canyon
Safety Improvement Project
Map 7 of 13

Biological Study Area
Railroad
Creek
Tree
Permanent Impact
Temporary Impact
Stationing

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

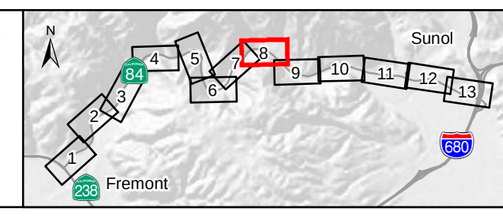


Figure 8:
Project Impacts to Trees
Niles Canyon
Safety Improvement Project
Map 8 of 13

Biological Study Area
Railroad
Creek
Tree
Permanent Impact
Temporary Impact
Stationing

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

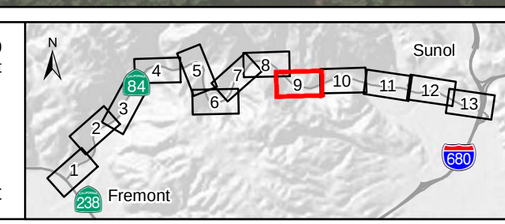
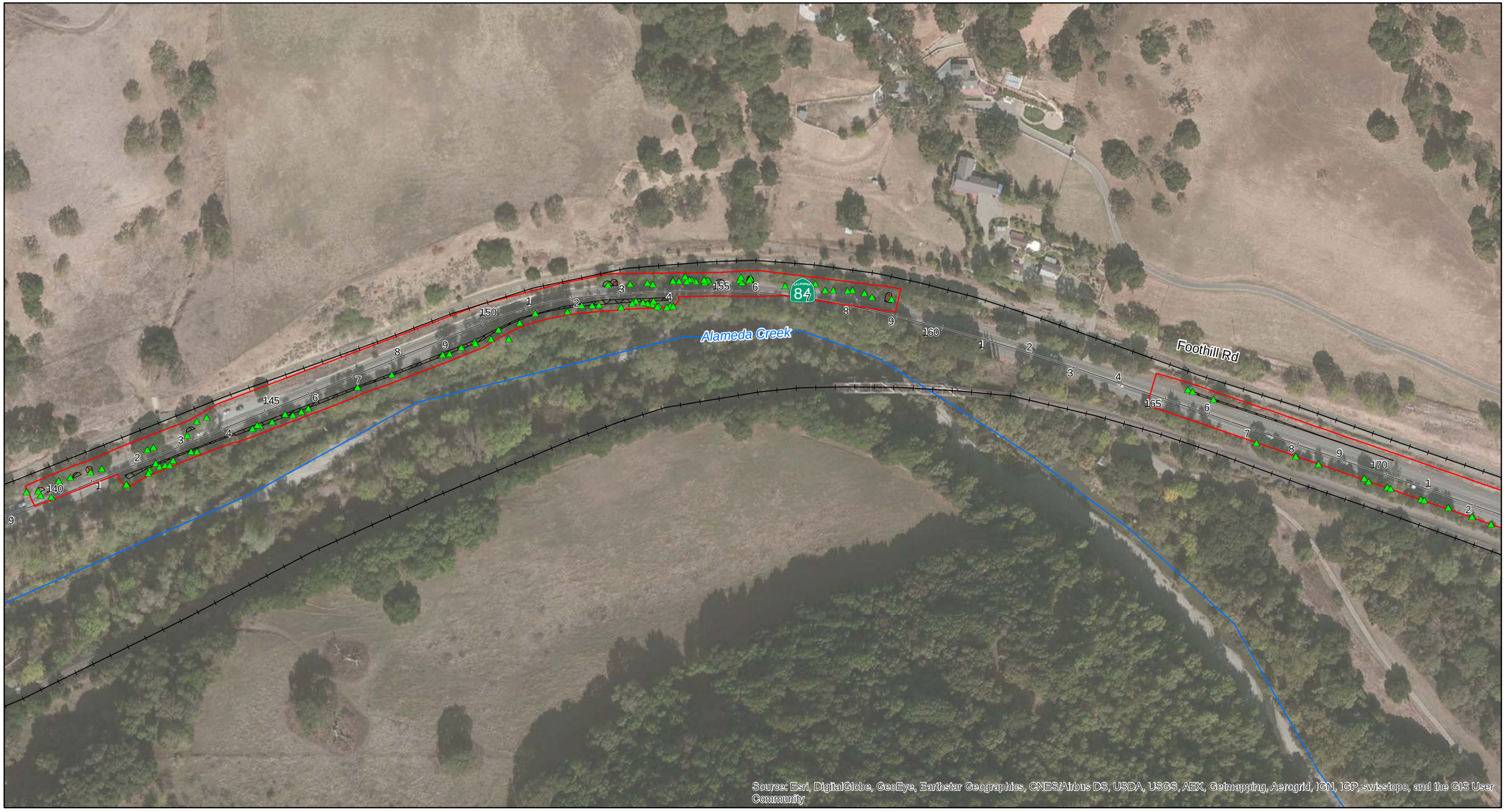


Figure 8:
Project Impacts to Trees
Niles Canyon
Safety Improvement Project
Map 9 of 13



Biological Study Area
Railroad
Creek
Tree
Permanent Impact
Temporary Impact
Stationing

Scale: 1:2,400
1 inch = 200 feet

N

0 100 200 Feet

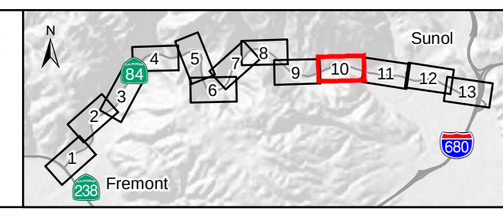


Figure 8:
Project Impacts to Trees
Niles Canyon
Safety Improvement Project
Map 10 of 13

Biological Study Area
Railroad
Creek
Tree
Permanent Impact
Temporary Impact
Stationing

Scale: 1:2,400
1 inch = 200 feet

0 100 200 Feet

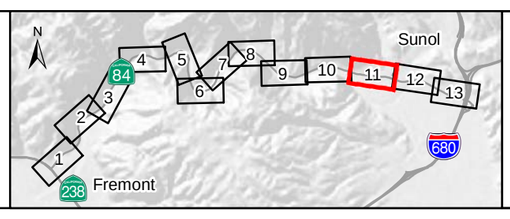
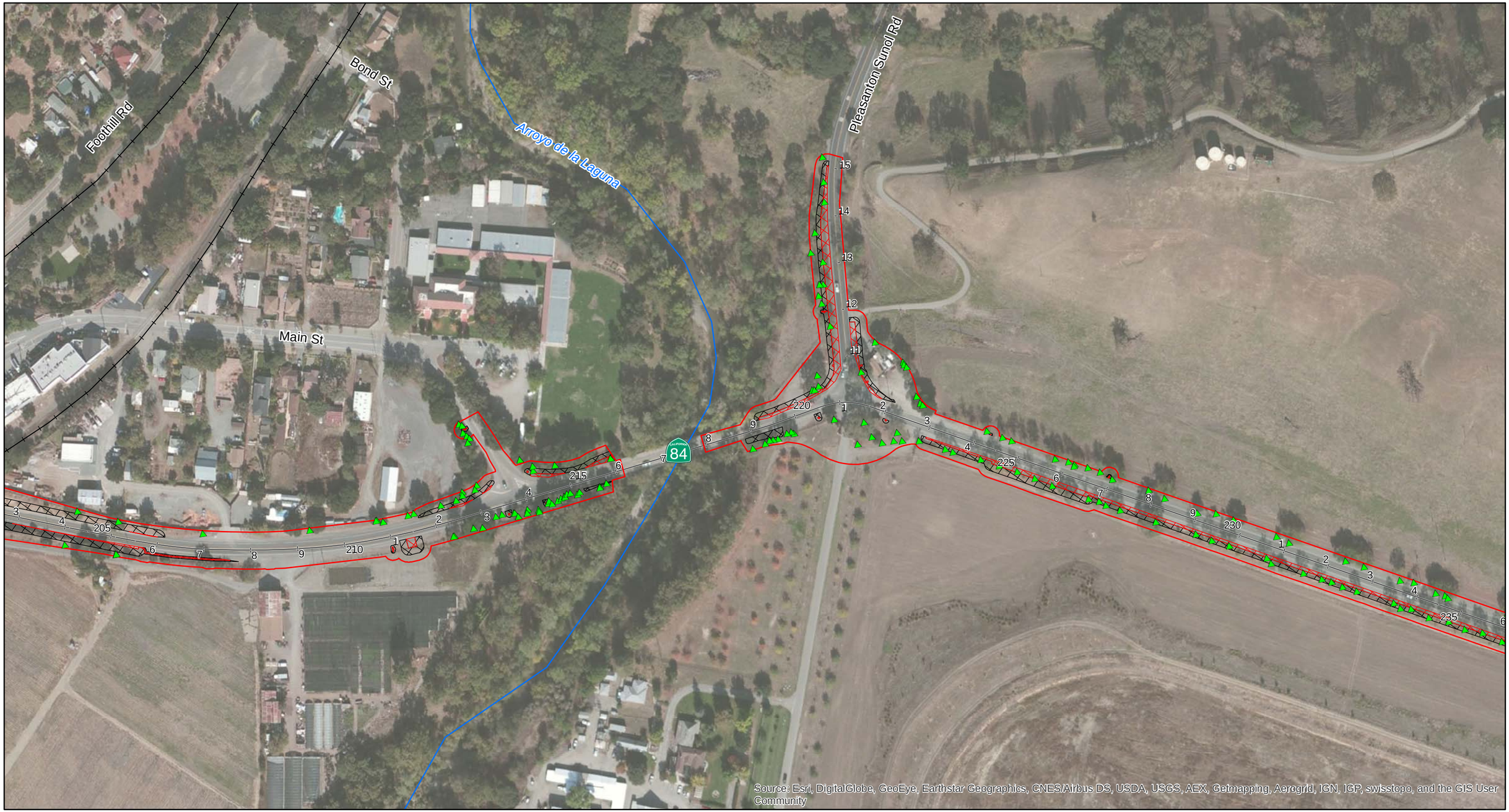


Figure 8:
Project Impacts to Trees
Niles Canyon
Safety Improvement Project
Map 11 of 13



Biological Study Area
Railroad
Creek
Tree
Permanent Impact
Temporary Impact
Stationing

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

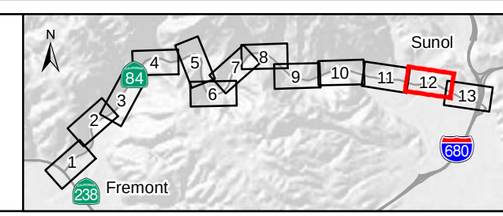


Figure 8:
Project Impacts to Trees
Niles Canyon
Safety Improvement Project
Map 12 of 13

Biological Study Area
Railroad
Creek
Tree
Permanent Impact
Temporary Impact
Stationing

Scale: 1:2,400
1 inch = 200 feet
N
0 100 200 Feet

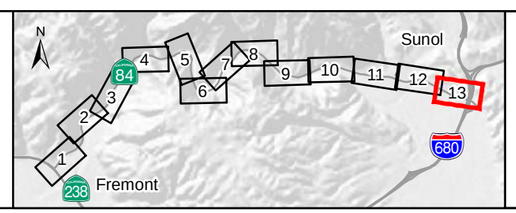


Figure 8:
Project Impacts to Trees
Niles Canyon
Safety Improvement Project
Map 13 of 13

Appendix B U.S. Fish and Wildlife Service and National Marine Fisheries Service Species Letters

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
FEDERAL BUILDING, 2800 COTTAGE WAY, ROOM W-2605
SACRAMENTO, CA 95825
PHONE: (916)414-6600 FAX: (916)414-6713

Consultation Code: 08ESMF00-2016-SLI-1864 July 19, 2016
Event Code: 08ESMF00-2016-E-04079
Project Name: Niles Canyon Safety Improvement Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2)

of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

Official Species List

Provided by:

Sacramento Fish and Wildlife Office
FEDERAL BUILDING
2800 COTTAGE WAY, ROOM W-2605
SACRAMENTO, CA 95825
(916) 414-6600

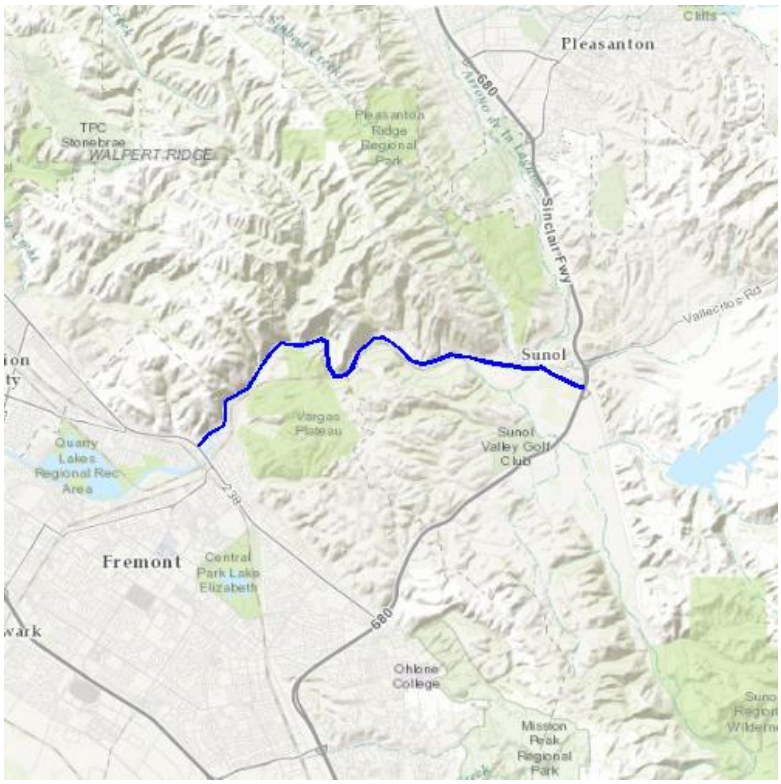
Consultation Code: 08ESMF00-2016-SLI-1864
Event Code: 08ESMF00-2016-E-04079

Project Type: TRANSPORTATION

Project Name: Niles Canyon Safety Improvement Project

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Alameda, CA

Endangered Species Act Species List

There are a total of 14 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Amphibians	**Status**	**Has Critical Habitat**	**Condition(s)**
California red-legged frog *(Rana draytonii)* Population: Entire	Threatened	Final designated	
California tiger Salamander *(Ambystoma californiense)* Population: U.S.A. (Central CA DPS)	Threatened	Final designated	
Birds			
California Least tern *(Sterna antillarum browni)*	Endangered		
Crustaceans			
Conservancy fairy shrimp *(Branchinecta conservatio)* Population: Entire	Endangered	Final designated	
Vernal Pool fairy shrimp *(Branchinecta lynchi)* Population: Entire	Threatened	Final designated	
Vernal Pool tadpole shrimp *(Lepidurus packardi)*	Endangered	Final designated	

Population: Entire			
Fishes			
Delta smelt *(Hypomesus transpacificus)* Population: Entire	Threatened	Final designated	
steelhead *(Oncorhynchus (=salmo) mykiss)* Population: Northern California DPS	Threatened	Final designated	
Flowering Plants			
Contra Costa goldfields *(Lasthenia conjugens)*	Endangered	Final designated	
Insects			
Bay Checkerspot butterfly *(Euphydryas editha bayensis)* Population: Entire	Threatened	Final designated	
San Bruno Elfin butterfly *(Callophrys mossii bayensis)* Population: Entire	Endangered		
Mammals			
Salt Marsh Harvest mouse *(Reithrodontomys raviventris)* Population: wherever found	Endangered		
San Joaquin Kit fox *(Vulpes macrotis mutica)* Population: wherever found	Endangered		
Reptiles			
Alameda whipsnake *(Masticophis*	Threatened	Final designated	

lateralis euryxanthus) Population: Entire			

Critical habitats that lie within your project area

The following critical habitats lie fully or partially within your project area.

Reptiles	Critical Habitat Type
Alameda whipsnake *(Masticophis lateralis euryxanthus)* Population: Entire	Final designated

Quad Name **Niles**
Quad Number **37121-E8**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) - **X**
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) -
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat -
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -

Essential Fish Habitat

Coho EFH - **X**
Chinook Salmon EFH - **X**
Groundfish EFH -
Coastal Pelagics EFH -
Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult Monica DeAngelis
monica.deangelis@noaa.gov
562-980-3232

MMPA Cetaceans -
MMPA Pinnipeds -

Appendix C Potential for Special-Status Species to Occur

Table C-1. Potential for Special-Status Wildlife Species to Occur within the BSA

Federal Status Designations:

FE	Listed as Endangered under the federal Endangered Species Act
FT	Listed as Threatened under the federal Endangered Species Act
FC	Candidate for listing under the federal Endangered Species Act
FD	Delisted; was formerly listed as Threatened or Endangered
BGEPA	Protected under the Bald and Golden Eagle Protection Act
--	No federal status

State of California Status Designations:

SE	Listed as Endangered under the California Endangered Species Act
ST	Listed as Threatened under the California Endangered Species Act
SC	Candidate for listing under the California Endangered Species Act
SD	Delisted; was formerly listed as Threatened or Endangered
FP	Fully Protected Species under California Fish and Game Code
SSC	California Species of Special Concern
SA	Included on the California Department of Fish and Wildlife's Special Animals List

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
Invertebrates				
Conservancy fairy shrimp	*Branchinecta conservatio*	FE / SA	Vernal pools in a variety of soil types, including clays and playas. Often found in pools that are relatively large and turbid.	Not Expected - No vernal pool habitat in BSA.
Longhorn fairy shrimp	*Branchinecta longiantenna*	FE / SA	Clear to turbid vernal pools in varying habitat types, including grasslands, sandstone outcrops, and playas.	Not Expected - No vernal pool habitat in BSA.
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT / SA	Wide variety of vernal pool habitats, most commonly in grass or mud bottomed swales, or basalt flow depression pools in unplowed grasslands.	Not Expected - No vernal pool habitat in BSA.
San Bruno Elfin butterfly	*Callophyrys mossii bayensis*	FE / --	Inhabits rocky outcrops and cliffs within coastal scrub of the San Francisco peninsula. Eggs are laid on the host plant, stonecrop (*Sedum spathulifolium*). Adult flight period is late February to mid-April, with the peak occurring in March to early April.	Not Expected – Outside species' range, no suitable habitat in BSA.
Monarch butterfly (winter roosting)	*Danaus plexippus*	-- / SA	Winter roosting sites extend along the coast from northern Mendocino County south to San Diego County. Roosts are typically located in wind-protected tree groves within a half mile of the coast. Commonly found in eucalyptus, Monterey pine and/or cypress groves, with nectar and water sources in the vicinity. Larvae develop on milkweed (*Asclepias* sp.) throughout California.	Low – Marginal wintering habitat, no historic presence recorded in this area.
Bay checkerspot butterfly	*Euphydryas editha bayensis*	FT / SA	Serpentine areas in Santa Clara and San Mateo Counties where its hostplant, dwarf plantain (*Plantago erecta*) is present.	Not Expected - No serpentine habitat in BSA.

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE / SA	Vernal pools and swales containing clear to highly turbid water. Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	Not Expected - No vernal pool habitat in BSA.
California linderiella	*Linderiella occidentalis*	-- / SA	Wide variety of vernal pool and other seasonal wetland habitats, often in deeper pools.	Not Expected - No vernal pool habitat in BSA.
Lum's micro-blind harvestman	*Microcina lumi*	-- / SA	Found under rocks in serpentine grasslands. Known only from serpentine hillsides near San Leandro, Alameda County.	Not Expected - No serpentine habitat in BSA.
Mimic tryonia (=California brackishwater snail)	*Tryonia imitator*	-- / SA	Inhabits coastal lagoons, estuaries and salt marshes, from Sonoma County south to San Diego County.	Not Expected - No lagoon, estuary, or salt marsh in BSA.
Fish				
Green sturgeon - southern DPS	*Acipenser medirostris*	FT / SSC	This Distinct Population Segment (DPS) includes all coastal and Central Valley populations south of the Eel River. They spawn in deep pools or "holes" in large, turbulent, freshwater river main-stems. Adults live in oceanic waters, bays, and estuaries when not spawning.	Not Expected - No suitable habitat in BSA.
Pacific lamprey	*Entosphenus tridentatus*	-- / SA	Anadromous. Adults spawn in gravel substrates within low gradient stream reaches, generally near pools or riffles. Larvae float downstream to silty areas where they filter feed for 4-7 years, before metamorphosing into adults and leaving streams for oceanic waters.	Moderate. Suitable habitat present, lamprey species have been observed within the watershed.
Delta smelt	*Hypomesus transpacificus*	FT/ SE	Found in the Sacramento-San Joaquin delta, seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Seldom found at salinities > 10 ppt. Most often occurs at salinities < 2ppt.	Not Expected - Outside species' range, no suitable habitat in BSA.
River lamprey	*Lampetra ayresii*	-- / SSC	Anadromous. Oceanic adults enter river systems to spawn in clean, gravelly riffles. Filter-feeding larvae bury themselves in sandy backwaters or stream edges.	Moderate. Suitable habitat present, lamprey species have been observed within the watershed.
Coho salmon - central California coast ESU	*Oncorhynchus kisutch*	FE / SE	Spawning habitat is small streams with stable gravel substrates. The remainder of the life cycle is spent foraging in estuarine and marine waters of the Pacific Ocean.	Not Expected – Outside of species' current range, marginally suitable habitat in BSA.

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
Steelhead - central California coast DPS	*Oncorhynchus mykiss irideus*	FT / SA	Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development. Natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks. This DPS includes spawning populations from the Russian River to Aptos Creek, including San Francisco Bay.	High - Suitable habitat in Alameda Creek, and resident rainbow trout form is present in watershed. Currently, anadromous form is excluded by downstream passage barriers; but is likely to occur if passage is restored as planned in 2019.
Steelhead - Central Valley DPS	*Oncorhynchus mykiss irideus*	FT / SA	Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development. Natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks. This DPS includes spawning populations from the Sacramento and San Joaquin River systems.	Not Expected - Outside species' range.
Chinook salmon - Central Valley spring-run ESU	*Oncorhynchus tshawytscha*	FT / ST	Prefer streams that are deeper and larger than those used by other Pacific salmon species.	Not Expected - Outside species' range.
Chinook salmon - Sacramento River winter-run ESU	*Oncorhynchus tshawytscha*	FE / SE	Prefer streams that are deeper and larger than those used by other Pacific salmon species.	Not Expected - Outside species' range.
Longfin smelt	*Spirinchus thaleichthys*	FC / ST	Occurs in bays and estuaries from Monterey Bay to the Smith River. Enters lower tidal portions of larger streams to spawn, not typically found in non-tidal sections of small streams.	Not Expected – No suitable habitat within BSA.
Amphibians				
California tiger salamander (Central DPS)	*Ambystoma californiense*	FT / ST	Vernal pools and/or seasonal water sources; requires underground refuges in adjacent upland areas, especially ground squirrel burrows.	Low – No suitable breeding habitat, marginally suitable upland habitat along Paloma Way in the eastern section of the BSA only. No habitat west of Pleasanton-Sunol Road because the steep, densely shaded walls of Niles Canyon are not suitable dispersal habitat for the species and likely represent a dispersal barrier.

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
Foothill yellow-legged frog	*Rana boylii*	-- / SSC	Breeds and forages in rocky or cobble-bottomed streams. Found in a variety of forest, woodland, scrub, riparian, and meadow habitats where suitable streams are present.	Low – Marginally suitable habitat present in Alameda Creek within the BSA.
California red-legged frog	*Rana draytonii*	FT / SSC	Breeds in ponds and pools in slow-moving streams with emergent vegetation; adjacent upland habitats are often used for temporary refuges or dispersal movements.	Moderate – Marginally suitable aquatic habitat within Alameda Creek, suitable upland habitat throughout BSA.
Reptiles				
Western pond turtle	*Emys marmorata*	-- / SSC	Occurs in both permanent and seasonal waters, including marshes, streams, rivers, ponds, and lakes. Also found in agricultural irrigation and drainage canals. They favor habitats with large amounts of emergent logs or boulders, where several individuals may congregate to bask.	Moderate – Suitable aquatic habitat in sun-exposed portions of Alameda Creek, and suitable breeding habitat in south-facing upland areas with short vegetation within BSA.
Alameda whipsnake	*Masticophis lateralis euryxanthus*	FT / ST	Typically found in chaparral and scrub habitats, but will also use adjacent grassland, oak savanna, and woodland habitats. Often found on south-facing slopes and ravines with rock outcrops, deep crevices, or abundant rodent burrows.	High – BSA is partially located within designated critical habitat, suitable foraging and dispersal habitat present.
Birds				
Cooper's hawk	*Accipiter cooperii*	-- / SA	Found in woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	Moderate - Suitable nesting and foraging habitat within BSA.
Sharp-shinned hawk	*Accipiter striatus*	-- / SA	Found in ponderosa pine, black oak, riparian deciduous, mixed conifer and Jeffrey pine habitats. Prefers riparian areas. Nest sites with plucking perches on north-facing slopes are critical requirements. Nests usually within 275 feet of water.	Low - Suitable nesting and foraging habitat within BSA, but it is uncommon for this species to nest in the Bay Area.
Tricolored blackbird	*Agelaius tricolor*	-- / SC	Highly colonial species that typically nests in freshwater marshes containing emergent vegetation such as cattail and bulrush, but will also use blackberry thickets and dense patches of ruderal vegetation such as thistles and mustard adjacent to marshes or wetlands.	Low – Marginal nesting habitat within the BSA, may forage or migrate through.

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
Golden eagle	*Aquila chrysaetos*	BGEPA / FP	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas provide good nesting sites.	Low – Unlikely to use trees in the canyon bottom for nesting. May occasionally forage in the BSA.
Great egret (nesting colony)	*Ardea alba*	-- / SA	Nests colonially in trees and tall vegetation in a wide variety of habitats near open water foraging habitats.	Moderate - Suitable rookery habitat in large trees within the BSA. Individuals likely to forage within the BSA.
Great blue heron (nesting colony)	*Ardea herodias*	-- / SA	Variety of habitats close to bodies of water including fresh and saltwater marshes, wet meadows, lake edges and shorelines. Nests colonially in tall trees, cliffsides, and sequestered spots on marshes.	Moderate - Suitable rookery habitat in large trees within the BSA. Individuals likely to forage within the BSA.
Western burrowing owl	*Athene cunicularia hypugaea*	-- / SSC	Nests in burrows (often constructed by ground squirrels) and forages in low-growing grasslands and other open, semi-arid habitats.	Not Expected – No suitable short, open grassland habitat within the BSA.
Ferruginous hawk	*Buteo regalis*	-- / SA	Forages over open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon-juniper habitats. Does not nest in California.	Low - Does not nest in California, but may occasionally occur within BSA while foraging or during migration.
Western snowy plover	*Charadrius alexandrinus nivosus*	FT / SSC	Found on sandy beaches, salt pond levees and shores of large alkali lakes. Requires sandy, gravelly or friable soils for nesting.	Not Expected - No suitable sandy beach or shoreline habitat in the BSA.
Northern harrier	*Circus cyaneus*	-- / SSC	Wet and dry open country such as marshes and grasslands with good ground cover. Nests on the ground among tall vegetation.	Low – Marginal nesting habitat within the BSA, may forage or migrate through.
Snowy egret (nesting colony)	*Egretta thula*	-- / SA	Nests colonially, with nest sites situated in trees and protected beds of dense bulrush. Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.	Moderate - Suitable rookery habitat in large trees within the BSA. Individuals likely to forage within the BSA.
White-tailed kite	*Elanus leucurus*	-- / FP	Nests in oak, willow or other trees and forages over open grasslands.	Moderate - Suitable nesting habitat in trees within and adjacent to BSA. Suitable foraging habitat in open grassland adjacent to the BSA.
California horned lark	*Eremophila alpestris actia*	-- / SA	Grasslands and other open habitats that lack trees or brushy areas. Nests on the ground, usually near grass clumps or earth clods.	Not expected – No suitable nesting or foraging habitat within the BSA.

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
Prairie falcon	*Falco mexicanus*	-- / SA	Found in dry, open terrain, either level or hilly. Breeding sites are located on cliffs. Forages far afield, even to marshlands and ocean shores.	Low - No suitable nesting habitat present, but individuals may occasionally forage or occur as a migrant within the BSA.
American peregrine falcon	*Falco peregrinus anatum*	FD / SD, FP	Nests on cliffs, banks, dunes, mounds, large bridges, and tall buildings, typically near wetlands, lakes, rivers, or other water bodies. Nest consists of a scrape or a depression or ledge in an open site.	Low - No suitable nesting habitat present, but individuals may occasionally forage or occur as a migrant within the BSA.
Saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	-- / SSC	Resident of fresh and salt water marshes fringing the San Francisco Bay region. Requires thick, continuous cover down to water's surface for foraging, and tall grasses, bulrush patches, or willows for nesting.	Not Expected - No salt or freshwater marshes with thick, continuous cover in the BSA.
California black rail	*Laterallus jamaicensis coturniculus*	-- / ST, FP	Found in freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Requires water depths of about one inch that does not fluctuate during the year and dense vegetation for nesting habitat.	Not Expected - No suitable marsh or tidal slough habitats in BSA.
Alameda song sparrow	*Melospiza melodia pusillula*	-- / SSC	Resident of salt marshes bordering south arm of San Francisco Bay. Inhabits pickleweed (*Salicornia* spp.) marshes; nests low in pickleweed and gumweed (*Grindelia* spp.) bushes, but high enough to escape high tides.	Not Expected - No suitable salt marsh habitat in the BSA.
Black-crowned night heron (nesting colony)	*Nycticorax nycticorax*	-- / SA	Nests in trees and vegetation near a wide variety of open water habitats, including streams, canals, lakes, shorelines, and marshes.	Moderate - Suitable rookery habitat in large trees within the BSA. Individuals likely to forage within the BSA.
California brown pelican	*Pelecanus occidentalis californicus*	FD / SD, FP	Nest on the Channel Islands in southern California and islands off the coast of Baja California. Roost during the winter on near-shore rocks and undisturbed human-made structures such as breakwaters and abandoned piers.	Not Expected - No shoreline habitat in BSA.
California clapper rail	*Rallus longirostris obsoletus*	FE / SE, FP	Salt-water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay.	Not Expected - No suitable marsh or tidal slough habitats in BSA.
Bank swallow	*Riparia riparia*	-- / ST	Nests colonially in vertical banks of sand or dirt along rivers, lake shores, road cuts, or similar sites. Nests primarily in riparian and other lowland habitats in central and northern California.	Not Expected - No suitable habitat for nesting colonies within the BSA. Has not been confirmed breeding in Alameda County since 1929.

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
Yellow warbler	*Setophaga petechia*	-- / SSC	Nest and forage in riparian woodlands, often associated with willows, though specific vegetation varies by locality.	Moderate - Suitable nesting habitat in riparian areas; may also forage or occur as a migrant within the BSA.
California least tern	*Sternula antillarum browni*	FE / SE, FP	Nest colonially on the ground in sandy or gravelly beaches. Forage over open water in coastal regions, including within San Francisco Bay.	Not Expected - No sandy or gravelly beach habitat in the BSA.
Mammals				
Pallid bat	*Antrozous pallidus*	-- / SSC	Occurs throughout California and most abundant in grasslands, shrublands, and woodlands. Roosts in crevices and cavities of buildings, bridges, tunnels, rocks, cliffs, and trees.	High – Confirmed to be using Alameda Creek Bridge as a night roost
Ringtail	*Bassariscus astutus*	-- / FP	Found throughout much of California in riparian areas, rocky slopes, and woodlands near water. Builds dens in tree hollows and crevices among rocks.	Not Expected – Rare in the region, no documented observations and limited suitable habitat in Niles Canyon.
Townsend's big-eared bat	*Corynorhinus townsendii*	-- / SSC	Found throughout California in a wide variety of habitats; most commonly associated with mesic sites. Usually roosts in caves, mines, bridges, trees, and structures in or near woodlands and forests, often near water. Extremely sensitive to human disturbance.	High – Species is known to occur within the region and the Niles Canyon corridor provides suitable foraging habitat. Suitable roosting habitat in large trees, marginal roosting habitat on bridge.
Berkeley kangaroo rat	*Dipodomys heermanni berkeleyensis*	-- / SA	Species was considered extinct for several decades until recent rediscovery. Habitat requirements not fully understood, but likely to be found in open grassy hilltops and open spaces in chaparral and blue oak/California foothill pine woodlands. Requires fine, deep, well-drained soil for burrowing.	Low - Marginal habitat present based on the information available.
Western mastiff bat	*Eumops perotis californicus*	-- / SSC	Found in open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, and chaparral. Roosts in crevices in cliff faces, high buildings, trees, and/or tunnels.	Moderate - May forage in riparian and woodland habitat within the BSA, but low potential to roost in trees or on bridge.
Silver-haired bat	*Lasionycteris noctivagans*	-- / SA	Occurs in coastal and montane coniferous forests, valley and foothill woodlands, and riparian habitats. Roosts in crevices and cavities in trees.	Low – Prefers conifer forests, but may roost in trees within the BSA. Does not roost in bridges.
Western red bat	*Lasiurus blossevillii*	-- / SSC	Occurs throughout California primarily in riparian and woodland areas. Roosts singly or in small groups in shrub and tree foliage.	Moderate - Suitable riparian and woodland roosting habitat within BSA. Does not roost in bridges.

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
Hoary bat	*Lasiurus cinereus*	-- / SA	Occurs throughout California, primarily in habitat mosaics with cover and open areas or habitat edges for feeding. Roosts singly or in small groups in shrub and tree foliage of riparian, woodland, and forest habitats.	Moderate - Suitable riparian and woodland roosting habitat within BSA. Does not roost in bridges.
Small-footed myotis	*Myotis ciliolabrum*	-- / SA	Uncommon species found in coastal areas, Sierra Nevada and transverse ranges, Great Basin and desert habitats. Roosts in crevices in caves, buildings, mines, bridges and trees.	Moderate - Suitable riparian and woodland habitats within the BSA; may roost in bridges.
Long-eared myotis	*Myotis evotis*	-- / SA	Occurs throughout California in suitable habitat such as conifer and deciduous woodlands, coastal scrub, and chaparral. Roosts in crevices and cavities in buildings, bridges, trees, snags and stumps.	Moderate - Known to occur in the region. Suitable riparian and woodland habitats within the BSA; may roost in bridges.
Fringed myotis	*Myotis thysanodes*	-- / SA	Occurs throughout California in suitable habitat such as conifer and deciduous woodlands, coastal scrub, and chaparral. Roosts in crevices and cavities in buildings, bridges, trees, snags and stumps.	Moderate - Known to occur in the region. Suitable riparian and woodland habitats within the BSA; may roost in bridges.
Long-legged myotis	*Myotis volans*	-- / SA	Occurs throughout coastal ranges and Cascade/Sierra Nevada ranges to southern California. Most common in woodland and forest habitats above 4,000 feet. Roosts in crevices in trees, rocks, buildings, mines, and caves.	Low – Prefers conifer forests, but may roost in the bridge or in trees within the BSA.
Yuma myotis	*Myotis yumanensis*	-- / SA	Commonly throughout California especially near water features. Roosts in crevices and cavities of buildings, bridges, caves, tunnels, mines, and trees. Forages primarily over open water such as reservoirs, lakes, streams, creeks, canals, and ponds.	High – Confirmed maternity colony present within Alameda Creek Bridge
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	-- / SSC	Found in forest habitats of moderate canopy and moderate to dense understory. May prefer chaparral and redwood habitats. Constructs nests of shredded grass, leaves, and other material. May be limited by availability of nest-building materials.	High - Woodrat nests observed throughout the BSA.
Salt-marsh harvest mouse	*Reithrodontomys raviventris*	FE / SE, FP	Only in the saline emergent wetlands of San Francisco bay and its tributaries. Pickleweed (*Salicornia* sp.) is primary habitat. Builds loosely organized nests and requires higher areas to escape high tides.	Not Expected - No suitable salt marsh or pickleweed habitat in BSA.
Salt-marsh wandering shrew	*Sorex vagrans halicoetes*	-- / SSC	Found in salt marshes of the south arm of San Francisco Bay. Medium high marsh 6-8 feet above sea level where abundant driftwood is scattered among pickleweed.	Not Expected - No salt marsh or driftwood habitat in BSA.

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
American badger	*Taxidea taxus*	-- / SSC	Prefers dry open stages of most shrub, forest, and herbaceous habitats. Requires sufficient prey base (mostly burrowing rodents), friable soils, and open, uncultivated ground.	Low - Marginally suitable habitat present, may occasionally forage or disperse through the BSA.
San Joaquin kit fox	*Vulpes macrotis mutica*	FE / ST	Annual grassland or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing and suitable prey base.	Not expected – No suitable habitat within the BSA. Rare and sparsely distributed in the region.

Table C-2. Special-status plant species with potential to occur within the Niles Canyon Safety Improvement Project BSA

Common name *Scientific name*[1]	Listing Status[2] Federal	State	RPR	Flowering Period	Habitat Preferences[3]	Potential to Occur at the Project Site[4]
Large-flowered fiddleneck *Amsinckia grandiflora*	FE	SE	1B.1	Apr-May	Cismontane woodland and valley and foothill grassland. 900-1,800 feet	**Low.** Limited suitable grassland habitat in the BSA. Known from fewer than 5 natural occurrences. Only 2 current natural populations in Alameda County (Lawrence Livermore Labs and Corral Hollow), which are more than 10 miles from the project area.
Bent-flowered fiddleneck *Amsinckia lunaris*	-	-	1B.2	Mar-Jun	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. 10-1,500 feet	**Low.** A wide-ranging species. Nearest CNDDB occurrence record is greater than 10 miles north of the BSA at Rocky Ridge on EBMUD property.
Anderson's manzanita *Arctostaphylos andersonii*	-	-	1B.2	Nov-May	Openings, edges. Broadleafed upland forest, chaparral, and North Coast coniferous forest. 200-2,500 feet	**Low.** Nearest CNDDB occurrence record is greater than 20 miles southwest of the BSA on Skyline Blvd. on the peninsula.
Pallid manzanita *Arctostaphylos pallida*	FT	SE	1B.1	Dec-Mar	Siliceous shale, sandy or gravelly. Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, and coastal scrub. 610-1,535 feet	**Low.** Nearest CNDDB occurrence record is 20 miles northeast of the BSA at Joaquin Miller Park in Oakland, CA.
Alkali milk-vetch *Astragalus tener* var. *tener*	-	-	1B.2	Mar-June	Adobe clay. Playas, valley and foothill grassland, and vernal pools. 5-200 feet	**Low.** All Alameda County occurrences are historic (pre-1938). Nearest current CNDDB occurrence record is more than 20 miles northeast of the BSA in Contra Costa County.
Heartscale *Atriplex cordulata*	-	-	1B.2	Apr-Oct	Saline or alkaline. Chenopod scrub, meadows and seeps, and valley and foothill grassland. 5-1,240 feet	**None.** No saline or alkaline habitat.
Brittlescale *Atriplex depressa*	-	-	1B.2	May-Oct	Alkaline, clay. Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools. 5-1,060 feet	**None.** No saline or alkaline habitat in the BSA.
San Joaquin spearscale *Atriplex joaquiniana*	-	-	1B.2	Apr-Oct	Alkaline. Chenopod scrub, meadows and seeps, playas, and valley and foothill grassland. 5-2,755 feet	**None.** No saline or alkaline habitat in the BSA.
Lesser saltscale *Atriplex minuscula*	-	-	1B.1	May-Oct	Alkaline, sandy. Chenopod scrub, Playas, and valley and foothill grassland. 50-660 feet	**None.** No saline or alkaline habitat in the BSA.

Common name *Scientific name*[1]	Listing Status[2]			Flowering Period	Habitat Preferences[3]	Potential to Occur at the Project Site[4]
	Federal	State	RPR			
Big-scale balsamroot *Balsamorhiza macrolepis* var. *macrolepis*	-	-	1B.2	Mar-Jun	Sometimes serpentinite. Chaparral, cismontane woodland, and valley and foothill grassland. 295-5,100 feet	**Low.** Nearest current CNDDB occurrence records are greater than 10 miles NW of the BSA, on Fairmont Ridge in East Bay Hills.
Chaparral harebell *Campanula exigua*	-	-	1B.2	May-Jun	Rocky, usually serpentinite. Chaparral. 910-4,125 feet	**None.** No suitable chaparral habitat.
Congdon's tarplant *Centromadia parryi* ssp. *congdonii*	-	-	1B.2	May-Oct (Nov)	Valley and foothill grassland. 0-755 feet	**High**. A wide-ranging species; tolerates disturbed sites such as roadsides. Nearest CNDDB occurrence record is approximately 2 miles southeast of the BSA.
Point Reyes bird's-beak *Chloropyron maritimum* ssp. *palustre*	-	-	1B.2	Jun-Oct	Marshes and swamps (coastal salt). 0-33 feet	**None.** No coastal salt marsh habitat in the BSA.
Palmate-bracted bird's-beak *Chloropyron palmatum*	FE	SE	1B.1	May-Oct	Alkaline. Chenopod scrub and valley and foothill grassland. 15-510 feet	**None.** No alkaline habitat in the BSA.
Robust spineflower *Chorizanthe robusta* var. *robusta*	FE		1B.1	Apr-Sept	Sandy or gravelly. Chaparral (maritime), cismontane woodland (openings), coastal dunes, and coastal scrub. 30-330 feet	**Low.** Most populations extirpated, and now known from only six extended occurrences. Presumed extirpated in Alameda County.
Santa Clara red ribbons *Clarkia concinna* ssp. *automixa*			4.3	Apr-Jul	Chaparral and cismontane woodland. 300-4,950 feet	**Low.** CNDDB occurrence records within 20 miles are historic (pre-1938).
Presidio clarkia *Clarkia franciscana*	FE	SE	1B.1	May-Jul	Coastal scrub and valley and foothill grassland (serpentinite). 80-1,105 feet	**None.** No coastal scrub or serpentine habitat in the BSA.
Hospital Canyon larkspur *Delphinium californicum* ssp. *interius*	-	-	1B.2	Apr-Jun	Mesic. Chaparral (openings) and cismontane woodland. 760-3,610 feet	**Low.** Nearest CNDDB occurrences records are approximately 5.5 miles east of the BSA on SFPUC property.
Western leatherwood *Dirca occidentalis*	-	-	1B.2	Jan-Apr	Mesic Broadleaved upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, and riparian woodland.165-1,300 feet	**Low.** Nearest CNDDB occurrences records are greater than 10 miles northeast of the BSA in East Bay hills, EBRPD.

Common name *Scientific name*[1]	Listing Status[2] Federal	State	RPR	Flowering Period	Habitat Preferences[3]	Potential to Occur at the Project Site[4]
Ben Lomond buckwheat *Eriogonum nudum* var. *decurrens*	-	-	1B.1	Jun-Oct	Sandy. Chaparral, cismontane woodland, and lower montane coniferous forest (maritime ponderosa pine sandhills). 165-2,640 feet	**Low.** Nearest current CNDDB occurrence records are greater than 30 miles southwest of the BSA.
Hoover's button-celery *Eryngium aristulatum* var. *hooveri*	-	-	1B.1	Jul	Vernal pools. 10-150 feet	**None.** No vernal pool habitat in the BSA.
Fragrant fritillary *Fritillaria liliacea*	-	-	1B.2	Feb-Apr	Often serpentine. Cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland. 10-1,345 feet	**Low.** A wide-ranging species. Nearest CNDDB occurrence records are greater than 10 miles northwest of the BSA, in East Bay Hills, EBRPD.
Diablo helianthella *Helianthella castanea*	-	-	1B.2	Mar-Jun	Broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. 200-4,265 feet	**Low.** Nearest CNDDB occurrence record is approximately 4.5 miles northwest of the BSA, in Dry Creek Regional Park (EBRPD).
Santa Cruz tarplant *Holocarpha macradenia*	FT	SE	1B.1	Jun-Oct	Often clay. Coastal prairie, coastal scrub,and valley and foothill grassland. 35-720 feet	**Low.** Limited suitable grassland habitat in the BSA. Natural populations are restricted to coastal terrace prairie habitat within Santa Cruz and Monterey Counties. Experimentally seeded populations were grown within Wildcat Canyon Regional Park, Contra Costa County, from 1982-1986. Of these 22 experimental sites, all but one, Mezue, have failed. All Alameda County occurrences are historic (pre-1915). Considered extirpated in Alameda and Contra Costa Counties.
Contra Costa goldfields *Lasthenia conjugens*	FE	-	1B.1	Mar-Jun	Mesic. Cismontane woodland, Playas (alkaline), valley and foothill grassland, and vernal pools. 0-1,550 feet	**Low.** Nearest CNDDB occurrence record is approximately 5.5 miles south of the BSA.
Beach layia *Layia carnosa*	FE	SE	1B.1	Mar-Jul	Coastal dunes and coastal scrub (sandy). 0-200 feet	**None.** No coastal dune or coastal habitat in the BSA.
Woolly-headed lessingia *Lessingia hololeuca*	-	-	3	Jun-Oct	Clay, serpentine. Broadleaved upland forest, coastal scrub, lower montane coniferous forest, and valley and foothill grassland. 50-1,010 feet	**None.** No serpentine habitat in the BSA.

Common name *Scientific name*[1]	Listing Status[2] Federal	State	RPR	Flowering Period	Habitat Preferences[3]	Potential to Occur at the Project Site[4]
Arcuate bush mallow *Malacothamnus arcuatus*	-	-	1B.2	Apr-Sept	Chaparral and cismontane woodland. 50-1,170 feet	**Low.** Nearest current CNDDB occurrence record is greater than 20 miles southwest of the BSA, on the peninsula.
Hall's bush mallow *Malacothamnus hallii*	-	-	1B.2	May-Sept	Chaparral, coastal scrub. 35-2,510 feet	**Low.** Nearest current CNDDB occurrence record is greater than 20 miles south of the BSA.
San Antonio Hills monardella *Monardella antonina* ssp. *antonina*	-	-	3	Jun-Aug	Chaparral and cismontane woodland. 1,060-3,300 feet	**Low.** Nearest current CNPS occurrence records are in the Sunol Regional Wilderness (EBRP) greater than 5 miles southeast of the BSA. All other Alameda County records are historic (pre-1935).
Prostrate vernal pool navarretia *Navarretia prostrata*	-	-	1B.1	Apr-Jul	Mesic. Coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), and vernal pools. 50-3,990 feet	**Low.** Nearest current CNDDB occurrence record is approximately 5 miles south of the BSA.
Hairless popcorn-flower *Plagiobothrys glaber*	-	-	1A	Mar-May	Meadows and seeps (alkaline) and marshes and swamps (coastal salt). 50-595 feet	**None.** No alkaline or coastal salt habitat in the BSA. Considered extirpated.
Oregon polemonium *Polemonium carneum*	-	-	2B.2	Apr-Sep	Coastal prairie, coastal scrub, and lower montane coniferous forest. 0-6,040 feet	**Low.** Not known to occur in the Niles Quadrangle. All CNDDB occurrence records within 35 miles of the BSA are historic.
Chaparral ragwort *Senecio aphanactis*	-	-	2B.2	Jan-Apr	Sometimes alkaline. Chaparral, cismontane woodland and coastal scrub. 50-2,640 feet	**Low.** Nearest current CNDDB occurrence record is greater than 10 miles east of the BSA in Corall Hollow area**.**
Most beautiful jewel-flower *Streptanthus albidus* ssp. *peramoenus*	-	-	1B.2	Mar-Oct	Serpentinite. Chaparral, cismontane woodland, valley and foothill grassland. 365-3,300 feet	**Low.** No serpentine habitat in the BSA. Current CNDDB and CNPS occurrence records in Garin/Dry Creek Regional Park (EBRPD) greater than 4 miles west of the BSA.
Slender-leaved pondweed *Stuckenia filiformis* ssp. *alpina*	-	-	2B.2	May-Jul	Marshes and swamps (assorted shallow freshwater). 660-7,095 feet	**Low.** Nearest current CNDDB occurrence record is greater than .5 miles west of the BSA at Quarry Lakes in Fremont.
California seablite *Suaeda californica*	FE	-	1B.1	Jul-Oct	Marshes and swamps (coastal salt). 0-50 feet	**None.** No coastal salt habitat in the BSA.

Common name *Scientific name*[1]	Listing Status[2]			Flowering Period	Habitat Preferences[3]	Potential to Occur at the Project Site[4]
	Federal	State	RPR			
Saline clover *Trifolium hydrophilum*	-	-	1B.2	Apr-Jun	Marshes and swamps, valley and foothill grassland (mesic, alkaline), and vernal pools. 0-990 feet	**Low.** Nearest current CNDDB occurrence is about 5.5 miles southwest of the BSA.

1. Scientific nomenclature based on Jepson eFlora (Baldwin et al. 2012a); CNPS *Online Inventory* (CNPS 2014); CalFlora (CalFlora 2014) and other sources.
2. Conservation status definitions are as follows:
U.S. Fish and Wildlife Service designations:
- FE Endangered: Any species in danger of extinction throughout all or a significant portion of its range.
- FT Threatened: Any species likely to become endangered within the foreseeable future.

California Department of Fish and Wildlife designations:
- SE Endangered: Any species in danger of extinction throughout all or a significant portion of its range.
- ST Threatened: Any species likely to become endangered within the foreseeable future.

California Native Plant Society designations:
- 1A Plants are presumed extirpated.
- 1B Plants rare, threatened or endangered in California and elsewhere.
- 2 Plants rare, threatened or endangered in California, but more common elsewhere.
- 3 Plants for which more information is needed – a review list.
- 4 Plants of limited distribution – a watch list.

California Native Plant Society threat categories:
- .1 Seriously endangered in California.
- .2 Fairly endangered in California.
- .3 Not very endangered in California.

3. Habitat information from CNPS *Online Rare and Endangered Plant Inventory* (2014).

4. Information on known locations in the vicinity of the project limits was compiled from CNDDB (CDFG 2014a), CNPS *Online Rare and Endangered Plant Inventory* (2014), CalFlora (CalFlora 2014), and Lake (2010). A plant species was determined to have potential to occur at the project site if its known or expected geographic range includes the vicinity of the project site, and if its known or expected habitat is represented within or near the project site.

Definitions:
var.: variety

ssp.: subspecies

Low: Habitat within the BSA and/or BSA vicinity satisfies very few of the species' requirements and/or range of the species overlaps with the vicinity of the project limits, but not the project limits itself. The species' presence within the project limits is unlikely.

High: Habitat within the BSA and/or BSA vicinity meets most of the species' requirements, and known locations for the species are found within proximity to the BSA. Presence of the species within the BSA is highly likely.

Appendix D Special-Status Plant Survey Report

SPECIAL-STATUS PLANT SURVEYS

Niles Canyon Safety Improvement Project

Caltrans District 4
Alameda County
State Route 84
ALA 84 (PM 10.8/18.0)
EA 2A332

February 2016

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SPECIAL-STATUS PLANT SURVEYS

Niles Canyon Safety Improvement Project

Caltrans District 4
State Route 84
ALA 84 (PM 10.8/18.0)
EA 2A332

STATE OF CALIFORNIA
Department of Transportation

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Summary

The California Department of Transportation (Caltrans) proposes to construct safety improvements at specific site locations along the State Route 84 (SR-84) corridor between SR-238 (Mission Boulevard) post mile (PM) 10.8 and Interstate 680 (I-680) PM 18.0 (Figure 1). This project has been significantly modified from two larger previously proposed projects that would have widened SR-84 throughout Niles Canyon. Niles Canyon is in an unincorporated area of Alameda County between SR-238 in Fremont and the SR-84/ I-680 interchange in Sunol. Alameda Creek runs throughout the canyon, and SR-84 runs alongside much of the creek. The purpose of the project is to incrementally improve safety on SR-84 within the project area and involves several components including: installation of traffic signs and lighting, low speed curve improvements, installation of k-rail and Midwest guardrail system, installation of rock drapery system, signalization, and limited shoulder widening. The proposed project will result in impacts to natural habitat located along SR 84.

This report describes the protocol-level special-status plant surveys that were completed for Niles Canyon Safety Improvement Project in 2015. Last year 2014, protocol-level special-status plant surveys were completed for late blooming species only (August 2014). The goals of the protocol-level surveys were to locate, map, and census any special-status plant populations within the project limits. Protocol-level surveys were floristic, meaning that all plant species encountered were identified to the taxonomic level needed to determine if they have special-status. Protocol-level surveys were completed according to the botanical survey guidelines of the U.S. Fish and Wildlife Service (USFWS) (USFWS 1996), California Department of Fish and Game (CDFG) (CDFG 2009), and the California Native Plant Society (CNPS) (CNPS 2001).

Vegetation mapping had previously been established in 2006 when tree and vegetation surveys were conducted by CH2M Hill for the biological study area (BSA) for one of the larger previously proposed projects that did not go to construction. The previous project BSA extended from the intersection of I-680 and SR-84 (PM 18.0) west to the Alameda Creek Bridge (PM 13.6) (CH2M Hill 2007). In addition, special-status plant surveys were also conducted for this previous project in 2007 by Garcia and Associates (GANDA) (GANDA 2007). During rare plant surveys conducted in August 2014, GANDA botanist Constance Ganong mapped vegetation types within new areas of the current BSA, confirmed the vegetation typing for the overlapping BSA was accurate, and identified suitable habitat for special-status plant species in the current BSA (56.52 acres). Five vegetation types were classified in the BSA based on *A Guide to Wildlife*

Habitats of California (Mayer and Laudenslayer 1988), with the exception of one habitat (California bay/coast live oak) described by A Manual of California Vegetation 2nd Edition (Sawyer et al. 2009):

- California annual grassland
- California bay/Coast live oak
- Coastal scrub
- Fresh emergent wetland
- Valley foothill riparian

In addition to the vegetation types, land cover types in the BSA included roadway, creeks (Alameda Creek and Stonybrook Creek), and two types of urban areas: landscaped and railroad. To complete the protocol-level surveys, GANDA botanist Constance Ganong and GANDA biologists Meghan Bishop and Tiffany Ngo conducted three iterations of field surveys between March 10 and August 17 in correspondence with the flowering period of all blooming special-status plant species that could potentially occur within the BSA.

The BSA limits are approximately 7.2 miles long and encompass approximately 56.52 acres. Land cover in the BSA includes approximately 27.72 acres of pre-existing paved roadway, 12.86 acres of urban/landscaped cover types, 0.15 acre of urban/railroad, 0.14 acre of active perennial creek channel (Alameda Creek), and 15.65 acres of natural vegetation cover types. Surveys were conducted within the natural vegetation areas (annual grassland, California bay/coast live oak, coastal scrub, emergent wetland, and valley foothill riparian) and urban/landscaped areas, which total 28.51 acres, excluding paved roadways, urban/railroad areas, and creeks. Protocol-level surveys on foot were completed within approximately 87 percent of the BSA (24.70 acres) that included the natural vegetation (15.65 acres) and urban/landscaped types (12.86 acres) of the BSA. Protocol-level surveys on foot could not be conducted for approximatley13 percent (3.81 acres) of the natural vegetation type portions of the BSA because of safety issues. These areas are of extremely steep grades with limited shoulder access and were inaccessible by walking. These areas were surveyed by using 8x36 mm binoculars to verify blooming plant species.

No Federally or State-listed plants or plants with California Rare Plant Ranks (RPR) were observed in the 28.51 acres of the BSA where protocol-level surveys were completed on

foot, nor were any special-status plant species observed via binoculars on the remaining 3.81 acres of steep grade.

List of Abbreviated Terms

Abbreviation	Definition
BSA	Biological study area
Caltrans	California Department of Transportation
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
EBRPD	East Bay Regional Parks District
EBMUD	East Bay Municipal Utility District
GANDA	Garcia and Associates
I	Interstate
IPaC	Information, Planning, and Conservation System
NRCS	Natural Resources Conservation Service
PM	Post mile
RPR	Rare plant rank
SFPUC	San Francisco Public Utilities Commission
SR	State Route
ssp.	Subspecies
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
var.	Variety

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1.0 INTRODUCTION

The California Department of Transportation (Caltrans) proposes to implement a number of shoulder improvements to increase safety along a 7.2-mile stretch of State Route 84 (SR-84) as it runs through Niles Canyon between post miles (PM) 10.8 and PM 18.0. This project has been significantly modified from a larger previous proposed alternative that would have widened SR-84 throughout Niles Canyon. The purpose of the project is to incrementally improve safety on SR-84 within the project area and involves several components including: installation of traffic signs and lighting, low speed curve improvements, installation of k-rail and Midwest guardrail system, installation of rock drapery system, signalization, and limited shoulder widening. The project is located within Niles Canyon in Alameda County between SR-238 in Fremont and the SR-84/Interstate 680 (I-680) interchange in Sunol (Figure 1).

1.1. Project Location

The biological study area (BSA) is located at various shoulder areas along SR-84 in Niles Canyon between PM 10.8 and PM 18.0, an unincorporated area of Alameda County between SR-238 in Fremont and the SR-84/I-680 interchange in Sunol (Figure 1). Alameda Creek runs throughout the canyon, and SR-84 runs alongside much of the creek. The project is located almost entirely in the Niles U.S. Geological Survey (USGS) 7.5-minute quadrangle, but extends a short distance into the La Costa Valley quadrangle. The BSA encompasses approximately 56.52 acres and includes primarily upland habitat.

The BSA for this project includes the project footprint and the action area, which are areas that may be directly and indirectly affected by the proposed project. In certain locations the BSA was expanded beyond the project footprint for areas of potential construction staging. In all other areas, the BSA includes a 15-foot buffer from the project footprint.

Two previous larger projects were put on hold in 2011 due to the project's planned impacts to historic and biological resources. The current project has updated design alternatives to reduce impacts to these resources.

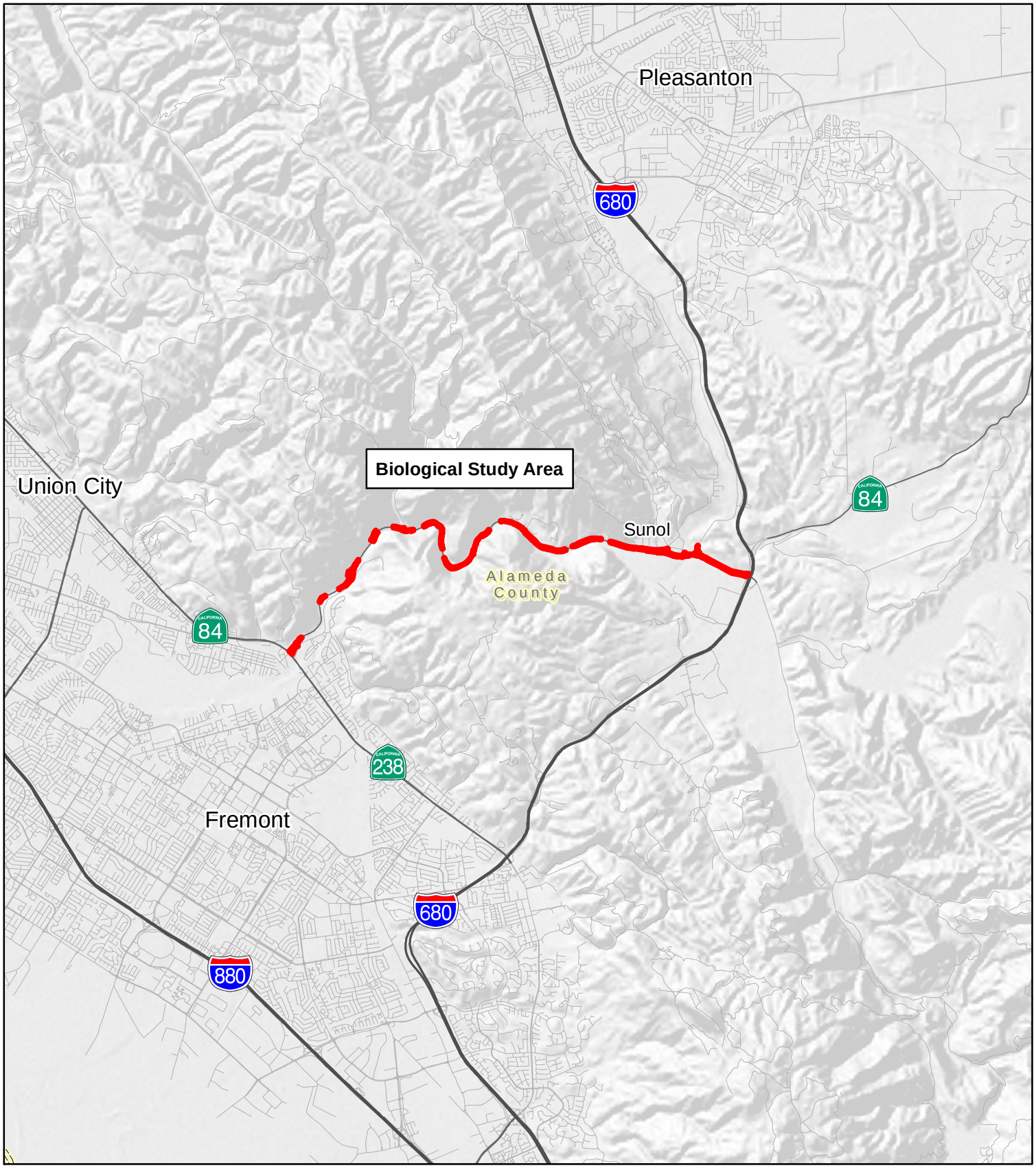
1.2. Biological Setting

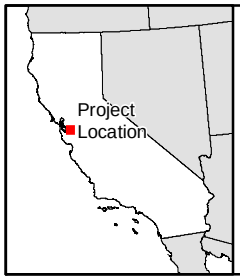
The BSA is located in the San Francisco Bay subregion of the California Floristic Province (Baldwin et. al. 2012). Elevation within the project limits range from approximately 70 feet to 400 feet above sea level. Soils in the area are composed primarily of loam, silt loam and silt clay loam (Natural Resource Conservation Service [NRCS] 2014). The climate of the region is Mediterranean with cool, wet winters

(November to April) and warm, dry summers (May to October). Land cover types within the BSA can be generally classified as paved, urban/landscaped, and riparian and oak woodlands. Vegetation types are fully described in Section 3.1.

The majority of the project is located in Niles Canyon, a steep-walled canyon in Alameda County that runs roughly east-west between Fremont and Sunol, with Alameda Creek flowing westward through the bottom. The Union Pacific Railroad tracks and SR-84 both run through the canyon, alternating along the north and the south sides via several road and rail bridges spanning Alameda Creek. This stretch of SR-84 is named Niles Canyon Road and is a two-lane highway used as an alternative commute corridor to the highly utilized I-680. The bottom of Niles Canyon is densely forested with riparian and oak woodland vegetation that is occasionally broken with scattered patches of scrub and grassland. Larger patches of scrub and grassland are present at higher elevations on the north wall of the canyon, while the south wall remains largely wooded up to the south ridgeline. There are several rural residences located along Niles Canyon Road. At the east end of Niles Canyon, the roadway runs along the south edge of the Town of Sunol. The BSA crosses Alameda Creek at two locations: the Alameda Creek Bridge (Bridge #33-0036) and the Alameda Creek Overhead (Bridge #33-0039). Alameda Creek drains a large watershed east of Niles Canyon, including the Sunol Regional Wilderness area to the southeast and Livermore Valley to the northeast (via a tributary named Arroyo de la Laguna). Flows in Alameda Creek are controlled by water agencies such as the San Francisco Public Utilities Commission (SFPUC) through releases from reservoirs upstream of the BSA.

The project also extends east of Niles Canyon to I-680, along a stretch of SR-84 named Paloma Way. An area of low, rolling hills covered in open grassland is located immediately north of Paloma Way. To the south, there is a large field that contains an active open-pit gravel mine. The edges of this field, including the areas immediately adjacent to Paloma Way, are subject to periodic disking. Paloma Way is lined on both sides by a row of planted trees, the majority of which are oaks and sycamores. I-680 is located just outside of the BSA, immediately east of the eastern end.





Biological Study Area

Scale: 1:100,000
1 inch = 8,333 feet

N

0 1 2 Miles

Figure 1:
Project Location Map
Niles Canyon
Safety Improvement Project

Alameda County,
California

2.0 METHODS

The survey methodology included pre-field preparations and protocol-level surveys. Surveys were conducted on March 10 and 11 and May 6 and May 19 by Garcia and Associates (GANDA) Botanist Constance Ganong and Biologist Meghan Bishop and on August 5 and August 17 by Ms. Ganong and Caltrans' Biologist Tiffany Ngo. The BSA extended from the intersection of I-680 and SR-84 (PM 18.0) west to the Alameda Creek Bridge (PM 13.6) (CH2M Hill 2007). In addition, special-status plant surveys were conducted for the previous BSA in 2007 by GANDA (GANDA 2007). During the rare plant survey conducted in August 2014, GANDA Botanist Constance Ganong mapped vegetation types within the new areas of the current BSA, confirmed previously established vegetation types within overlapping portions of the previous project BSA and current BSA, and identified suitable habitat for special-status plant species in the current BSA (56.52 acres). Protocol-level surveys were conducted during early season (March), mid-season (May) and late season (August) to locate and document locations of late blooming special-status plants within suitable habitat.

2.1. Pre-field Preparations

Preparation for the protocol-level special-status plant surveys included compiling a list of special-status plants with the potential to occur within the project area. The list was assembled using information from the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Plants of California* (CNPS 2015), the California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife [CDFW] 2015a), the Sacramento U.S. Fish and Wildlife Service (USFWS) office's Information, Planning, and Conservation (IPaC) System (USFWS 2015) and other sources listed below. A plant was considered to be of special-status if it met one or more of the following criteria:

- Listed, proposed for listing, or a candidate for listing as threatened or endangered under the Federal Endangered Species Act;
- Listed, or a candidate for listing, as threatened or endangered under the California Endangered Species Act or listed as rare under the Native Plant Protection Act (CDFW 2015b);
- Listed in the Special Plants, Bryophytes, and Lichens List as defined by the CDFW CNDDB (CDFW 2015c); or

- Listed as California Rare Plant Rank (RPR) 1-4 as defined by the CNPS *Inventory of Rare and Endangered Plants of California* (CNPS 2015).

In addition, literature review consisted of the following documents:

- Niles Canyon Safety Widening Project Special-Status Plant Surveys (GANDA 2007; prepared for Caltrans)

- Plant Communities Characterization for Niles Canyon Safety Widening Project (CH2M Hill 2007; prepared for Caltrans)

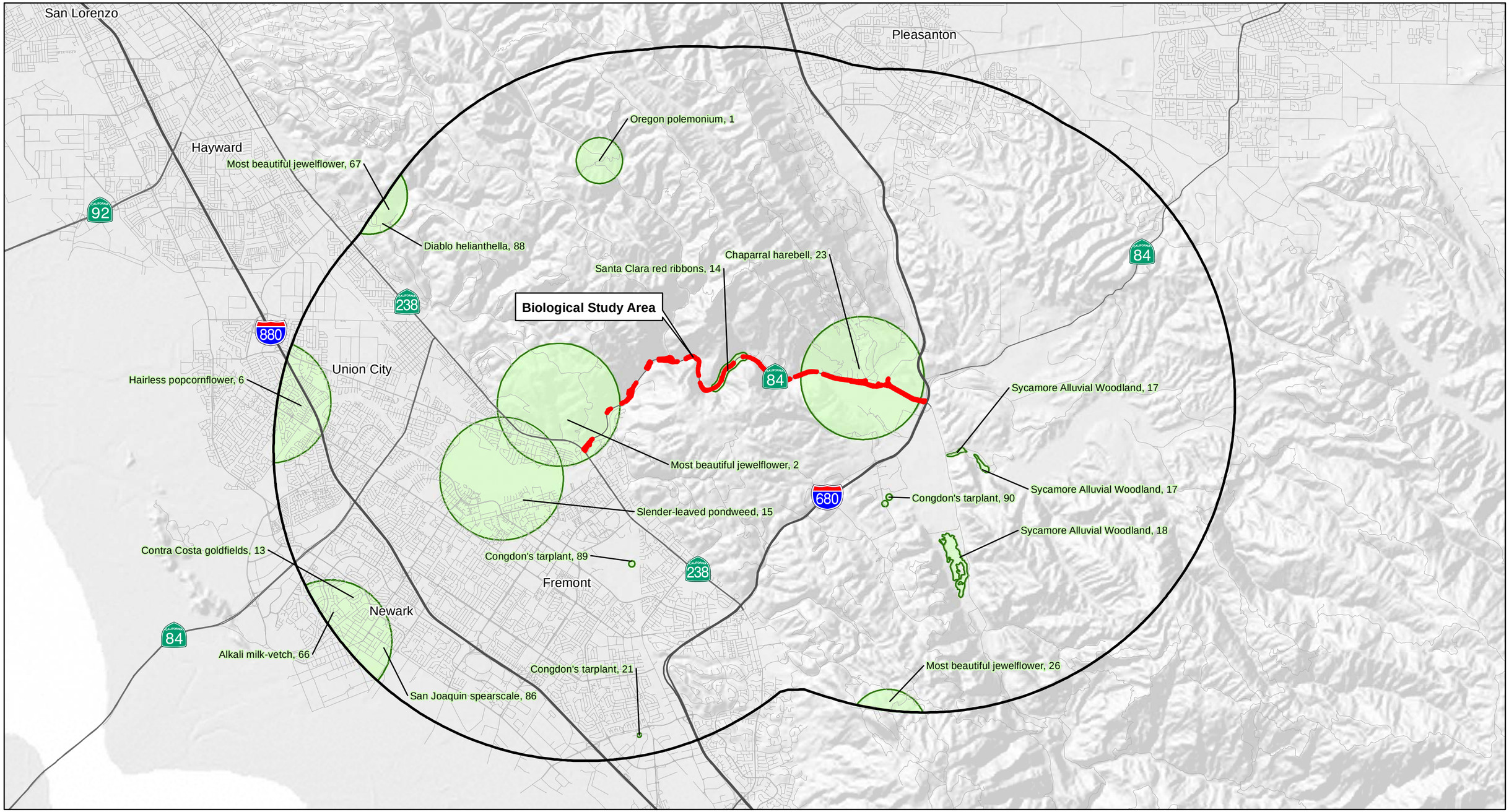
- Niles Canyon Safety Improvement Project Natural Environmental Study Draft (Caltrans 2012)

Protocol-level botanical surveys conducted by GANDA in 2007 were conducted for one of the larger previous projects that did not go to construction, which extended from the intersection of I-680 and SR-84 (PM 18.0) west to the Alameda Creek Bridge (PM 13.6), for a total distance of 4.4 miles. The current BSA areas were surveyed in that 2007 study, except for areas east of the Alameda Creek Bridge (PM 13.6) to Fremont (PM 10.8) for 2.8 miles.

A species was determined to have potential to occur in the BSA if its known or expected geographic range includes the BSA or the vicinity of the BSA, and if its known or expected habitat is represented within or near the BSA.

A preliminary list of potentially occurring special-status plant species was compiled by conducting a background 9-quadrangle search of the CNDDB RareFind 5 database (CDFW 2015a), the USFWS's IPaC system (USFWS 2015), and the CNPS Online Inventory (CNPS 2015). The BSA is located primarily within the Niles California quadrangle. The database search included this quadrangle as well as the eight surrounding quadrangles: Hayward, Dublin, Livermore, Newark, La Costa Valley, Mountain View, Milpitas, and Calaveras Reservoir. The 9-quadrangle search produced a preliminary list of 29 special-status taxa that are known from the background research area (Table 1). After considering vegetation information from the survey and reviewing the habitat preferences, geographic distribution, elevation range, and known locations of all taxa on the preliminary list, the list was revised to include 16 special-status species with potential to occur in the BSA. A figure showing the reported CNDDB occurrences of special-status plant species within five miles of the project limits is shown in Figure 2.

Information on flowering time, status, habitat preferences, geographic distribution, elevation range, and known locations in the vicinity of the project area was gathered prior to the initiation of the protocol-level (floristic) field surveys conducted from March through August 2015. This information was compiled from the sources listed above, and other sources, including *The Jepson Manual* (Baldwin et al. 2012), *Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties 8th ed.* (Lake 2010), and the CalFlora database (2015).



Biological Study Area
5 Mile Buffer of Biological Study Area
CNDDB Plant or Plant Community Occurrence (Species, Occurrence number)

Scale: 1:96,000
1 inch = 8,000 feet

N

0 1 2 Miles

Figure 2:
CNDDB Occurrences Within 5 Miles of the Biological Study Area
Niles Canyon Safety Improvement Project
Rare Plant Survey Report

Table 1. Special-status plant species with potential to occur within the Niles Canyon Safety Improvement Project BSA

Common name *Scientific name*[1]	Listing Status[2] Federal	State	RPR	Flowering Period	Habitat Preferences[3]	Potential to Occur at the Project Site[4]
Bent-flowered fiddleneck *Amsinckia lunaris*	-	-	1B.2	Mar-Jun	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. 10-1,500 feet	**Low.** A wide-ranging species. Nearest CNDDB occurrence record is greater than 10 miles north of the BSA at Rocky Ridge on East Bay Municipal Utility District (EBMUD) property.
Alkali milk-vetch *Astragalus tener* var. *tener*	-	-	1B.2	Mar-June	Adobe clay. Playas, valley and foothill grassland, and vernal pools. 5-200 feet	**Low.** All Alameda County occurrences are historic (pre-1938). Nearest current CNDDB occurrence record is more than 20 miles northeast of the BSA in Contra Costa County.
Brittlescale *Atriplex depressa*	-	-	1B.2	Apr-Oct	Alkaline, clay. Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and verrnal pools. 10-1,055 feet	**None.** No alkaline habitat in the BSA.
Lesser saltscale *Atriplex minuscula*	-	-	1B.1	May-Oct	Alkaline, sandy. Chenopod scrub, playas, and valley and foothill grassland. 50-660 feet	**None.** No alkaline habitat in the BSA.
Big-scale balsamroot *Balsamorhiza macrolepis* var. *macrolepis*	-	-	1B.2	Mar-Jun	Sometimes serpentinite. Chaparral, cismontane woodland, and valley and foothill grassland. 295-5,100 feet	**Low.** Nearest current CNDDB occurrence records are greater than 10 miles northwest of the BSA, on Fairmont Ridge in East Bay Hills.
Chaparral harebell *Campanula exigua*	-	-	1B.2	May-Jun	Rocky, usually serpentinite. Chaparral. 910-4,125 feet	**None.** No suitable chaparral habitat.
Congdon's tarplant *Centromadia parryi* ssp. *congdonii*	-	-	1B.2	May-Oct (Nov)	Valley and foothill grassland. 0-755 feet	**High**. A wide-ranging species; tolerates disturbed sites such as roadsides. Nearest CNDDB occurrence record is approximately 2 miles southeast of the BSA.

Common name *Scientific name*[1]	Listing Status[2] Federal	State	RPR	Flowering Period	Habitat Preferences[3]	Potential to Occur at the Project Site[4]
Point Reyes bird's-beak *Chloropyron maritimum* ssp. *palustre*	-	-	1B.2	Jun-Oct	Marshes and swamps (coastal salt). 0-33 feet	**None.** No coastal salt marsh habitat in the BSA.
Palmate-bracted bird's-beak *Chloropyron palmatum*	FE	SE	1B.1	May-Oct	Alkaline. Chenopod scrub and valley and foothill grassland. 15-510 feet	**None.** No alkaline habitat in the BSA.
Hospital Canyon larkspur *Delphinium californicum* ssp. *interius*	-	-	1B.2	Apr-Jun	Mesic. Chaparral (openings) and cismontane woodland. 760-3,610 feet	**Low.** Nearest CNDDB occurrences records are approximately 5.5 miles east of the BSA on SFPUC property.
Western leatherwood *Dirca occidentalis*	-	-	1B.2	Jan-Apr	Mesic Broadleaved upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, and riparian woodland.165-1,300 feet	**None.** The perennial species was not observed during the rare plant surveys during its flowering time. A reference population site visit was conducted on February 23, 2015 while it was flowering and leafing. Nearest CNDDB occurrences records are greater than 10 miles northeast of the BSA in East Bay hills, East Bay Regional Park District (EBRPD).
Hoover's button-celery *Eryngium aristulatum* var. *hooveri*	-	-	1B.1	Jul	Vernal pools. 10-150 feet	**None.** No vernal pool habitat in the BSA.
San Joaquin spearscale *Extriplex joaquinana*	-	-	1B.2	Apr-Sept	Alkaline, clay. Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools. 5-1,060 feet	**None.** No alkaline habitat in the BSA.
Fragrant fritillary *Fritillaria liliacea*	-	-	1B.2	Feb-Apr	Often serpentine. Cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland. 10-1,345 feet	**Low.** A wide-ranging species. Nearest CNDDB occurrence records are greater than 10 miles northwest of the BSA, in East Bay Hills, EBRPD.

Common name *Scientific name*[1]	Listing Status[2] Federal	State	RPR	Flowering Period	Habitat Preferences[3]	Potential to Occur at the Project Site[4]
Diablo helianthella *Helianthella castanea*	-	-	1B.2	Mar-Jun	Broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. 200-4,265 feet	**Low.** Nearest CNDDB occurrence record is approximately 4.5 miles northwest of the BSA, in Dry Creek Regional Park, EBRPD.
Santa Cruz tarplant *Holocarpha macradenia*	FT	SE	1B.1	Jun-Oct	Often clay. Coastal prairie, coastal scrub, and valley and foothill grassland. 35-720 feet	**None.** Limited suitable grassland habitat in the BSA. Natural populations are restricted to coastal terrace prairie habitat within Santa Cruz and Monterey Counties. Experimentally seeded populations were grown within Wildcat Canyon Regional Park, Contra Costa County, from 1982-1986. Of these 22 experimental sites, all but one, Mezue, have failed. All Alameda County occurrences are historic (pre-1915). Considered extirpated in Alameda and Contra Costa Counties. (USFWS 2014)
Contra Costa goldfields *Lasthenia conjugens*	FE	-	1B.1	Mar-Jun	Mesic. Cismontane woodland, Playas (alkaline), valley and foothill grassland, and vernal pools. 0-1,550 feet	**None.** In Alameda County, this species is associated with vernal pool regions (USFWS 2013). There are no vernal pool regions within the BSA.
Woolly-headed lessingia *Lessingia hololeuca*	-	-	3	Jun-Oct	Clay, serpentine. Broadleaved upland forest, coastal scrub, lower montane coniferous forest, and valley and foothill grassland. 50-1,010 feet	**None.** No serpentine habitat in the BSA.

Common name *Scientific name*[1]	Listing Status[2] Federal	State	RPR	Flowering Period	Habitat Preferences[3]	Potential to Occur at the Project Site[4]
Arcuate bush mallow *Malacothamnus arcuatus*	-	-	1B.2	Apr-Sept	Chaparral and cismontane woodland. 50-1,170 feet	**Low.** Nearest current CNDDB occurrence record is greater than 20 miles southwest of the BSA, on the peninsula.
Hall's bush mallow *Malacothamnus hallii*	-	-	1B.2	May-Sept	Chaparral, coastal scrub. 35-2,510 feet	**Low.** Nearest current CNDDB occurrence record is greater than 20 miles south of the BSA.
San Antonio Hills monardella *Monardella antonina* ssp. *antonina*	-	-	3	Jun-Aug	Chaparral and cismontane woodland. 1,060-3,300 feet	**Low.** Nearest current CNPS occurrence records are in the Sunol Regional Wilderness (EBRPD) greater than 5 miles southeast of the BSA. All other Alameda County records are historic (pre-1935).
Prostrate vernal pool navarretia *Navarretia prostrata*	-	-	1B.1	Apr-Jul	Mesic. Coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), and vernal pools. 50-3,990 feet	**Low.** Nearest current CNDDB occurrence record is approximately 5 miles south of the BSA.
Hairless popcorn-flower *Plagiobothrys glaber*	-	-	1A	Mar-May	Meadows and seeps (alkaline) and marshes and swamps (coastal salt). 50-595 feet	**None.** No alkaline or coastal salt habitat in the BSA. Considered extirpated.
Oregon polemonium *Polemonium carneum*	-	-	2B.2	Apr-Sep	Coastal prairie, coastal scrub, and lower montane coniferous forest. 0-6,040 feet	**Low.** Not known to occur in the Niles Quadrangle. All CNDDB occurrence records within 35 miles of the BSA are historic (pre-1932).
Chaparral ragwort *Senecio aphanactis*	-	-	2B.2	Jan-Apr	Sometimes alkaline. Chaparral, cismontane woodland and coastal scrub. 50-2,640 feet	**Low.** Nearest current CNDDB occurrence record is greater than 10 miles east of the BSA in Corall Hollow area**.**

Common name *Scientific name*[1]	Listing Status[2] Federal	State	RPR	Flowering Period	Habitat Preferences[3]	Potential to Occur at the Project Site[4]
Most beautiful jewel-flower *Streptanthus albidus* ssp. *peramoenus*	-	-	1B.2	Mar-Oct	Serpentinite. Chaparral, cismontane woodland, valley and foothill grassland. 365-3,300 feet	**Low.** No serpentine habitat in the BSA. Current CNDDB and CNPS occurrence records in Garin/Dry Creek Regional Park (EBRPD) greater than 4 miles west of the BSA.
Slender-leaved pondweed *Stuckenia filiformis* ssp. *alpina*	-	-	2B.2	May-Jul	Marshes and swamps (assorted shallow freshwater). 660-7,095 feet	**Low.** Nearest current CNDDB occurrence record is greater than 0.5 miles west of the BSA at Quarry Lakes in Fremont.
California seablite *Suaeda californica*	FE	-	1B.1	Jul-Oct	Marshes and swamps (coastal salt). 0-50 feet	**None.** No coastal salt habitat in the BSA.
Saline clover *Trifolium hydrophilum*	-	-	1B.2	Apr-Jun	Marshes and swamps, valley and foothill grassland (mesic, alkaline), and vernal pools. 0-990 feet	**Low.** Nearest current CNDDB occurrence is about 5.5 miles southwest of the BSA.

1. Scientific nomenclature based on Jepson eFlora (Baldwin et al. 2012a); CNPS *Online Inventory* (CNPS 2015); CalFlora (CalFlora 2015) and other sources.
2. Conservation status definitions are as follows:

U.S. Fish and Wildlife Service designations:

- FE Endangered: Any species in danger of extinction throughout all or a significant portion of its range.
- FT Threatened: Any species likely to become endangered within the foreseeable future.

California Department of Fish and Wildlife designations:

- SE Endangered: Any species in danger of extinction throughout all or a significant portion of its range.
- ST Threatened: Any species likely to become endangered within the foreseeable future.
- SR Rare: Any species not currently threatened with extinction, but in such small numbers throughout its range that it may become endangered.

California Native Plant Society Rare Plant Rank designations:

- 1A Plants are presumed extirpated.
- 1B Plants rare, threatened or endangered in California and elsewhere.
- 2B Plants rare, threatened or endangered in California, but more common elsewhere.
- 3 Plants for which more information is needed – a review list.

California Native Plant Society threat categories:

- .1 Seriously endangered in California.
- .2 Fairly endangered in California.
- .3 Not very endangered in California.

3. Habitat information from CNPS *Online Rare and Endangered Plant Inventory* (2015).

4. Information on known locations in the vicinity of the project limits was compiled from CNDDB (CDFG 2015a), CNPS *Online Rare and Endangered Plant Inventory* (2015), CalFlora (CalFlora 2015), and Lake (2010). A plant species was determined to have potential to occur at the project site if its known or expected geographic range includes the vicinity of the project site, and if its known or expected habitat is represented within or near the project site.

Definitions:
var.: variety

ssp.: subspecies

Low: Habitat within the BSA and/or BSA vicinity satisfies very few of the species' requirements and/or range of the species overlaps with the vicinity of the project limits, but not the project limits itself. The species' presence within the project limits is unlikely.

High: Habitat within the BSA and/or BSA vicinity meets most of the species' requirements, and known locations for the species are found within proximity to the BSA. Presence of the species within the BSA is highly likely.

2.2. Reference Populations

Western leatherwood was observed blooming at the University of California at Berkeley Botanic Garden on February 23, 2015. In addition, a population of a couple hundred blooming Congdon's tarplant was observed blooming in annual grassland along Collier Canyon and Carneal Roads in Livermore, CA on August 8, 2015.

The Jepson Herbarium at the University of California at Berkeley was visited on February 23, 2015 to observe and study herbarium specimens for the remaining 14 species. The herbarium had only five of the 14 species available, which were observed and studied: bent-flowered fiddleneck, Diablo helianthella, Hospital Canyon larkspur, most beautiful jewel-flower, and saline clover,

Reference site visits for the remaining nine species in Table 1 were impractical due to one or more of the following: 1) the lack of precise information on the location and land ownership of many local populations, and 2) the lack of access to many local populations 10 miles or less from the project BSA, many of which are on private property, or on property to which access is restricted.

2.3. Protocol-level Surveys

The purpose of the protocol-level surveys was to locate all populations of special-status plants within the BSA, to precisely record and map their locations, and to estimate the size, number of individuals, phenology and microhabitat characteristics of each rare plant population. Protocol-level surveys were floristic in nature and were conducted according to the rare plant survey guidelines approved by the California Native Plant Society (CNPS 2001), the California Department of Fish and Game (CDFG 2009), and the US Fish and Wildlife Service (USFWS 1996).

Protocol-level surveys were conducted on March 10 and 11 and May 6 and May 19, 2015 by GANDA Botanist Constance Ganong and Biologist Meghan Bishop and on August 5 and August 17, 2015 by Ms. Ganong and Caltrans' Biologist Tiffany Ngo. This range of survey dates encompasses the blooming times of all special-status plants potentially occurring within the project area. All areas identified as potential habitat for rare plants were visited during the late blooming season.

Surveys were conducted by walking meandering transects spaced no further than 30 feet apart throughout the BSA. Surveyors visually observed all habitat within and adjacent to the BSA. Areas with a higher potential for supporting special-status plants, such as areas with well-developed natural vegetation, were carefully examined.

Nearly all plant species found in the study area during protocol-level surveys were identified to species. All were identified to the level needed to determine whether they qualify as special-status plants. A list of all vascular plant taxa encountered within the study area was recorded in the field. Collections were made of specimens that could not be readily identified in the field. Final determinations were made by keying specimens using *The Jepson Manual* (Baldwin et al. 2012). A list of vascular plant taxa found within the survey area is included in Appendix B.

2.4. Parcel Access and Study Limitations

The year of the survey, 2015, was the fourth year of drought conditions in California (State of California 2015). The winters of 2013-2014 and 2014-2015 were among the driest water years on record in California, and 2013 was the all-time driest calendar year (The Weather Channel 2014). The dry weather may have affected species richness within the BSA. Additionally, some species, including special-status species, which may have bloomed in a normal precipitation year, may not have bloomed at all.

Certain areas were inaccessible by foot due to safety concerns. Areas of steep cut slope and steep grading were not surveyed on foot because of a lack of limited shoulder access and dangerous walking conditions on the hillside. Indirect observations were made of these hillsides from adjacent accessible areas, and observations were assisted by using binoculars and supplemented with aerial imagery interpretation. The two areas of extreme cut slopes that were not foot surveyed due to safety concerns are on Map 3 and Map 4 (Appendix A) and total approximately 3.81 acres. These indirect observations were sufficient to identify the dominant vegetation types present and the occurrence of special-status plant species.

3.0 RESULTS

Five terrestrial vegetation communities were mapped within the BSA (Appendix A). In addition to natural vegetation, the BSA contains a paved roadway (SR-84), urban/landscaped areas, which are areas of Caltrans maintenance and retaining walls, urban/railroad areas, and Alameda Creek that passes under two SR-84 bridges. These vegetation communities were classified using *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988), with the exception of one habitat (California bay/coast live oak forest) described by Sawyer et al. (2009) in A Manual of California Vegetation 2nd Edition. The five vegetation cover types of the project area include:

- Annual grassland
- California bay/coast live oak
- Coastal scrub
- Fresh emergent wetland
- Valley Foothill Riparian

3.1. Vegetation types

Annual Grassland

CDFW's *Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988) describes annual grasslands as a compilation of exotic grass species derived from Europe and introduced during the North American settlement of the late 1800s. Common annual grass species include various brome species (*Bromus* spp.), wild oats (*Avena fatua*), and foxtail barley (*Hordeum murinum*). Common forbs include broadleaf filaree (*Erodium botrys*), redstem filaree (*Erodium cicutarium*), bur clover (*Medicago polymorpha*), and popcorn flower (*Plagiobothrys* spp.). It sometimes includes remnants of native perennial grasses, and often includes a diverse assemblage of native annual forbs (wildflowers).

California annual grasslands are found in small sections throughout the BSA adjacent to the roadside or in patches between coast live oak woodland, disturbed sites along SR 84, and steep hillsides. Common non-native grass species in these patches include various brome species (*Bromus* spp.), wild oats (*Avena fatua*), Italian ryegrass (*Festuca perennis*), and Smilograss (*Piptatherum miliaceum*). Annual grassland comprises 1.56 acres of the BSA.

California bay/coast live oak

California bay/coast live oak forest is an uncommon hardwood habitat comprised of a pronounced hardwood layer dominated by California bay (*Umbellularia californica*) and coast live oak (*Quercus agrifolia*). This upland hardwood community is typically found on north- and west-facing slopes with soils derived from sandstone. Understory vegetation is mostly scattered woody shrubs such as poison oak (*Toxicodendron diversilobum*), mountain mahogany (*Cercocarpus montanus*), manzanita (*Arctostaphylos* spp.), and ceanothus (*Ceanothus* spp.). Most large stands of this habitat have been cut and cleared for urban uses such as agriculture and housing over the past century.

The California bay/coast live oak forest habitat occurs throughout the western and central portions of the BSA dominating the north- and west-facing slopes. Buckeye (*Aesculus californica*) is a common tree associate in this habitat. Poison oak, ocean spray (*Holodiscus discolor*), honeysuckle (*Lonicera hispidula*), and snowberry (*Symphoricarpos* spp.) were common understory associates. Approximately 3.42 acres of this habitat occurs within the limits of the BSA.

Coastal Scrub

Coastal scrub is the dominant vegetation community on the south-facing hills within the BSA. Two dominant species of coastal scrub within the BSA are coyote brush (*Baccharis pilularis*) and California buckwheat (*Eriogonum fasciculatum*). Coyote brush, common in more recently disturbed sites, is found in the ecotones between California bay/coast live oak and annual grasslands. Associate species include non-native grasses and small forbs. California buckwheat is found on rocky, steep slopes. Patches of the California buckwheat scrub are found in the western boundary of the BSA, north of SR-84. Common species in this area include sticky monkey flower (*Mimulus aurantiacus*) and poison oak. Coastal scrub comprises approximately 4.37 acres of the BSA.

Fresh Emergent Wetland

The fresh emergent wetland vegetation community is typically characterized by colonial hydrophytic vegetation in areas that are perennially wet, or inundated to the point of creating anaerobic soils. There are two small fresh emergent wetlands within the BSA. One wetland is within valley foothill riparian area in the floodplain of Alameda Creek, and the other wetland is adjacent to the paved roadway at the bottom of a steep embankment, fed by a hillside spring. The dominant species within the floodplain of Alameda Creek is panicled bulrush (*Scirpus mircrocarpus*), and the dominant species adjacent to SR 84 is narrow-leafed cattail (*Typha angustifolia*). Fresh emergent wetland comprises approximately 0.03 acre of the current BSA.

Valley Foothill Riparian

The valley foothill riparian community within the BSA is characterized by mature riparian forest with 40 to 80 percent canopy cover, often dominated by winter deciduous trees. The majority of the community occurs along the edges of Alameda Creek throughout the western and central portions of the BSA. Dominant over-story species include California sycamore (*Platanus racemosa*), Fremont's cottonwood (*Populus fremontii*), big leaf maple (*Acer macrophyllum*), and white alder (*Alnus rhombifolia*). Sub-canopy species include arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), and narrowleaf willow (*Salix exigua*). Understory species include poison oak, Himalayan blackberry (*Rubus armeniacus*), and wild grape (*Vitis californica*). Valley foothill riparian comprises approximately 6.27 acres of the BSA.

3.2. Special-status plants

No special-status plants were found within the study area during protocol-level surveys conducted for this project in 2015.

4.0 CONCLUSIONS

Protocol-level surveys on foot were completed for approximately 87 percent of the BSA (24.70 acres) that included the natural vegetation (15.65 acres) and urban/landscaped types (12.86 acres) of the BSA, excluding paved roadways, urban/railroad areas, and active creek channel. No Federally-listed plants, State-listed plants, or plants with California RPRs were observed in the 24.70 acres of the BSA in which protocol-level surveys on foot were completed.

Two areas of extreme cut slopes (approximately 3.81 acres) were not foot surveyed due to safety concerns and, therefore, were not given protocol-level surveys. However, indirect observations were made of these hillsides from adjacent accessible areas, and observations were assisted by using binoculars. These indirect observations were sufficient to determine that no special-status plant species were present.

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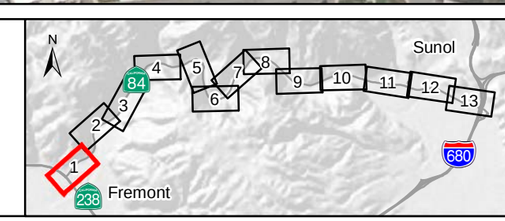
Appendix A: Land Cover Types in the Biological Study Area

Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



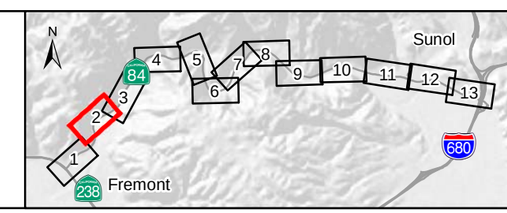
Appendix A: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 1 of 13

0 100 200 Feet

Railroad
Creek
Biological Study Area

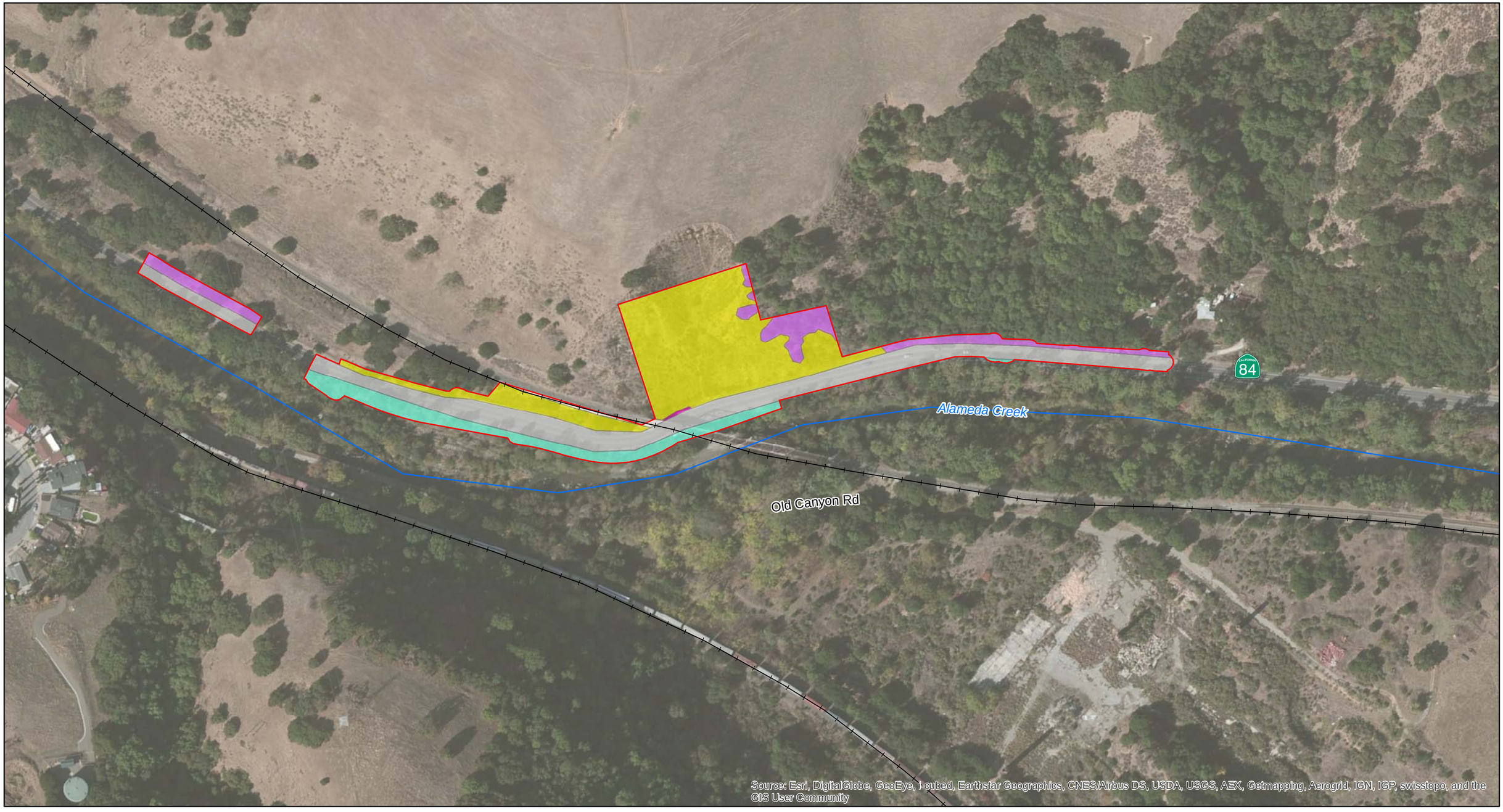
Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



Appendix A: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 2 of 13

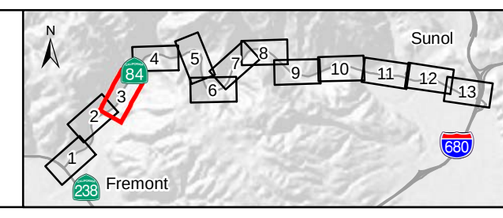
0 100 200 Feet



Railroad
Creek
Biological Study Area

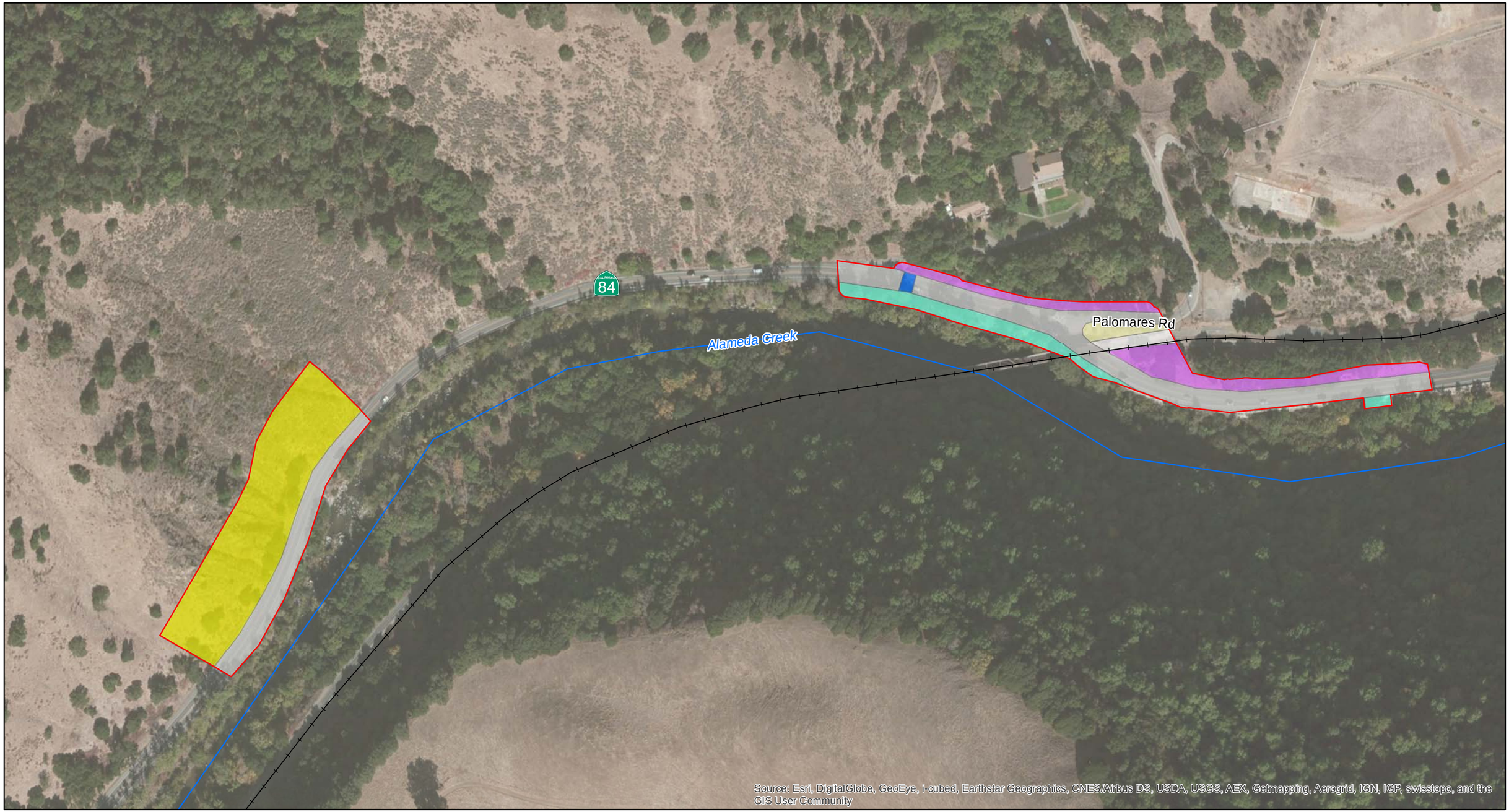
Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



Appendix A: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 3 of 13

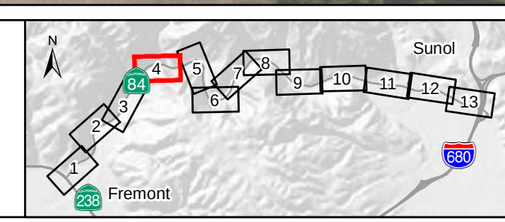
0 100 200 Feet



Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

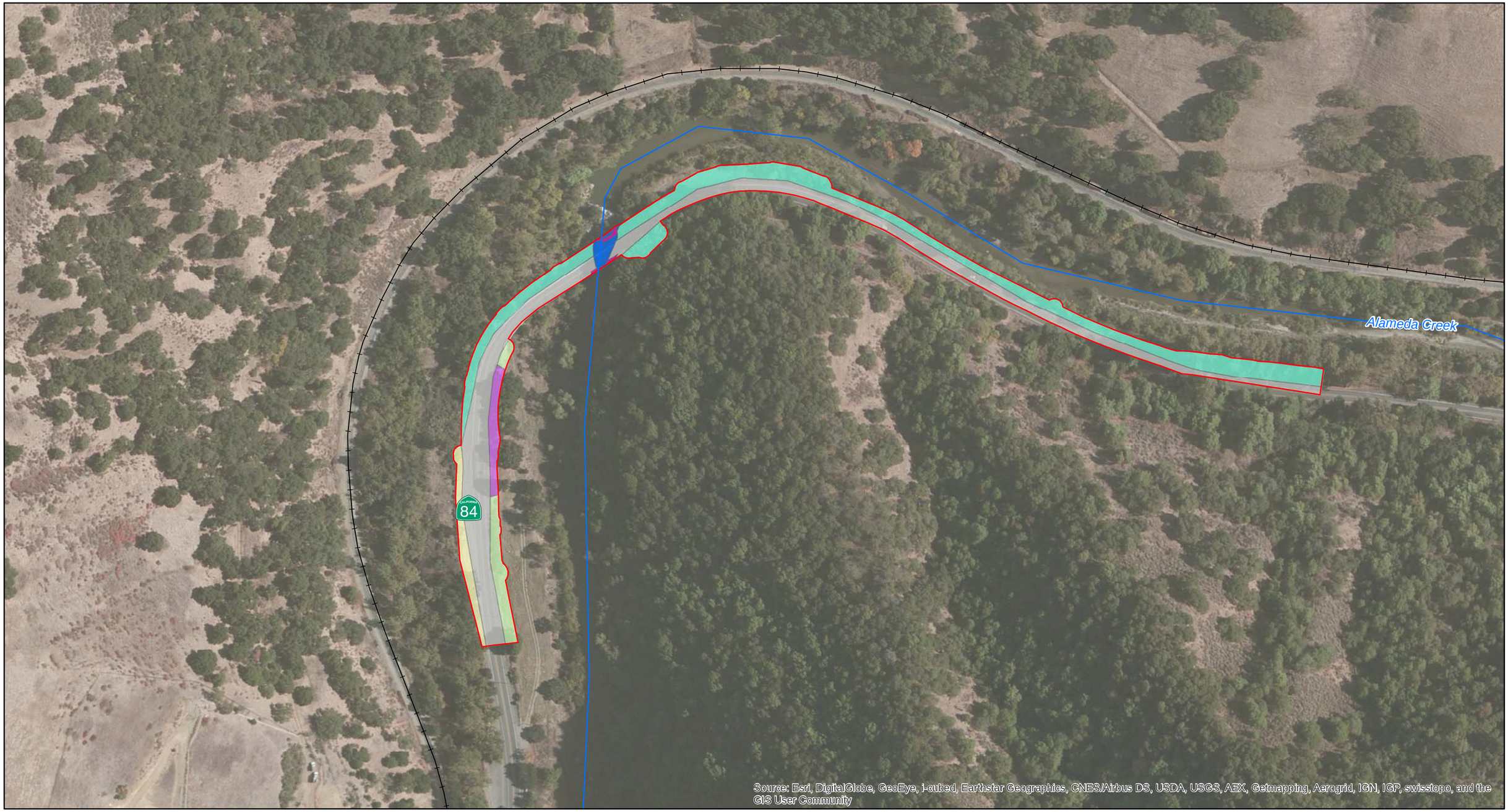
- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



Appendix A: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 4 of 13

0 100 200 Feet

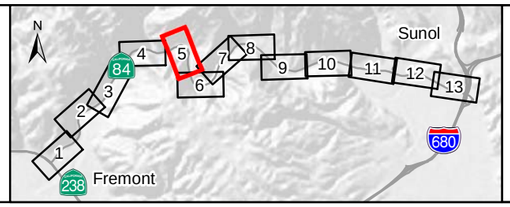
N



Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



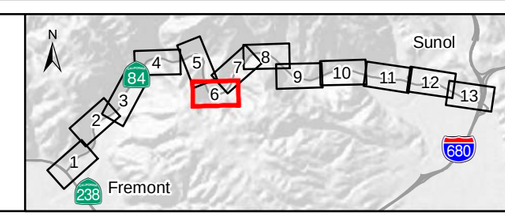
Appendix A: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 5 of 13

0 100 200 Feet

Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

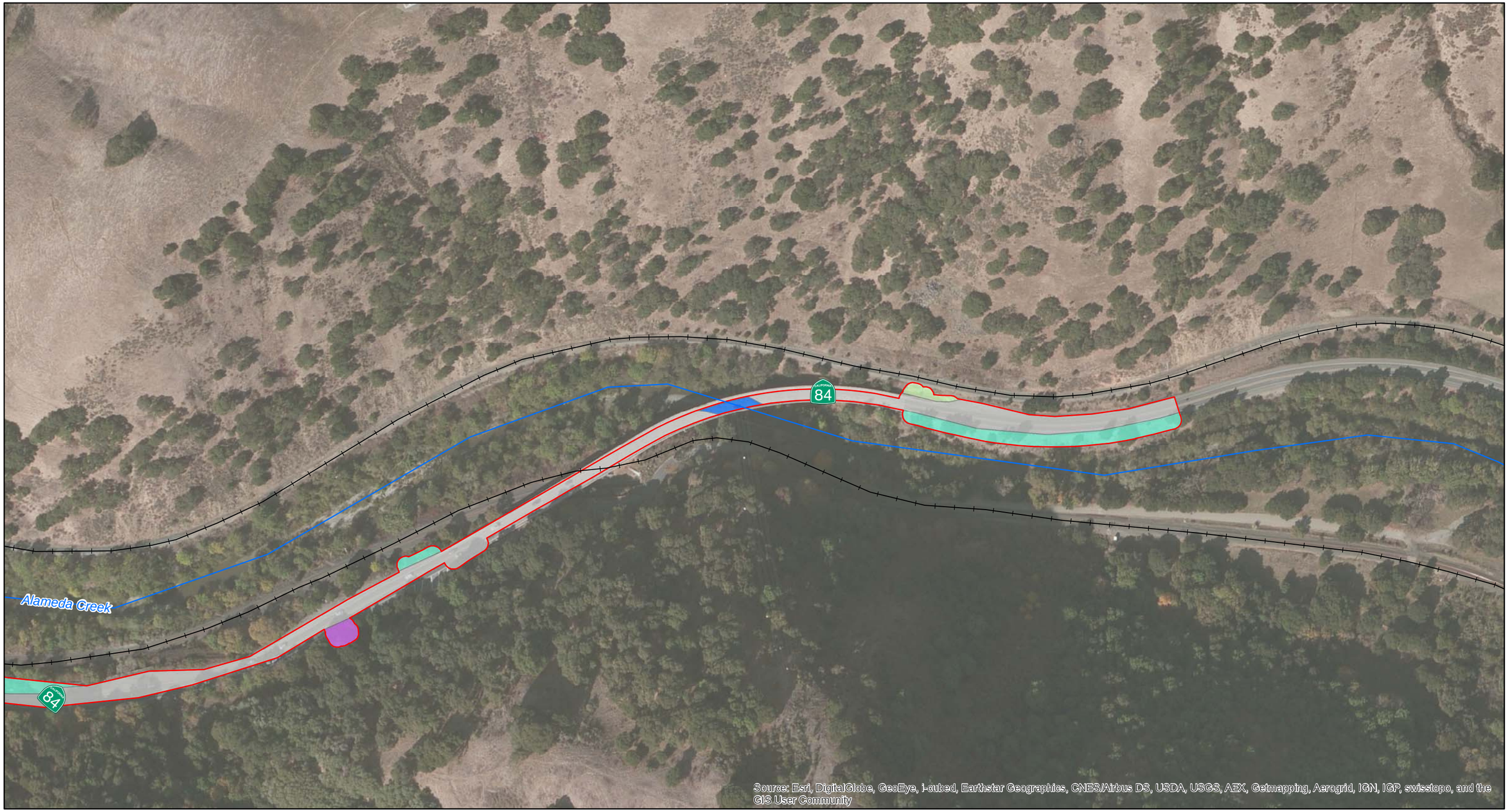
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Urban-Landscaped
Urban-Railroad



Appendix A: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 6 of 13

0 100 200 Feet

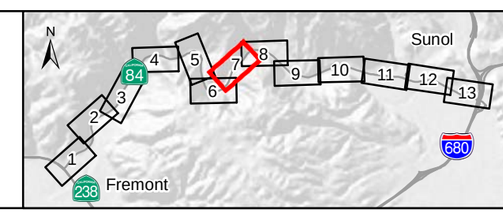
N



Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



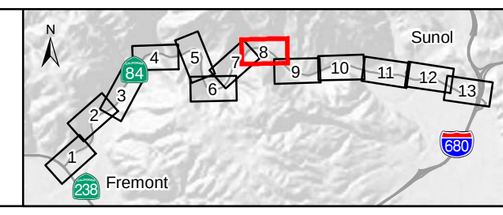
Appendix A: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 7 of 13

0 100 200 Feet

Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



Appendix A: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 8 of 13

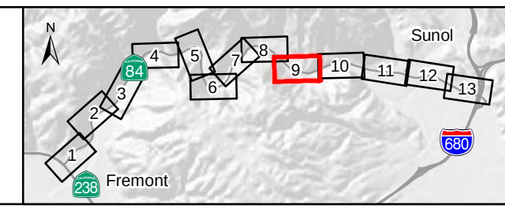
0 100 200 Feet

N

Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Urban-Landscaped
Urban-Railroad



Appendix A: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 9 of 13

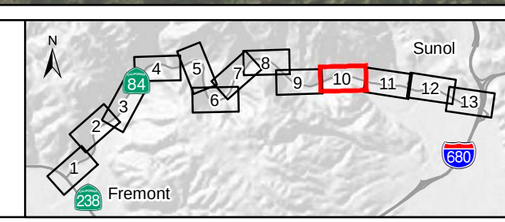
0 100 200 Feet

N

Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



Appendix A: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 10 of 13

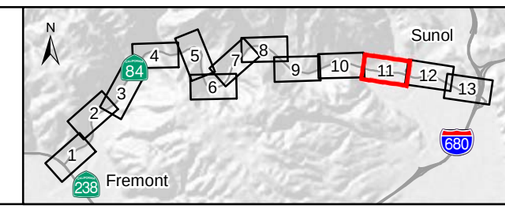
0 100 200 Feet

N

Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



Appendix A: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 11 of 13

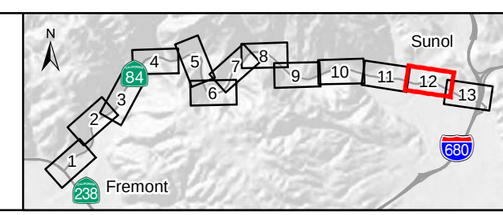
0 100 200 Feet

N

Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Urban-Landscaped
Urban-Railroad



Appendix A: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 12 of 13

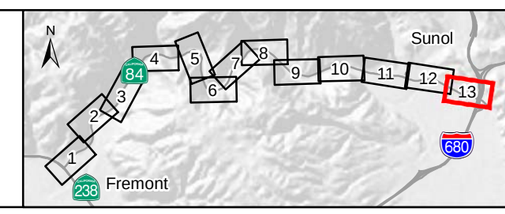
0 100 200 Feet

N

Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



Appendix A: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 13 of 13

0 100 200 Feet

N

Appendix B:
Vascular Plants Observed in the BSA

SCIENTIFIC NAME[1]	COMMON NAME	HABITAT[2]
FERNS AND FERN ALLIES		
EQUISETACEAE	HORSETAIL FAMILY	
Equisetum laevigatum	Smooth scouring rush	VFR; WET
Equisetum telmateia ssp. *braunii*	Giant horsetail	VFR
DENNSTAEDTIACEAE	BRACKEN FAMILY	
Pteridium aquilinum var. *pubescens*	Bracken fern	BAY/OAK
POLYPODIACEAE	POLYPODY FAMILY	
Polypodium californicum	California polypody	VFR
GYMNOSPERMS		
CASUARINACEAE	BEEFWOOD FAMILY	
Casuarina sp.*		VFR
PINACEAE	PINE FAMILY	
*Pinus canariensis**	Canary Island pine	LAND
Pinus muricata	Bishop pine	VFR, LAND
Pinus ponderosa	Ponderosa pine	VFR; LAND
Pinus radiata	Monterey pine	VFR; LAND
FLOWERING PLANTS: DICOTS		
ADOXACEAE	MUSKROOT FAMILY	
Sambucus nigra ssp. cerulea	Blue elderberry	VFR
ANACARDIACEAE	SUMAC FAMILY	
*Schinus molle**	Peruvian peppertree	LAND
Toxicodendron	Poison oak	VFR, OAK, CAG

SCIENTIFIC NAME[1]	COMMON NAME	HABITAT[2]
diversilobum		
APIACEAE	CARROT FAMILY	
*Anthriscus caucalis**	Bur-chervil	VFR
*Conium maculatum**	Poison hemlock	VFR; BAY/OAK; SCRUB
*Daucus carota**	Queen's Anne's lace	LAND
*Foeniculum vulgare**	Wild fennel	AG
Heracleum maximum	Common cowparnsip	VFR
Lomatium utriculatum	Bladder parsnip	VFR
*Scandix pecten-veneris**	Shepard's needle	AG; LAND
*Torilis arvensis**	Hedge-parsley	VFR
APOCYNACEAE	DOGBANE FAMILY	
Asclepias fascicularis	Narrow-leaved milkweed	VFR
*Nerium oleander**	Oleander	LAND
*Vinca major**	Greater periwinkle	VFR
ARALIACEAE	GINSENG FAMILY	
*Hedera helix**	English Ivy	VFR
ASTERACEAE	SUNFLOWER FAMILY	
Achillea millefolium	Yarrow	SCRUB
*Anthemis cotula**	May weed	AG
Artemisia californica	California sagebrush	SCRUB
Artemisia douglasiana	Mugwort	VFR
Baccharis pilularis	Coyote brush	SCRUB; AG
Baccharis salicifolia	Mulefat	VFR
*Carduus pycnocephalus**	Italian thistle	AG; VFR
*Centaurea solstitialis**	Yellow star-thistle	AG
*Cirsium vulgare**	Bull thistle	LAND
*Cotula coronopifolia**	Brass buttons	VFR
*Dittricia graveolens**	Stinkwort	LAND
*Erigeron bonariensis**	Horseweed	AG; LAND

SCIENTIFIC NAME[1]	COMMON NAME	HABITAT[2]
Erigeron canadensis	Canada horseweed	LAND; VFR
Eriophyllum confertiflorum	Yellow yarrow	SCRUB
*Helenium puberulum**	Sneezeweed	VFR
*Helminthotheca echioides**	Bristly ox-tongue	AG; LAND
*Hypochaeris glabra**	smooth cat's ear	AG; LAND
*Lactuca serriola**	Prickly lettuce	AG; LAND
*Pseudognaphalium luteoalbum**	Cudweed	AG; LAND
Senecio hydrophilus	Alkali ragwort	VFR; WET
*Senecio minimus**	Coastal burnweed	VFR
*Senecio vulgaris**	Common groundsel	AG; LAND
Silybum marianum	Blessed milk thistle	AG; LAND
*Sonchus asper**	Prickly sow thistle	AG; LAND
*Sonchus oleraceus**	Dow thistle	AG
*Taraxacum officionale**	Dandelion	AG
*Tragopogon porrifolius**	Purple salsify	LAND
Xanthium spinosum	Spiny cocklebur	VFR
Xanthium strumarium	Cocklebur	AG; VFR
BETULACEAE	BEECH FAMILY	
*Alnus cordata**	Italian alder	VFR
Alnus rhombifolia	White alder	VFR
BORAGINACEAE	BORAGE FAMILY	
Nemophilia parviflora var. parviflora	Woodland nemophilia	BAY/OAK
Pholistoma auritum var. *auritum*	Blue fiesta flower	BAY/OAK
BRASSICACEAE	MUSTARD FAMILY	
*Brassica nigra**	Black mustard	AG; LAND
*Brassica rapa**	Field mustard	AG; LAND
Cardamine californica var. *californica*	Bittercress	VFR
Cardamine oligosperma	Bittercress	VFR

SCIENTIFIC NAME[1]	COMMON NAME	HABITAT[2]
*Raphanus sativus**	Wild mustard	AG; LAND
CAPRIFOLIACEAE	HONEYSUCKLE FAMILY	
Lonicera hispidula	Hairy honeysuckle	VFR
Symphoricarpos albus	Snowberry	VFR
Symphoricarpos mollis	Creeping snowberry	VFR
CARYOPHYLLACEAE	PINK FAMILY	
*Stellaria media**	Chickweed	BAY/OAK; VFR
CHENOPODIACEAE	GOOSEFOOT FAMILY	
*Bassia hyssopifolia**	Five horn bassia	LAND
*Salsola tragus**	Russian thistle	AG
CONVOLVULACEAE	MORNING-GLORY FAMILY	
*Convolvulus arvensis**	Bindweed	AG
Calystegia occidentalis	Bush morning glory	SCRUB
Calystegia purpurata ssp. *purpurata*	Pacific false bindweed	AG
DIPSACACEAE	TEASEL FAMILY	
*Dipsacus sativus**	Teasel	VFR
ERICACEAE	HEATH FAMILY	
Arbutus menziesii	Madrone	VFR
EUPHORBIACEAE	SPURGE FAMILY	
Croton setigerus	Dove weed	LAND
Euphorbia maculate	Spotted spurge	LAND
*Euphorbia oblongata**	Oblong spurge	VFR
*Euphorbia peplus**	Petty spurge	AG
FABACEAE	PEA FAMILY	

SCIENTIFIC NAME[1]	COMMON NAME	HABITAT[2]
Acacia melanoxylon	Black acacia	VFR; LAND
Acmispon americanus	Spanish lotus	AG
Acmispon wrangelianus	Chilean trefoil	AG
Cercis occidentalis	Redbud	LAND; VFR
*Genista monspesulana**	French broom	AG, VFR
Lathyrus vestitus	Woodland pea	VFR
*Lotus corniculatus**	Bird's foot trefoil	AG
Lotus purshianus	Spanish lotus	LAND
Lotus scoparius	Deer weed	AG; SCRUB
Lupinus bicolor	Annual lupine	AG; LAND
Lupinus nanus	Sky lupine	AG; LAND
Lupinus latifolius	Bigleaf lupine	LAND
*Medicago polymorpha**	Bur clover	AG
*Melilotus albus**	White sweet-clover	VFR, AG
*Melilotus indicus**	Yellow sweet-clover	VFR, AG
*Robinia pseudoacacia**	Black locust	LAND
Trifolium dubium	Shamrock clover	AG
*Trifolium hirtum**	Rose clover	AG; LAND
*Trifolium incarnatum**	Crimson clover	AG
Vicia sativa ssp. *sativa**	Common vetch	AG
Vicia villosa ssp. *varia**	Thick fruited vetch	AG
Vicia villosa ssp. *villosa**	Winter vetch, hairy vetch	AG
FAGACEAE	OAK FAMILY	
Quercus agrifolia	Coast live oak	BAY/OAK; VFR
Quercus chrysolepis	Canyon live oak	BAY/OAK; VFR
Quercus douglasii	Blue oak	BAY/OAK
Quercus lobata	Valley oak	BAY/OAK; VFR
*Quercus suber**	Cork oak	LAND
GERANIACEAE	GERANIUM FAMILY	
*Erodium botrys**	Long-beaked stork's-bill	AG
*Erodium cicutarium**	Red-stem filaree	AG

SCIENTIFIC NAME[1]	COMMON NAME	HABITAT[2]
*Geranium dissectum**	Cutleaf geranium	AG
*Geranium molle**	Dovefoot geranium	AG
GROSSULARIACEAE	GOOSEBERRY FAMILY	
Ribes californicum var. *californicum*	Hillside gooseberry	VFR
JUGLANDACEAE	WALNUT FAMILY	
Juglans hindsii	Northern California black walnut	VFR; likely hybrids
LAMIACEAE	MINT FAMILY	
*Mentha pulegium**	Pennyroyal	VFR
*Mentha spicata**	Spearmint	VFR
Satureja douglasii	Yerba buena	AG
Stachys ajugoides	Hedgenettle	VFR
Trichostema lanceolatum	Vinegarweed	VFR
LAURACEAE	LAUREL FAMILY	
Umbellularia californica	California bay	VFR, BAY/OAK
LOASACEAE	LOASA FAMILY	
Mentzelia lindleyi	Lindley's blazing star	SCRUB
MALVACEAE	MALLOW FAMILY	
*Malva nicaeensis**	Bull mallow	AG
MONTIACEAE	MINER'S LETTUCE FAMILY	
Claytonia perfoliata	Miner's lettuce	BAY/OAK
MYRSINACEAE	MYRSINE FAMILY	
*Anagallis arvensis**	Scarlet pimpernel	VFR

SCIENTIFIC NAME[1]	COMMON NAME	HABITAT[2]
MYRTACEAE	EUCALYPTUS FAMILY	
*Eucalyptus globulus**	Tasmanian blue gum	roadside, planted
OLEACEAE	OLIVE FAMILY	
*Ligustrum lucidum**	Glossy privet	LAND
*Olea europea**	Olive	VFR; LAND
ONAGRACEAE	EVENING-PRIMROSE FAMILY	
Clarkia unguiculata	Elegant clarkia	VFR
Epilobium brachycarpum	Panicled willow-herb	AG; VFR
Epilobium canum ssp. *canum*	California fuschia	BAY/OAK; SCRUB
Epilobium ciliatum	Slender willow-herb	VFR
Oenanthe sarmentosa	Water parsley	VFR
OXALIDACEAE	OXALIS FAMILY	
*Oxalis pes-caprae**	Bermuda buttercup	AG
PAPAVERACEAE	POPPY FAMILY	
Dicentra formosa	Pacific bleedinghearts	VFR
Eschscholzia californica	California poppy	AG; LAND
PHRYMACEAE	LOPSEED FAMILY	
Mimulus aurantiacus	Sticky monkeyflower	AG;SCRUB
Mimulus guttatus	Seep monkey flower	VFR
PLANTAGINACEAE	PLANTAGO FAMILY	
Kickxia elatine	Sharp-leaved fluellin	LAND
*Plantago lanceolata**	English plantain	AG, VFR
Plantago major	Common plantain	AG, VFR
Veronica anagallis-aquatica	Water speedwell	VFR
PLATANACEAE	SYCAMORE FAMILY	

SCIENTIFIC NAME[1]	COMMON NAME	HABITAT[2]
Platanus racemosa	Western sycamore	VFR
POLEMONIACEAE	PHLOX FAMILY	
Gilia achilleifolia ssp. *multicaulis*	California gilia	SCRUB
POLYGONACEAE	BUCKWHEAT FAMILY	
Eriogonum fasciculatum	California buckwheat	SCRUB
Eriogonum nudum	Nude buckwheat	SCRUB
Polygonum aviculare ssp. depressum	Prostrate knotweed	VFR
Polygonum sp.	Knotweed	AG
*Rumex acetosella**	Sheep sorrel	LAND
*Rumex crispus**	Curly dock	VFR
*Rumex pulcher**	Fiddle dock	VFR
RHAMNACEAE	BUCKTHORN FAMILY	
Ceanothus sp.	California lilac	LAND
ROSACEAE	ROSE FAMILY	
Cotoneaster pannosus	Silverleaf cotoneaster	VFR
Heteromeles arbutifolia	Toyon	SCRUB
Holodiscus discolor	Ocean spray	VFR
*Prunus dulcis**	Almond	LAND
Rosa woodsii	Wood rose	VFR
*Rubus armeniacus**	Himalayan blackberry	AG; VFR
Rubus ursinus	California blackberry	VFR
RUBIACEAE	MADDER FAMILY	
Galium aparine	Goose-grass	VFR; LAND
*Galium murale**	Tiny bedstraw	VFR
*Sherardia arvensis**	Field madder	VFR
SALICACEAE	WILLOW FAMILY	

SCIENTIFIC NAME[1]	COMMON NAME	HABITAT[2]
Salix exigua	Narrowleaf willow	VFR
Salix laevigata	Red willow	VFR
Salix lasiolepis	Arroyo willow	VFR
Populus fremontii ssp. *fremontii*	Fremont cottonwood	VFR; LAND
SAPINDACEAE	SOAPBERRY FAMILY	
Acer negundo	Box elder	VFR
Acer macrophyllum	Big-leaf maple	VFR
Aesculus californica	California buckeye	VFR
SAXIFRAGACEAE	SAXIFRAG FAMILY	
Lithophragma heterophyllum	Hill star	VFR
SCROPHULARIACEAE	FIGWORT FAMILY	
*Bellardia trixago**	Mediterranean lineseed	AG
Mimulus aurantiacus	Sticky monkey flower	SCRUB
Scrophularia californica	Bee plant	AG; SCRUB
*Verbascum blattaria**	Moth mullein	VRF
*Verbascum thapsis**	Wooly mullein	LAND; VFR
SIMAROUBACEAE	QUASSIA FAMILY	
*Ailanthus altissimus**	Tree of heaven	LAND; VFR
SOLANACEAE	NIGHTSHADE FAMILY	
*Datura stramonium**	Jimson weed	VFR
Nicotiana acuminate var. *multiflora**	Many flowered tobacco	VFR
*Nicotiana glauca**	Tree tobacco	BAY/OAK
*Solanum nigra**	Black nightshade	LAND
Solanum umbelliferum	Blue witch	BAY/OAK
URTICACEAE	NETTLE FAMILY	
*Urtica urens**	Stinging nettle	VFR

SCIENTIFIC NAME[1]	COMMON NAME	HABITAT[2]
VALERIANACEAE	VALERIAN FAMILY	
*Centranthus ruber**	Red valerian	LAND
VERBENACEAE	VERVAIN FAMILY	
Verbena lasiostachys var. *scabrida*	Robust vervain	VFR
VITACEAE	GRAPE FAMILY	
Vitis californica	California wild grape	VFR
ZYGOPHYLLACEAE	CALTROP FAMILY	
*Tribulus terrestris**	Puncturevine	AG; LAND
FLOWERING PLANTS: MONOCOTS		
ALLIACEAE	ONION FAMILY	
*Allium neapolitanum**	White garlic	VFR
CYPERACEAE	SEDGE FAMILY	
Cyperus eragrostis	Tall cyperus	VFR
Scirpus microcarpus	Panicled bulrush	WET
IRIDACEAE	IRIS FAMILY	
Sisyrinchium bellum	Blue eyed grass	SCRUB
JUNCACEAE	RUSH FAMILY	
Juncus bufonius var. *bufonius*	toad rush	VFR
Juncus patens	Wire rush	VFR
LAXMANNIACEAE	WIRE-LILY FAMILY	
*Cordyline australis**	Cabbage tree	OAK

SCIENTIFIC NAME[1]	COMMON NAME	HABITAT[2]
LILIACEAE	LILY FAMILY	
Chlorogalum pomeridianum var. pomeridianum	Soap plant	BAY/OAK; SCRUB
POACEAE	GRASS FAMILY	
*Arundo donax**	Giant reed	VFR; SCRUB
*Avena barbata**	Slender wild oat	AG; BAY/OAK; LAND; VFR
*Avena fatua**	Wild oat	AG; BAY/OAK; LAND; VFR
*Briza minor**	Little rattlesnake grass	AG
*Bromus diandrus**	Ripgut brome	AG; BAY/OAK; LAND; VFR
Bromus carinatus	California brome	AG; VFR
Bromus catharticus	Rescuegrass	AG
*Bromus hordeaceus**	Soft chess	AG, OAK
Bromus madritensis ssp. *rubens**	Foxtail chess	AG; BAY/OAK; LAND; VFR
*Cortaderia jubata**	Pampas grass	AG
*Cynodon dactylon**	Bermuda grass	AG; LAND
*Cynosurus echinatus**	Spiny dogtail	AG; LAND; VFR
*Dactylis glomerata**	Orchardgrass	BAY/OAK
Distichlis spicata	Saltgrass	VFR
*Echinochloa crus-galli**	Barnyard grass	VFR
*Ehrharta erecta**	Panic veldtgrass	LAND
Elymus glaucus	Blue wildrye	VFR
*Elymus myuros**	Rat-tail fescue	AG, LAND
Elymus triticoides	Beardless wildrye	VFR
*Festuca perennis**	Italian ryegrass	AG; BAY/OAK; LAND; VFR
*Hordeum marinum**	Seaside barley	AG; VFR
*Hordeum murinum**	Foxtail	AG
Melica californica	California melic grass	VFR

SCIENTIFIC NAME[1]	COMMON NAME	HABITAT[2]
*Paspalum dilatatum**	Dallisgrass	VFR
*Phalaris aquatica**	Harding grass	AG; VFR
*Piptatherum miliaceum**	Smilo grass	VFR
*Poa annua**	Bluegrass	LAND
*Polypogon interruptus**	Beard grass	AG; VFR
*Polypogon monspeliensis**	Rabbit's-foot grass	VFR
Stipa pulchra	Purple needle grass	BAY/OAK
*Triticum aestivum**	Wheat	LAND
THEMIDACEAE	BRODIAEA FAMILY	
Dichelostemma capitatum	Blue dicks	BAY/OAK
Triteleia laxa	Ithuriel's spear	VFR
TYPHACEAE	CATTAIL FAMILY	
Typha angustifolia	Narrow-leaf cattail	WET

Notes:

1. Common and scientific names from Baldwin et al. (2012) and CalFlora (2015)

   * = non-native species

2. AG = Annual grassland; BAY/OAK = Calfiornia bay/coast oak woodland; LAND = Urban/Landscaped; SCRUB = Coastal scrub; VFR = Valley foothill riparian; WET=Freshwater wetland.

Appendix E Preliminary Determination of Jurisdictional Waters

PRELIMINARY DETERMINATION OF JURISDICTIONAL WATERS

Niles Canyon Safety Improvement Project

Caltrans District 4
Alameda County
State Route 84
ALA 84 (PM 10.8/18.0)
EA 2A332

January 2015

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PRELIMINARY DETERMINATION OF JURISDICTIONAL WATERS

NILES CANYON SAFETY IMPROVEMENT PROJECT

Caltrans District 4
State Route 84
ALA 84 (PM 10.8/18.0)
EA 2A332

STATE OF CALIFORNIA
Department of Transportation

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Summary

The California Department of Transportation (Caltrans) proposes to construct safety improvements at specific site locations along the State Route 84 (SR-84) corridor between SR-238 (Mission Boulevard) post mile (PM) 10.8 and Interstate-680 (I-680) PM 18.0 (Figure 1). This project has been significantly modified from two larger previously proposed projects that would have widened SR-84 throughout Niles Canyon. Niles Canyon is in an unincorporated area of Alameda County between SR-238 in Fremont and the SR-84/Interstate 680 (I-680) interchange in Sunol. Alameda Creek runs throughout the canyon, and SR-84 runs alongside much of the creek. The purpose of the project is to improve safety on SR-84 within the project area and involves several components including: installation of traffic signs and lighting, low speed curve improvements, installation of k-rail and Midwest guardrail system, installation of rock drapery system, signalization, and limited shoulder widening.

This investigation followed the methods described in the *Army Corps of Engineers Wetlands Delineation Manual* (USACE 1987), supplemented with guidance as directed by the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008) and *A Field Guide to the Identification of the Ordinary High Water mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008).

A previous preliminary investigation of jurisdictional waters was conducted for a small portion of the BSA in 2009 at the Alameda Creek Bridge (Bridge #33-0036) for the Alameda Creek Bridge Replacement Project. The preliminary investigation of jurisdictional waters was conducted by URS Corporation and then verified and revised in 2010 by the Caltrans Liaison at the USACE (USACE File Number SPN-2010-00203S). This 2010 report is added (Appendix A) as an addendum and supplement to this wetland delineation report. Therefore, a wetland delineation was not conducted for the area north of the bridge within Alameda Creek since preliminary jurisdictional determinations verified by the USACE do not expire (USACE 2005).

Garcia and Associates (GANDA) botanist Constance Ganong and biologist Meghan Bishop conducted the field investigations on September 5, 2014 to delineate potential waters of the U.S., including wetlands and water features in the biological study area (BSA), which total 56.52 acres. The BSA is illustrated in Figure 1 and Appendix B.

A total of approximately 1.8362 acres of potential waters of the U.S., including wetlands, were delineated within the BSA. These features are illustrated in Appendix B and summarized in Table 3-1. Datasheets are included as Appendix C. Representative photographs of the BSA are included in Appendix D.

One wetland type, fresh emergent wetland, and two water feature types, perennial and intermittent creeks, were mapped. Field investigations identified three fresh emergent wetland features (totaling 0.0347 acre), and two water features, Alameda Creek, (totaling approximately 1.7702 acres) and Stonybrook Creek (totally approximately 0.0313 acre) within the BSA. For these wetland and water features, a preliminary evaluation of jurisdiction is presented in this report. All of the total 1.8362 acres of potential waters of the U.S. mapped within the BSA are proposed to be jurisdictional.

List of Abbreviated Terms

Abbreviation	Definition
º	Degrees
‘	Minute
BSA	Biological Study Area
Caltrans	California Department of Transportation
CFR	Code of Federal Regulations
CWA	Clean Water Act
EBRPD	East Bay Regional Parks District
F	Fahrenheit
FAC	Facultative
FACW	facultative wetland
FACU	facultative upland
FE	fresh emergent wetland
GANDA	Garcia and Associates
NL	Not listed
NRCS	National Resource Conservation Service
NWI	National Wetlands Inventory
OBL	obligate wetland
OHWM	ordinary high water mark
PM	post-mile
PC	perennial creek
quad(s)	USGS 7.5’ topographic quadrangle(s)
RPW	Relatively permanent waters
SFPUC	San Francisco Public Utilities Commission
SR	State Route
TNW	Traditionally navigable waters
UPL	Upland
U.S.	United States
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

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1.0 OVERVIEW

The California Department of Transportation (Caltrans) proposes to construct safety improvements at specific site locations along the State Route 84 (SR-84) corridor between SR-238 (Mission Boulevard) post mile (PM) 10.8 and Interstate-680 (I-680) PM 18.0 (Figure 1). This project has been significantly modified from two larger previously proposed projects that would have widened SR-84 throughout Niles Canyon. Niles Canyon is in an unincorporated area of Alameda County between SR-238 in Fremont and the SR-84/I-680 interchange in Sunol. Alameda Creek runs throughout the canyon, and SR-84 runs alongside much of the creek. The purpose of the project is to incrementally improve safety on SR-84 within the project area and involves several components including: installation of traffic signs and lighting, low speed curve improvements, installation of k-rail and Midwest guardrail system, installation of rock drapery system, signalization, and limited shoulder widening.

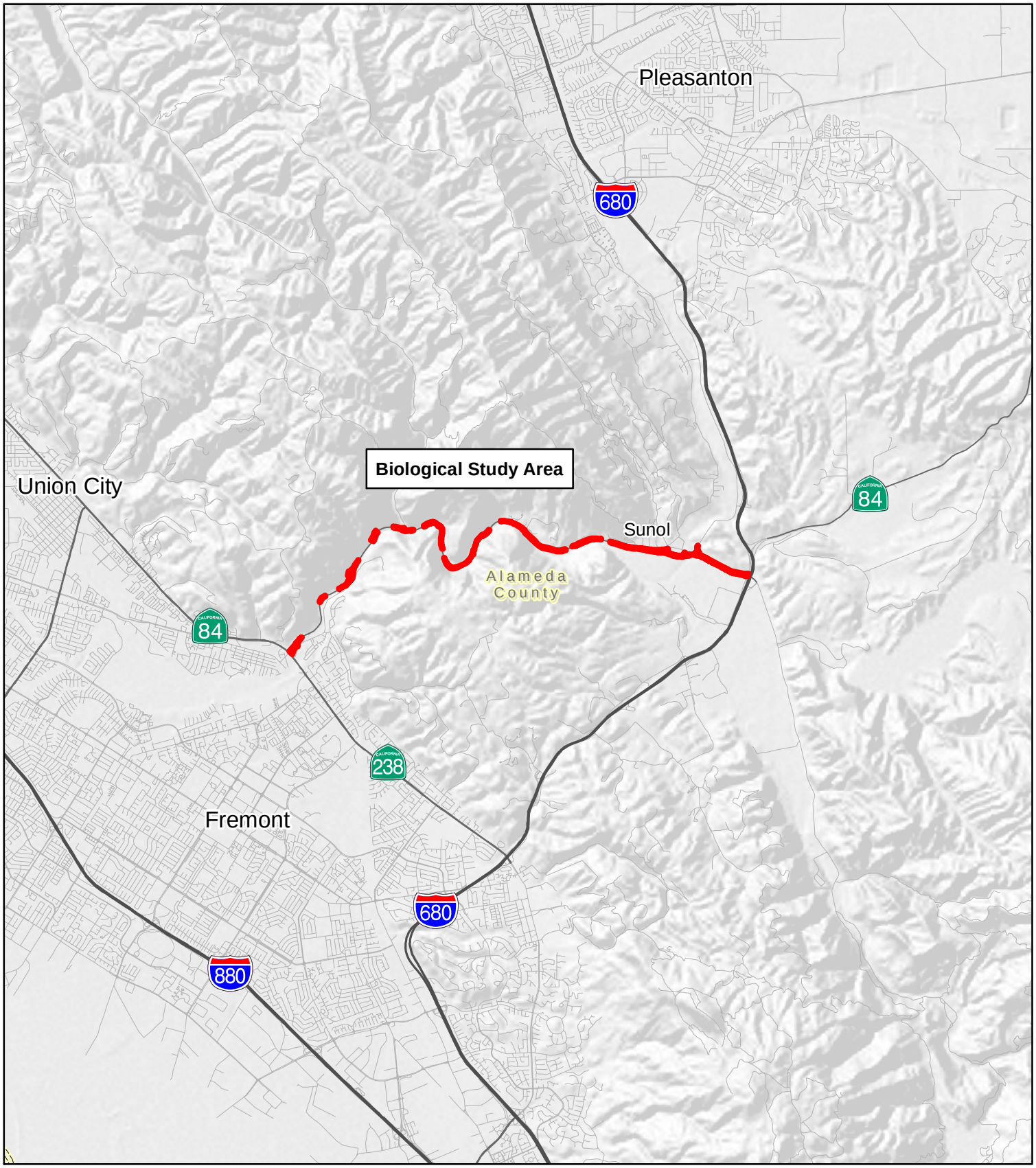
This report was prepared to assist Caltrans with planning efforts within the Biological Study Area (BSA) and to identify United States Army Corps of Engineers (USACE) jurisdiction pursuant to Section 404 of the Clean Water Act (CWA). A previous preliminary investigation of jurisdictional waters was conducted for a small portion of the BSA in 2009 at the Alameda Creek Bridge (Bridge #33-0036) for the Alameda Creek Bridge Replacement Project. The preliminary investigation of jurisdictional waters was conducted by URS Corporation and then verified and revised in 2010 by the Caltrans Liaison at the USACE (USACE File Number SPN-2010-00203S). The 2010 report is attached as an addendum and supplement for this area at the Alameda Creek Bridge within the BSA (Appendix A; Map 5).

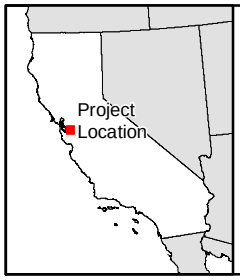
This report documents the location and extent of waters of the U.S., including wetlands, occurring within the BSA for this project. The BSA for this project includes the project construction area, which are areas that will be temporarily or permanently impacted by the proposed project. In certain locations the BSA was expanded beyond the project construction area for areas of potential construction staging. In all other areas, the BSA includes a 15-foot buffer from the project footprint. The BSA for the project totals approximately 56.52 acres.

The field delineation identified approximately 1.8362 acres of potential waters of the U.S. within the 56.52 acres of the BSA, including approximately 0.0347 acre of wetlands and 1.8015 acres of water features. Based on criteria as described in 33 Code of Federal Regulations (CFR) 328.3, all of the mapped potential waters of the U.S. within the new

areas of the BSA is considered jurisdictional. The jurisdiction of individual features as discussed in this report should be verified by the USACE.

The field delineation was conducted during the late summer (September 2014). The winter of 2013-2014 was among the top three driest water years on record in California, and 2013 was the all-time driest calendar year. However, the identification of wetlands is based on hydric soil characteristics, direct hydrologic indicators, and vegetation types. This combination of criteria allowed investigators to determine presence of wetlands under the low-precipitation conditions.





Biological Study Area

Scale: 1:100,000
1 inch = 8,333 feet

N

0 1 2 Miles

Figure 1:
Project Vicinity Map
Niles Canyon
Safety Improvement Project

Alameda County,
California

1.1. Project Location

The project is located at various shoulder areas along SR-84 in primarily Niles Canyon between PM 10.8 and PM 18.0, an unincorporated area of Alameda County between SR-238 in Fremont and the SR-84/Interstate 680 (I-680) interchange in Sunol (Figure 1). Alameda Creek runs throughout the canyon, and SR-84 runs alongside much of the creek. The project is located almost entirely in the *Niles* U.S. Geological Survey (USGS) 7.5-minute quadrangle, but extends a short distance into the *La Costa Valley* quadrangle. The BSA encompasses approximately 56.52 acres and includes primarily upland habitat.

The bottom of Niles Canyon is densely forested with riparian and oak woodland vegetation that is occasionally broken with scattered patches of scrub and grassland. Larger patches of scrub and grassland are present at higher elevations on the north wall of the canyon, while the south wall remains largely wooded up to the south ridgeline. The project area crosses Alameda Creek at two locations: the Alameda Creek Bridge (Bridge #33-0036) and the Alameda Creek Overhead (Bridge #33-0039).

The project also extends east of Niles Canyon to I-680, along a stretch of SR 84 named Paloma Way. Paloma Way is lined on both sides by a row of planted trees, the majority of which are oaks and sycamores. I-680 is located just outside of the BSA, immediately east of the eastern end.

1.2. Climate

The BSA is located to the east of the San Francisco Bay, which moderates the typically Mediterranean climate. Annual precipitation averages 18 inches, and is typically delivered as rainfall between November and April. Average temperatures range from 39 to 56 degrees (°) Fahrenheit (F) in winter, and from 57 to 89 ºF in summer (National Oceanic and Atmospheric Administration National Weather Service 2014).

1.3. Land Use

The Union Pacific Railroad tracks and SR 84 both run through Niles Canyon, alternating along the north and the south sides via several road and rail bridges spanning Alameda Creek. This stretch of SR 84 is named Niles Canyon Road and is a two-lane highway used as an alternative commute corridor to the highly utilized I-680. There are several rural residences located along Niles Canyon Road. At the west end of the project, the roadway runs along the Niles District in the City of Fremont and is adjacent to residential housing. At the east end of Niles Canyon, the roadway runs along the south edge of the Town of Sunol and runs east to I-680 along a stretch named Paloma Way. An area of

low, rolling hills covered in open grassland used for grazing is located immediately north of Paloma Way. To the south, there is a large field that contains an active open-pit gravel mine. The edges of this field, including the areas immediately adjacent to Paloma Way, are subject to periodic disking.

Alameda Creek drains a large watershed east of Niles Canyon, including the Sunol Regional Wilderness area to the southeast and Livermore Valley to the northeast (via a tributary named Arroyo de la Laguna). Flows in Alameda Creek are controlled by water agencies such as the San Francisco Public Utilities Commission (SFPUC) through releases from reservoirs upstream of the BSA.

2.0 APPLIED METHODS

This investigation followed the methods described in the *Army Corps of Engineers Wetlands Delineation Manual* (USACE 1987), supplemented with guidance as directed by the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008) and *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008).

These methods included a preliminary review of available information, and onsite field inspections of the BSA to determine the presence or absence of 1) hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology. Sample points were assessed at paired plots on either side of the lateral edge of sampled wetlands to record the vegetation, soils, and hydrology present. Areas with a dominance or prevalence of hydric vegetation, hydric soil, and wetland hydrology indicators were mapped as wetlands. Features with ordinary high water marks (OHWM) were mapped as water features. The following discussion describes how these methods and related reference materials were applied to the onsite features.

2.1. Preliminary Data Gathering and Review of Existing Materials

A pre-field review of the BSA was conducted to identify potential wetlands and other waters, as well as information on hydrophytic vegetation, hydric soils, and wetland hydrology. Existing materials reviewed included geospatial wetlands information provided online by the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) (USFWS 2014) and aerial photography of the BSA and vicinity. The *Niles* and *La Costa Valley* California USGS 7.5' topographic quadrangles were also reviewed (USGS 1961). Soil types in the BSA were identified using the Web Soil

Survey, a resource provided by the National Resources Conservation Service ([NRCS] 2014) (Appendix B).

The *Jurisdictional Delineation Report: State Route 84 Bridge Replacement Project* (Caltrans 2010) was also reviewed. The report presented results of a delineation survey conducted in June and September 2009 by URS Corporation within 11.13 acres of BSA for another Caltrans project at the Alameda Creek Bridge. In addition, the revised jurisdictional determination from 2010 (USACE File Number SPN-2010-00203S), which included the revised and verified site assessment report and mapping, was also reviewed. The 2010 report is added (Appendix A) as an addendum and supplement to this wetland delineation report. Therefore, a wetland delineation was not conducted for these areas of the BSA at the Alameda Creek Bridge (see Map 5 in Appendix B) since preliminary jurisdictional determinations verified by the USACE do not expire (USACE 2005).

The soil survey for the BSA was obtained from the Natural Resources Conservation Service (NRCS) online Web Soil Survey (NRCS 2014). The locations of these soil types in the BSA and the boundaries between them are depicted in the jurisdictional delineation map in Appendix B. The following 12 soil units were identified within the BSA:

- Los Gatos-Los Osos comples, 30-70 percent slopes, eroded (LpF2)
- Los Osos loam, seeped variant, 3-15 percent slopes (LsC)
- Los Osos silty clay loam, 30-45 percent slopes, eroded (LtE2)
- Los Osos and Millsholm soils, 30-45 percent slopes, eroded (LuE2)
- Millsholm silt loam, 45-75 percent slopes, eroded (MhF2)
- Positas gravelly loam, 2-20 percent slopes, eroded (PoC2)
- Positas gravelly loam, 20-40 percent slopes, eroded (PoE2)
- Riverwash (Rh)
- Rock land (RoF)
- Yolo loam, 0-3 percent slopes (YmA)
- Yolo loam, 3-10 percent slopes (YmB)
- Zamora silt loam, 0-4 percent slopes (Za)

2.2. Field Investigation

Field investigations to delineate wetlands and water features within the 56.52 acres of the BSA were conducted on September 5 and December 2, 2014 by Garcia and Associates (GANDA) botanist Constance Ganong and biologist Meghan Bishop (Appendix B). Wetlands were identified based on vegetation, soils, and hydrology. Water features were mapped based on the presence of an OHWM. Potential waters of the U.S. (wetlands and water features) and sample point locations were mapped in the field using a Trimble Global Positioning System survey unit capable of meter accuracy (Appendix B). Sample

points were evaluated at two locations. Sample points shown in the map in Appendix B correspond with the datasheets included in Appendix C.

Each mapped feature was given a two-part code designation: the first part indicates the type of wetland (FE = fresh emergent wetland, PC = perennial creek, and IC = intermittent creek), and the second part is a unique identification number. Two pairs of data points were collected at two wetlands, and the corresponding datasheets are included as Appendix C. Representative photographs of the BSA and wetland and water features are included as Appendix D.

2.2.1. Vegetation

Wetland vegetation was identified in the field based on species composition and corresponding wetland indicator status. The sizes of sample plots were varied to represent the vegetation community in each feature, and exclude sampling vegetation from adjacent communities. Plot sizes are listed in the datasheets in Appendix C. The percent cover of each plant species in the field was visually estimated. The "50/20" rule was used to select dominant species from each stratum (tree, shrub, and herb) of the community, as defined in the *Arid West Regional Supplement*. The indicator status of each species was determined based on *The National Wetland Plant List: 2013 wetland ratings* (Lichvar 2013). Vegetation was considered hydrophytic if more than 50% of the dominant plant species from all strata were obligate, facultative wetland, or facultative or the Prevalence Index was 3.0 or less.

Wetland indicator species include those listed as obligate (OBL), facultative wetland (FACW), or facultative (FAC) in the *National List*, for California Region 0. Upland indicator categories include facultative upland (FACU) or upland (UPL). Plant indicator status categories are described in Table 2-1.

Table 2-1. Wetland Indicator Categories

Indicator Category	Definition
Obligate wetland plants (OBL)	Almost always occur in wetlands. With few exceptions, these plants (herbaceous or woody) are found in standing water or seasonally saturated soils (14 or more consecutive days) near the surface.
Facultative wetland plants (FACW)	Usually occur in wetlands, but may occur in non-wetlands. These plants predominately occur with hydric soils, often in geomorphic settings where water saturates the soils or floods the soil surface at least seasonally.
Facultative plants (FAC)	Occurs in wetlands and non-wetlands. These plants can grow in hydric, mesic, or xeric habitats. The occurrence of these plants in different habitats represents responses to a variety of

	environmental variables other than hydrology, such as shade tolerance, soil pH, and elevation, and they have a wide tolerance of soil moisture conditions.
Facultative upland plants (FACU)	Usually occur in non-wetlands, but may occur in wetlands. These plants predominately occur on drier or more mesic sites in geographic settings where water rarely saturates the soils or floods the soil surface seasonally.
Upland plants (UPL)	Almost never occur in wetlands. These plants occupy mesic to xeric non-wetland habitats. They almost never occur in standing water or saturated soils. Typical growth forms include herbaceous, shrubs, woody vines, and trees.
Source: Lichvar et. al. 2012	

2.2.2. Hydrology

Hydrology was characterized in the field using the methods provided in the *Arid West Supplement* (USACE 2008). While the winter (2013-2014) had abnormally low precipitation, this investigation relied largely on direct indicators of wetland hydrology. These included standing water and/or saturated soils at each of the wetland sites. Indirect indicators of hydrology were also occasionally present, including water marks, sediment deposits, and drift deposits.

2.2.3. Soils

Soils were characterized in the field using the methods provided in the *Arid West Supplement* (USACE 2008). At each sample point, a soil pit was excavated. The determination of whether soils were hydric was based on hydric soil indicators, which are a function of soil texture, matrix color, and/or the presence of other hydric soil indicators such as redoximorphic features. Soil colors were classified according to the *Munsell Soil Color Charts* (Munsell 2000).

Hydric soil indicators used in this determination included hydrogen sulfide (A4) at the wetland with flowing water from hillside pipe (FE-1) and depleted matrix (F3) for the wetland within the floodplain of Alameda Creek (FE-2). The presence of standing water or saturated soil was present at each wetland feature.

2.2.4. Mapping of Other Waters

The lateral edge of Alameda Creek was mapped at the location of the OHWM. The OHWM is defined as "...the line on the [watercourse banks] established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR 328). The bank-to-bank extent of the

channel that contains the water-flow during a normal rainfall year generally serves as a good first approximation of the lateral limit of the OHWM. The upstream limit of non-tidal water features is defined as the point where the OHWM is no longer perceptible.

The location of OHWM for non-tidal water bodies under the Clean Water Act includes evaluating physical characteristics of the area that are determined to be reliable indications of the OHWM (USACE 2005). Physical evidence to be evaluated includes those items listed in 33 CFR 329.11 (a)(1) and including, but not limited, to:

Natural line impressed on bank
Shelving
Changes in the character of soil
Destruction of terrestrial vegetation
Presence of litter and debris
Wracking
Vegetation matted down, bent, or absent
Change in plant community
Sediment sorting
Leaf litter disturbed or washed away
Scour
Deposition
Multiple observed flow events
Bed and bank
Water staining

3.0 RESULTS

A total of approximately 1.8362 acres of potential waters of the US, including wetlands, were delineated within the 56.52 acres of the BSA. These features are illustrated in Appendix B and summarized in Table 3-1. Datasheets are included as Appendix C. Representative photographs of new areas of the current BSA are included in Appendix D.

The following section describes wetland and water feature types and vegetation communities that were observed within the additional BSA. Six terrestrial vegetation communities were mapped within the BSA (Appendix E). In addition to natural vegetation, the BSA contains a paved roadway (SR 84) and urban areas, which include landscaped and railroad areas. These vegetation and aquatic communities were classified using *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988), with the exception of one habitat (California bay/coast live oak forest) described by Sawyer and Keeler-Wolf in *A Manual of California Vegetation* (1997).

For these wetland and water features, a preliminary evaluation of jurisdiction is presented in Section 4.

3.1. Wetlands

Three wetland features, totaling approximately 0.0347 acre, were mapped in the 56.52 acres of the BSA (see Table 3-1). One wetland type occurs within the BSA: fresh emergent wetland. This wetland type is described further below.

3.1.1. Fresh Emergent Wetland

The fresh emergent wetland vegetation community is typically characterized by colonial hydrophytic vegetation in areas that are perennially wet, or inundated to the point of creating anaerobic soils. This category is synonymous with the ‘palustrine emergent wetland’ or ‘fresh emergent wetland’ defined in the jurisdictional delineation for this project. Dominant herbaceous species within the fresh emergent wetland in the BSA include panicled bulrush (*Scirpus microcarpus;* OBL) and narrow-leaf cattail (*Typha angustifolia;* OBL).

Wetland feature FE-1 is between a very steep hillside and the k-rail adjacent to SR-84 (Photos 1-3, Appendix D). Feature FE-1 is approximately 0.0082 acre. It is approximately 5 feet wide and 60 feet long. Within the five-foot by five-foot plot, the wetland is dominated by narrow-leaf cattail (OBL), which at the time of the site visit was partly submerged in standing water and is likely to remain submerged much of the year. The wetland is fed by running water from a pipe from the hillside, possibly a hillside seep

(Photo 4). The water is contained from overflowing into the road by the k-rail and two drainage inlets that outlet on the opposite side of SR-84 to Alameda Creek. Soils throughout the feature exhibited hydrogen sulfide odor (A4).

Wetland feature FE-2 was delineated in 2010 by the Caltrans Liaison (Appendix A) and includes wetland features east and west of the existing bridge. Feature FE-2 is approximately 0.0184 acre. Wetlands occur within the active creek channel east of the bridge at areas with large boulders and broken concrete and occur against the edges of the active creek channel east and west of the bridge. Dominant hydrophytic species include torrent sedge (*Carex nudata*; FACW) and common tule (*Schoenoplectus acutus*; OBL).

Wetland feature FE-3 is within the floodplain of Alameda Creek and is adjacent to a retaining wall for SR-84. It is approximately 0.0081 acre and is approximately 15 feet wide and 25 feet long (Photos 5 and 6, Appendix D). Within the five-foot by five-foot plot, the wetland is dominated by panicled bulrush (OBL). A large culvert outlet empties water into this wetland. The culvert crosses underneath SR-84 and the railroad and carries hillside water flow through the culvert to the wetland. A high water table and soil saturation were present within this wetland at the time of the survey. Soils were characterized by a depleted matrix (F3).

Table 3-1. Summary of Acreage of Wetlands and Waters within the 56.52 acres of the BSA (see Appendix B)

Feature Type	Feature Name	Area (acres)	Area (ft ^{2})
Intermittent creek	IC-1	0.0313	1,363
Perennial creek	PC-1	0.0225	978
	PC-2	0.2459	10,713
	PC-3	0.2788	12,144
	PC-4	0.2117	9,222
	PC-5	0.2569	11,191
	PC-6	0.0549	2,393
	PC-7	0.1240	5,400
	PC-8	0.5755	25,070
Total waters		**1.8015**	**78,474**
Fresh emergent wetlands	FE-1	0.0082	358
	FE-2	0.0184	802
	FE-3	0.0081	351
Total wetlands		**0.0347**	**1,511**
Total Waters of the U.S.		**1.8362**	**79,985**

3.2. Water Features

Nine water features, with a total area of 1.8049 acres, were mapped in the 56.52 acres of the BSA. The types of non-wetland water feature in the BSA are perennial creek (Alameda Creek) and intermittent creek (Stonybrook Creek).

3.2.1. Perennial Creek

The perennial creek (or riverine) is typically characterized by continually running water. The riverine community within the BSA is characterized as the active floodplain of Alameda Creek, including the cobble and boulder margins and islands within Alameda Creek. Perennial habitat consists of vegetation such as torrent sedge (*Carex nudata;* FACW) shadowed by over-story trees, including white alder (*Alnus rhombifolia;* FACW), Northern California black walnut (*Juglans hindsii;* FAC), Fremont cottonwood (*Populus fremontii;* NL), and California sycamore (*Platanus racemosa*; FAC). Tules, sedges (*Carex* spp.), and rushes (*Juncus* spp.), and a variety of strictly hydrophytic vegetation also occur within this habitat.

Perennial creek features (totaling 1.7702 acres) were mapped within the 56.52 acres of the BSA. SR-84 runs adjacent to Alameda Creek for much of Niles Canyon and crosses under SR-84 at two locations: Alameda Creek Bridge (BR # 33-0036) and the Alameda Creek Overhead (Bridge #33-0039). The two areas of the creek that pass under the bridges (PC-4 and PC-6) total 0.2666 acres and consist of flowing Alameda Creek. The other seven areas (PC-1 through PC-3, PC-5, PC-7, and PC-8) are areas of OHWM or active floodplain, which total 1.5036 acres. Common vegetation within OHWM included arroyo willow (FACW), red willow (FACW), California mugwort (*Artemisia douglasiana*; FAC), common rush (*Juncus* patens; FACW), torrent sedge (FACW), California sycamore (FAC), and white alder (FACW). The OHWM was identified by presence of wrack caught on standing vegetation and changes in substrate.

3.2.1. Intermittent Creek

One intermittent creek feature, totaling approximately 0.0313 acre, was mapped within the BSA. Intermittent creek features have a bed and bank, and appear to carry flows for several months of the year. These are relatively permanent water features that are fed by groundwater in the spring and early summer, in addition to carrying surface waters during the rainy season. These features do not appear to carry water year-round. This feature was not flowing at the time of survey.

Within the BSA Stonybrook Creek (IC-1) flows above ground north of SR-84 and just west of Palomares Road. It enters a culvert that flows under SR-84 into Alameda Creek (Photo 7, Appendix D). The overstory at Stonybrook Creek above ground north of SR-84 is primarily coast live oak.

3.3. Land Cover Vegetation Types

In addition to the wetlands and water features discussed above, the following land cover vegetation types were observed within the 56.52 acres of the BSA during the survey (Appendix E).

3.3.1. Annual grassland

CDFW's *Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988) describes annual grasslands as a compilation of exotic grass species derived from Europe and introduced during the North American settlement of the late 1800s. Common annual grass species include various brome species (*Bromus* spp.), wild oats (*Avena fatua*), and foxtail barley (*Hordeum murinum*). Common forbs include broadleaf filaree (*Erodium botrys*), redstem filaree (*Erodium cicutarium*), bur clover (*Medicago polymorpha*), and

popcorn flower (*Plagiobothrys* spp.). It sometimes includes remnants of native perennial grasses, and often includes a diverse assemblage of native annual forbs (wildflowers).

California annual grasslands are found in small sections throughout the BSA adjacent to the roadside or in patches between coast live oak woodland, disturbed sites along SR 84, and steep hillsides. Common non-native grass species in these patches include various brome species (*Bromus* spp.), wild oats (*Avena fatua*), Italian ryegrass (*Festuca perennis*), and Smilograss (*Piptatherum miliaceum*). Annual grassland comprises 1.560 acres of the BSA.

3.3.2. California bay/coast live oak

California bay/coast live oak forest is an uncommon hardwood habitat comprised of a pronounced hardwood layer dominated by California bay (*Umbellularia californica*) and coast live oak (*Quercus agrifolia*). This upland hardwood community is typically found on north- and west-facing slopes with soils derived from sandstone. Understory vegetation is mostly scattered woody shrubs such as poison oak (*Toxicodendron diversilobum*), mountain mahogany (*Cercocarpus montanus*), manzanita (*Arctostaphylos* spp.), and ceanothus (*Ceanothus* spp.). Most large stands of this habitat have been cut and cleared for urban uses such as agriculture and housing over the past century.

The California bay/coast live oak forest habitat occurs throughout the western and central portions of the BSA dominating the north- and west-facing slopes. Buckeye (*Aesculus californica*) is a common tree associate in this habitat. Poison oak, ocean spray (*Holodiscus discolor*), honeysuckle (*Lonicera hispidula*), and snowberry (*Symphoricarpos* spp.) were common understory associates. Approximately 3.42 acres of this habitat occurs within the limits of the BSA.

3.3.3. Coastal Scrub

Coastal scrub is the dominant vegetation community on the south-facing hills within the BSA. Two dominant species of coastal scrub within the BSA are coyote brush (*Baccharis pilularis*) and California buckwheat (*Eriogonum fasciculatum*). Coyote brush, common in more recently disturbed sites, is found in the ecotones between California bay/coast live oak and annual grasslands. Associate species include non-native grasses and small forbs. California buckwheat is found on rocky, steep slopes. Patches of the California buckwheat scrub are found in the western boundary of the BSA, north of SR 84. Common species in this area include sticky monkey flower (*Mimulus aurantiacus*) and poison oak. Coastal scrub comprises approximately 4.37 acres of the BSA.

3.3.4. Valley foothill riparian

The valley foothill riparian community within the BSA is characterized by mature riparian forest with 40 to 80 percent canopy cover, often dominated by winter deciduous trees. The majority of the community occurs along the edges of Alameda Creek throughout the western and central portions of the BSA. Dominant over-story species include California sycamore (*Platanus racemosa*), Fremont's cottonwood (*Populus fremontii*), big leaf maple (*Acer macrophyllum*), and white alder (*Alnus rhombifolia*). Sub-canopy species include arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), and narrowleaf willow (*Salix exigua*). Understory species include poison oak, Himalayan blackberry (*Rubus armeniacus*), and wild grape (*Vitis californica*). Valley foothill riparian comprises approximately 6.27 acres of the BSA.

4.0 PRELIMINARY REVIEW OF USACE JURISDICTION

Wetlands and other waters delineated in this report are potentially subject to a variety of state and federal regulations, including the federal CWA, Rivers and Harbors Act, California Fish and Wildlife Code, California's Porter-Cologne Water Quality Act, and McAteer-Petris Act.

Wetlands and other waters addressed in this report include waters of the U.S. subject to the CWA as defined below.

4.1. Definitions of Wetlands and Other Waters of the United States

The federal government, through Section 404 of the CWA and Section 10 of the Rivers and Harbors Act, has jurisdiction over activities in waters of the US. Waters of the US include a variety of water features, including wetlands, navigable waters, and other aquatic features adjacent or tributary to navigable waters.

As used in this report, wetlands are defined based on federal regulations as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (USACE 1987). Swamps, marshes, and bogs are defined as wetlands, as are seasonally saturated or inundated areas such as seeps, springs, and vernal pools. Any wetland and other waters meeting the following criteria as described in 33 CFR 328.3 were preliminarily determined to be waters of the U.S.:

1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters, which are subject to the ebb and flow of the tide;
2) All interstate waters including interstate wetlands;
3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

    a) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

    b) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

c) Which are used or could be used for industrial purpose by industries in interstate commerce;

4) All impoundments of waters otherwise defined as waters of the US under the definition;

5) Tributaries of waters identified in paragraphs (a) (1) through (4) of this section;

6) The territorial seas;

7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1) through (6) of this section.

In accordance with USACE in the "*Rapanos* Guidance" (USACE 2007), the criteria for determining whether features meet the definition of waters of the US include the following:

1) Traditionally navigable waters (TNWs), including territorial seas
2) Wetlands adjacent to TNWs
3) Relatively permanent waters (RPWs). RPWs are tributaries that are not TNWs that typically flow perennially or have continuous flow at least seasonally (e.g. typically at least 3 months of the year). Tributaries are waters that flow directly or indirectly into TNWs
4) Non-RPWs that have a significant nexus finding. Non-RPWs are tributaries that have brief ephemeral flow that would not be considered seasonal (e.g. typically less than 3 months of the year)
5) Wetlands directly abutting RPWs
6) Wetlands adjacent to but not directly abutting RPWs that have a significant nexus finding
7) Wetlands adjacent to non-RPWs that have a significant nexus finding
8) Impoundments of otherwise jurisdictional waters
9) Interstate waters including interstate wetlands
10) Waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce
11) Waters that if degraded or destroyed could affect interstate or foreign commerce
12) Isolated (interstate or intrastate) waters, including isolated wetlands if the USACE Headquarters asserts CWA jurisdiction based on the process described in the Corps/EPA Memorandum Regarding CWA Jurisdiction Following *Rapanos* (USACE 2007).

The *Rapanos* guidance does not broaden or narrow CWA jurisdiction compared with CWA jurisdiction asserted by USACE before the *Rapanos* decision. The guidance reflects the scope of CWA jurisdiction enunciated by the US Supreme Court in *Rapanos*. The guidance, based on the *Rapanos* decision, discusses the application of new analytical standards, plus a greater level of documentation, to support an agency finding that there is the presence or absence of CWA jurisdiction over a particular water body (USACE 2007). The USACE typically asserts jurisdiction over all wetland and water features that have a surface hydrologic connection with a TNW or that are separated from the tributary system by short distances (as occurs with vernal pools in undulating grassland). As a result of the *Rapanos* decision, the USACE must demonstrate and document CWA jurisdiction over non-RPWs and adjacent wetlands as well as wetlands adjacent to but not directly abutting RPWs (USACE 2007).

4.2. Definition of Waters of the State

Wetlands and waters meeting the definition as described in the Porter-Cologne Water Quality Control Act (California Water Code, Division 7, §13050(e)) were preliminarily determined to be waters of the state. This document defines "waters of the state" as any surface water or groundwater, including saline waters, within the boundaries of the state.

All wetland and water features mapped within the 56.40 acres of the BSA likely qualify as Waters of the state. All features are depicted on a map in Appendix B.

4.3. Preliminary CWA Jurisdictional Determination

Eight water features mapped within the BSA (PC-1 through PC-9) are known as Alameda Creek and one water feature mapped within the BSA is known as Stonybrook Creek (USFWS NWI 2014). Alameda Creek and its active floodplain, which total 1.7702 acres within the 56.52 acres of the BSA, are assumed to be jurisdictional, having connectivity with navigable waters (South San Francisco Bay). Stonybrook Creek, which totals 0.0313 acre, is assumed to be jurisdictional since it is a known tributary to Alameda Creek. Features FE-1, FE-2, and FE-3 are fresh emergent wetlands (totaling 0.0347 acre). FE-1 drains to Alameda Creek via two drainage inlets and a culvert. FE-2 wetland areas are within and along the active channel of Alameda Creek. FE-3 is within the floodplain of Alameda Creek. Because each of these wetlands is hydrologically connected to Alameda Creek, each is proposed to be jurisdictional. The total jurisdictional acreage, including wetlands, in the BSA is proposed to be approximately 1.8362 acres. Details are presented in Tables 3-1.

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Appendix A:
2010 Revised Preliminary Jurisdictional Determination Package

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November 30, 2010

Jane Hicks, Caltrans Liaison
United States Army Corps of Engineers
1455 Market Street, 16th Floor P.O. Box 47
San Francisco, California 94103-1398

Attn: Andrea Meier

Subject: Alameda Creek Bridge Replacement Project Revised Wetland Delineation Map

Dear Ms. Meier:

The California Department of Transportation (Caltrans) is pleased to present the enclosed Jurisdictional Waters of the United States map. The map shows the revised wetland boundaries for the Alameda Creek Bridge Replacement Project (EA 160300) as requested by Mr. Hal Durio of the United States Army Corps of Engineers (USACOE) in a September 2010 email.

Should you have any questions regarding this submittal, please contact Ms. Margaret Gabil, Senior Environmental Planner at (510) 286-5506.

Sincerely,

JEFFREY G. JENSEN
District Office Chief
Office of Biological Sciences and Permits

Enclosures: Jurisdictional Waters of the United States Map
September 2010 email and

Bcc: chronological file
county file
electronic File

Site Assessment

ALA SR 84 Alameda Creek Bridge Replacement Project
Alameda County State Route 84, PM 13.1 / 13.6
California Department of Transportation

Caltrans Project EA: 04-16030_ **USACE File Number: 2010-00203S**

Project ..... ALA 84 Alameda Creek Bridge Replacement Project
Applicant..... California Department of Transportation
Project Location..... Alameda County on State Route 84 , Post Mile 13.1 / 13.6
Project Manager (Corps)..... Hal Durio
Caltrans Senior..... John Yeakel (510) 286 5681 john_yeakel@dot.ca.gov
Caltrans Biologist ..... Decie Boone (510) 286 5667 decie_boone@dot.ca.gov
Caltrans Consultant .....
Request for JD ..... April 9, 2010
Permit Application Received..... Permit for Geotechnical Investigations received Aug 18, 2010
USFWS BO ..... XXX to be completed later XXXX
NMFS ..... No BO required from NMFS
RWQCB 401 Certification..... Application applied for, not received at this time
Field Verification..... August 30 and September 6, 2010
Office Verification:..... not yet
Jurisdictional Letter sent..... not yet
Permit Letter sent..... XXX to be completed later XXX
Starting Lat/Long..... Lat: 37.5977 N, Long: -121.94347 W
Ending Lat/Long..... Lat: 37.5953 N; Long: -121.93819 W

Field Delineation:

Field Delineation by Caltrans consultants on June 10 and 11, 2009. Verification by Hal Durio, USACE on August 30 and September 6, 2010..

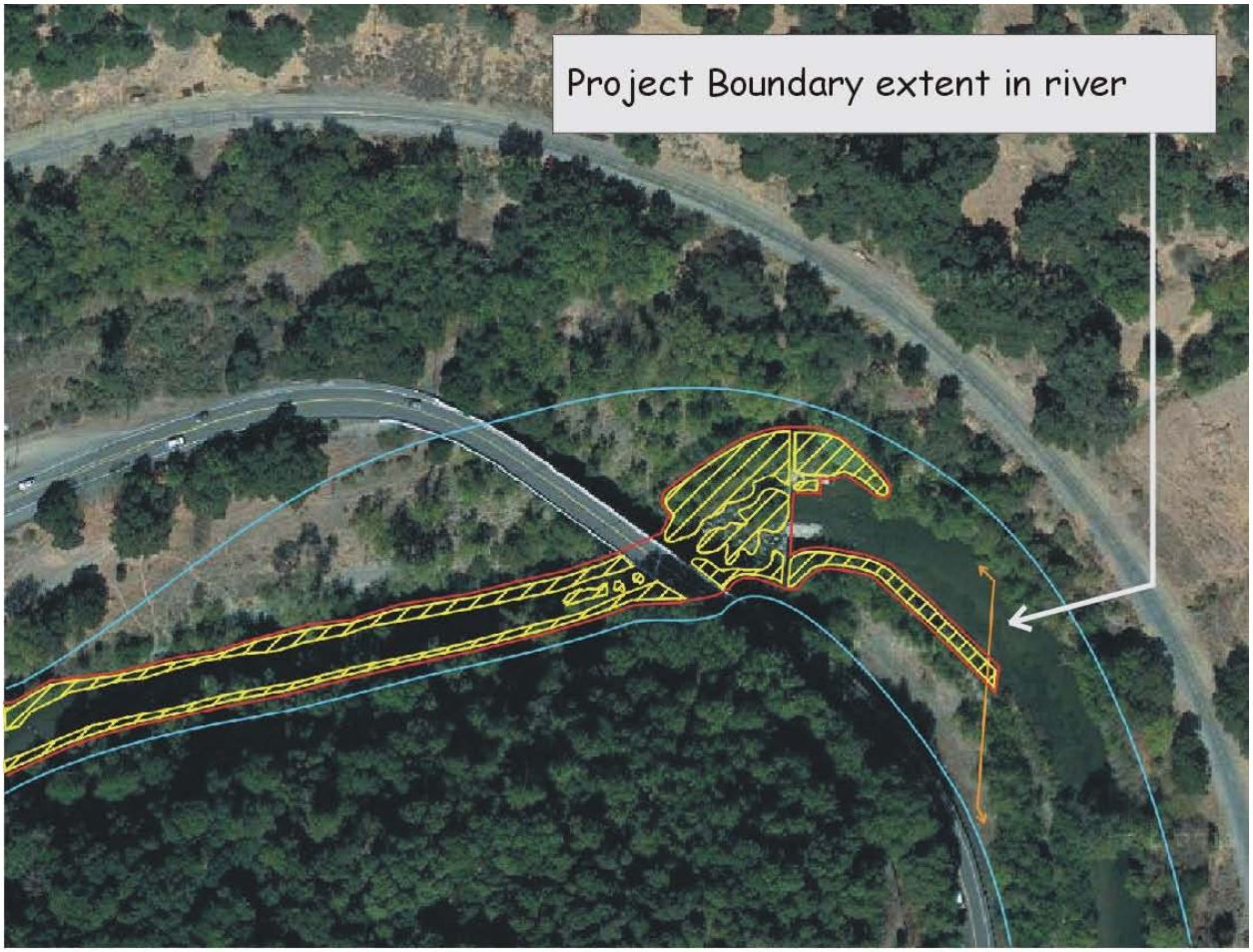
Project Manager

Hal Durio, Caltrans Liaison at the Corps

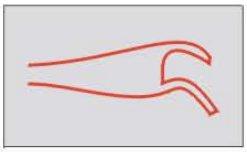
Caltrans Mailing Address:

Mr. Jeffrey G. Jensen
California Department of Transportation
Office of Biological Sciences & Permits
PO Box 23660
Oakland, California 94623-0660

Figure 1 shows the Corps of Engineers Jurisdiction at the Alameda Creek Bridge**.**



OHW (ordinary high water)The blue lines mark the extent of Corps jurisdiction. These lines mark the Corps definition of the OHW which is the extent of the Creek's influence on the landscape. These lines can change from year to year and they are somewhat judgemental, based upon fluvial deposits and debris caught in the trees.



Special Aquatic Site: The red lines mark the area considered Special Auqatic Sites which, include wetlands and Riffle and Pool Complexes. Between the red lines, everything that is not marked as wetland is considered Riffle and Pool Complex.

Wetland: The yellow hashed areas are considered wetlands.

Water Body Information / Site Assessment:

Alameda Creek is a perennial creek that flows in most years all year with a very high capacity because it is supplied by an approximate 700 square mile watershed which all collects in the area of Sunol and flows through Niles Canyon (referred to as the canyon) to the East Bay, emerging from the canyon by the city of Fremont. Because it flows at a high capacity all year it has well developed wetlands along it banks at most sites throuth the canyon. .

The Alameda Creek Bridge is located 2410 feet east of the Palomares Road intersection. On the east side of the existing bridge there are two concrete pads and a low berm approximately 120 feet long left after the romoval of an older bridge. The berm acts as a dam creating a wide shallow sandy bottom creek up river and a fast moving creek with large rocks and boulders downriver creating a riffle and pool complex for approximately 500 feet below the berm. At the end of the riffle and pool complex are deep pools which appeared to be 6 to 10 feet deep.

The existing bridge and the proposed new bridge will pass over the riffle and pool comples. The entire project area that corsses Alameda Creek will either be crossing wetland habitat or riffle and pool habitat which, is considered a special aquatic site (40 CFR Part 230.45) and therefore regulated just as a wetland is regulated.

The following site assessment will use **Figure 2** below as a reference to show the locations of the sites being discussed. Photographs will also be used to show some of the features.

Site 1 Alameda Creek Upstream of Brem: [area within project boundary is approximately 0.2 acres. Lat/Long = 37.5986/-121.93837]. From the berm (apparently built as part of the old bridge) upriver for about 930 feet, the river is wide with a flat gravelly sandy bottom. The margins of the river for the most part are held at a constant level because of the berm. The edges of the creek are lined with emmergent wetland vegetation dominated by the common willows, arroyo willow (*Salix lasiolepis*), red willow (*S. laevigata*) and narrow-leaved willow (*S. exigua*), common tule (*Schoenoplectus acutus*), broadfruit bur reed (*Sparganium eurycarpum*), torrent sedge (*Carex nudata),* scouring rush (*Equisetum laevigatum*), giant horsetail (*Equisetum telmateia ssp. braunii*), water primrose (*Ludwigia peploides*) and occasionally cattails (the species identified was southern cattail (*Typha domingensis*) but it is suspected that broad-leaf cattail (*T. latifolia*) and narrow-leaved cattail (*T. angustifolia*) are also present at places along the creek). Also commonly present are the tree species white alder (*Alnus rhombifolia*), California sycamore (*Platanus racemosa*) and cottonwood (*Populus fremonti*). Common species on the sandbars and open riparian beside the willows are mule fat (*Baccharis salicifolia*), mugwort (*Artemisia douglasiana*), western goldenrod (*Euthamia occidentalis*), cocklebur (*Xanthiuim strumarium*) and California wild grape (*Vitis californica*) (**see Figure 3**).

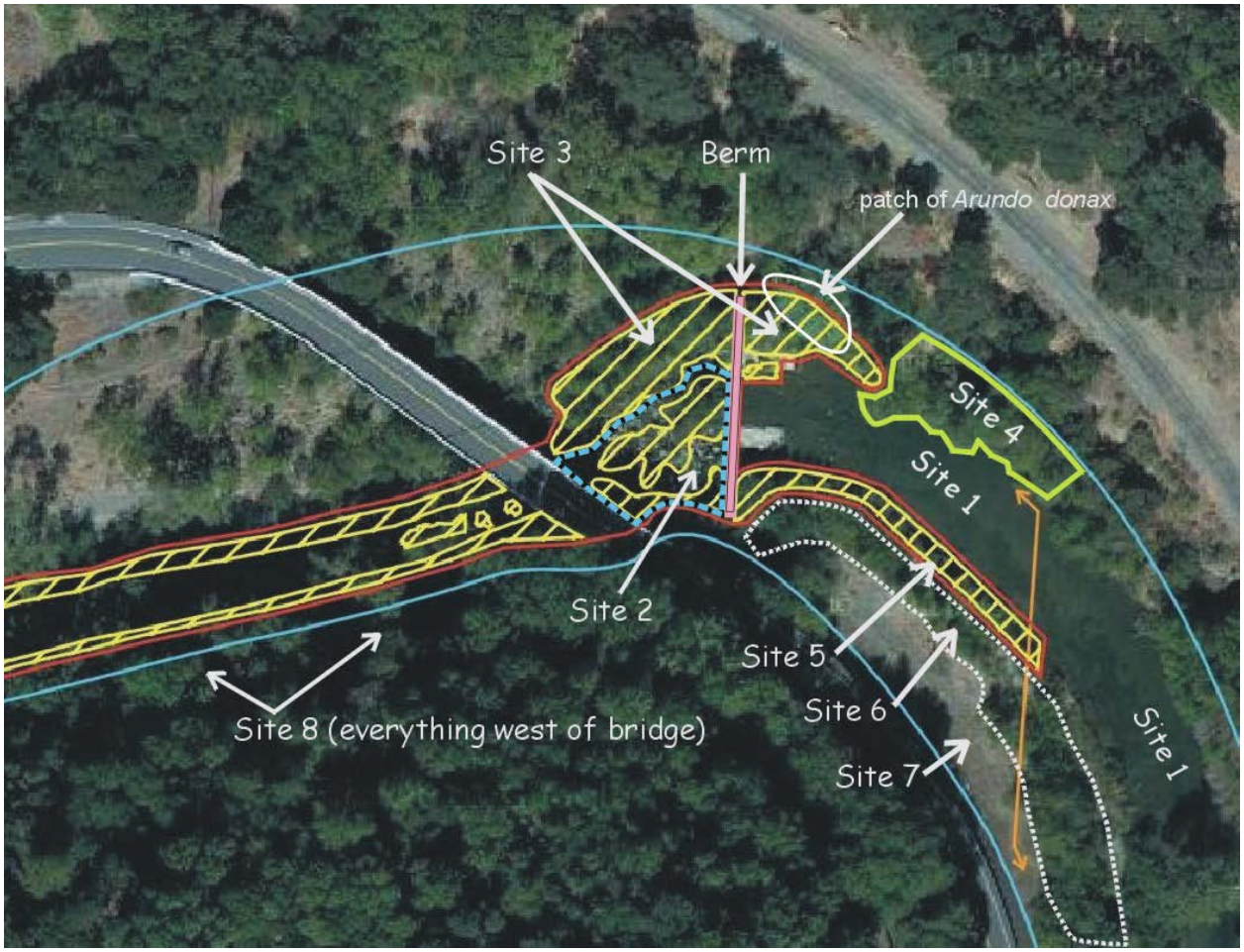
Site 2A Wetland within River bwtween Berm and Bridge: [area approximately .07 areas, Lat/Long = 37.5985/-121.93869]: From the berm to the existing bridge the creek goes form being about 120 feet wide at the berm to about 50 feet wide at the bridge. From the berm to the bridge is approximately 110 feet. This area is full of large boulders and what appears to be large pieces of broken concrete which was probably left on site when the old bridge was demolished. This entire area forms a large triangle of fast moving water that forms a riffle and pool complex with associated wetland, some of which are islands and some are against the south shore. .

The dominent species that make up the wetland areas within and at the edges of the riffle and pool complex are willow, bul rush, torrent sedge, cottenwoods and white alder (see **Figure 5** & **6**).

Site 2B Riffle and Pool Waters: [area is approximately .105 acre, lat/long = 37.5985/-121.93869]: This area is described in the paragraph under Site 2A.

Site 3 Riparian Wetland Floodplain [area is approximately .126 acre and the latitude / longitude = 37.5987/-121.9387]: This site is on the north bank of the creek in the area just upriver of the of the old bridge piles and berm and downriver to the existing bridge. The area is about 170 feet long and 50 feet wide. The elevation is just above the normal flow level which is set by the berm at this point in the river. During the periods of higher flow this area becomes inundated. Along the banks there are large boulders that support a wetland river edge of mostly torrent sedge, common tule (bulrush) and willow (see **Figure 6**). Beyond the immediate bank there is a thicket of willows and smooth scouring rush sitting on saturated soils. All of this area is wetland (see **Figure 10**).

Figure 2 shows the locations of the different **Sites** discussed in this site assessment document.



Site 4 Riparian within the Floodplain [area is approximately .05 acres, the latitude / longitude is 37.5986/-121.9381]: On the north bank of the creek for about 70 feet above (west of) the berm there are riparian trees that overhand the bank In this area the bank is fairly steep and the OHW level is not far from the edge of the normal water level (normal water level is set by the berm). There is no or very little development of wetland vegetation under the overhanging trees. The species of the riparian in this area are willows, conntowoods, white alder and California sycamores.

Site 5 Wetland Strip South side of Creek East of Berm [area is approximately .04 acres, the latitude/longitude is 37.5984/-121.9382]: On the south side of Alameda Creek above the berm there is a 5 to 10 foot wide wetland fringe at the edge of the river. The species that make up the wetland are broadfruit bur reed, common tule, and narrow-leaved willow. On the north side of Alameda Creek there is a simialr wetland (**Figure 4** shows wetland along the south shore of river above the berm).

Site 6 Willow Riparian Area Upland [the area is approximately .15 acres, the latitude and longitude = 37.5983/-121.9382]: Behind the site 5 wetland there is a narrow band of riparian willows (mostly red willow and arroyo willow) on an eleveated sand bar which is not a wetland (see left side of **Figure 9**)

Site 7 Open Floodplain within the OHWM [area is approximately 0.11 acres, the latitude / longitude is 37.5981/-121.9381]: This site is an open sandbar that is approximately 55 feet wide. It is located between the highway and the ridge of willows that make up site 6. This site will be inundated during high water but the site is not a wetland. The vegetation on this part of the sandbar is sparse and dominated by smilo grass (*Piptatherum miliaceum*) (see **Figure 9**).

Site 8A Alameda Creek Riffle and Pool Waters West of Bridge [area of Riffle and Pool is approximately 0.12 acres, latitude and longitude is 37.5983/-121.9394]: West of the bridge the creek is lined with mostly torrent sedge but with some willows, western goldenrod, and broadfruit bur reed. By the bridge there are some wetland islands in the creek consisting of the same species. The open water is all riffle and pool complex and at the end of the riffle and pool complex there are some pools that are 6 to 10 feet deep (not within project boundary) (**Figure 7** & **8**).

Site 8B Alameda Creek Wetlands (edges and islands) [area of the wetlands is 0.075 acre, the latitude and longitude is 37.5983/-121.9394]. This area is described in the above paragraph labled Site 8A.

Figure 3 shows the wide river with the flat shallow gravelly sand bottom described in Site 1. The wetlands on both sites of the river above the berm (site 5) and the large wetland in the center of the photo is in the center of the river in the riffle and pool area (Site 2). The Alameda Creek Bridge is also seen in the photo.

Figure 4 shows the wetland lining the south shore of Alameda Creek above the berm which, is seen on the far right of the photo (Site 5).

Figure 5 shows the large wetland area in the center of the Riffle and Pool complex below the berm which, is seen on the far right side of the photo (Site2).

Figure 6 is looking up river from under the bridge at site 3 on the left and site 2 on the right side of the photo.

Figure 7 is looking at Site 8 down river from the south shore below the bridge. The photo shows the broadfruit bur reed and torrent sedge on the south shore and the island wetlands in the riffle and pool area downstream of the bridge.

Figure 8 is a good view looking upriver at the wetlands on both shores of Alameda Creek as well as the island wetlands within the riffle and pool complex (Site 8).

Figure 9 is a view of the open sandbar between the riparian willows on the left that are referred to as Site 6 in Figure 2 and the retaining wall supporting the highway on the right. The dominant vegetation on this sandbar is smilo grass (*Piptatherum miliaceum*).

Figure 10 shows the willows and smooth scouring rush that make up the willow thicket wetland referred to as Site 3. Note last season's scouring rush plant lying on the ground in the flow direction beneath this year's plants. The soils were saturated on August 30, 2010.

List of Plant Species Recorded on August 31 and September 6, 2010.
State Route 84, Alameda Creek Bridge Replacement Project at Post Mile 13.1 / 13.7
List recorded by Hal Durio (updated September 18, 2010)

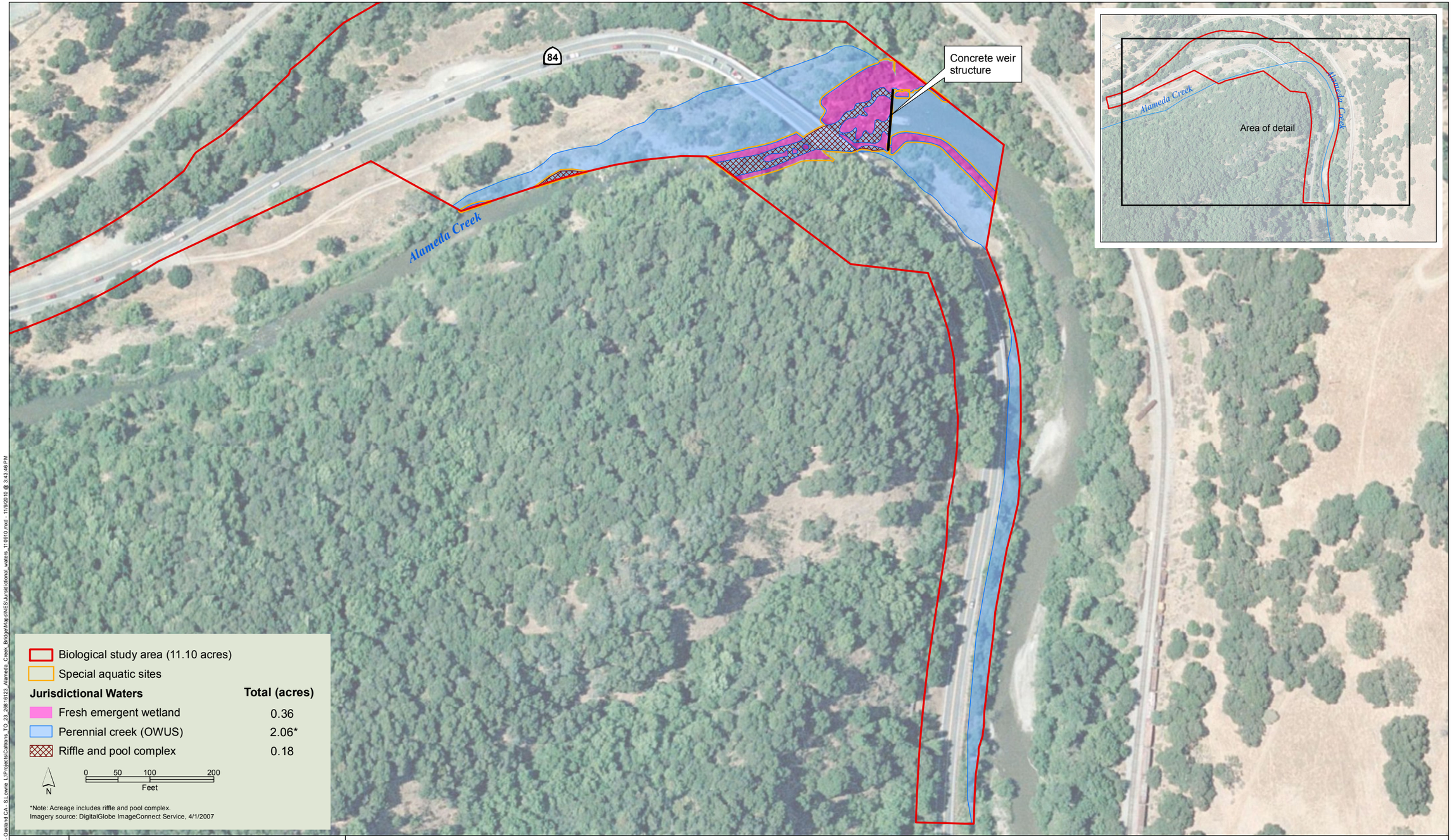
SPECIES	COMMON NAME	INDICATOR STATUS	FAMILY	NATIVE STATUS	NOTES
Acer macrophylla	Big-leaf Maple	FAC	Aceraceae	N	Riparian community
Acer negundo var californicum	Box Elder	FACW	Aceraceae	N	Riparian community
Alnus rhombifolia	White Alder	FACW	Betulaceae	N	Riparian and in river or edge
Ambrosia psilostachya	Western Ragweed	FAC	Asteraceae	N	Open disturbed upland areas
Artemisia douglasiana	Mugwort	FACW	Asteraceae	N	Riparian and edge communities
Arundo donax	Giant Reed	FACW	Poaceae	Eur	riparian by the berm north side
Avena barbata	Slender Wild Oats	NI	Poaceae	sEur	Open disturbed grassland
Baccharis pilularis	coyote brush	NI	Asteraceae	N	Uplands and riparian
Baccharis pilularis	coyote brush	NI	Asteraceae	N	sand bar, sandy floodplain
Baccharis salicifolia	mule fat	FACW	Asteraceae	N	Floodplain
Carduus pycnocephalus	Italian Thistle	NI	Asteraceae	Med	sand bar, sandy floodplain
Carex nudata	Torrent sedge	FACW	Cyperaceae	N	Creek banks and on top of rocks
Conium maculatum	Poison Hemlock	FACW	Apiaceae	Eur	Disturbed floodplain
Cynodon dactylon	Bermuda Grass	FAC	Poaceae	Afr	Open riparian and upland
Dittrichia graveolens	stinkwort, stink aster	no record	Asteraceae	Afr	sand bar, sandy floodplain
Echinochloa crus-galli	Barnyard Grass	FACW	Poaceae	EurA	Sandy floodplain
Elymus glaucus	Blue Wild Rye	FACU	Poaceae	N	Edge of floodplain, sandy soil.
Equisetum laevigatum	Smooth Scouring Rush	FACW	Equisetaceae	N	Sandy floodplain and riparian, also sandy shade under bridge
Equisetum telmateia ssp. braunii	Giant Horsetail	OBL	Equisetaceae	N	Riparian understory
Eucalyptus sp.	Eucalyptus	NI	Myrtaceae	Aus	Here and there
Eucalyptus sp.	Eucalyptus	NI	Myrtaceae	Aus	sand bar, sandy floodplain
Euthamia occidentalis	western goldenrod	OBL	Asteraceae	N	Freshwater river edges, riparian and riparian understory
Foeniculum vulgare	Sweet fennel	FACU-	Apiaceae	sEur	sand bar, sandy floodplain
Fraxinus latifolia	Origon Ash	FACW	Oleaceae	N	Riparian and river edge
Kickxia elatine	fluellin (sharp-point)	NI*	Scrophulariaceae	Eur	Sandy floodplain
Lotus corniculatus	Birdfoot Trefoil (deerweed)	FAC	Fabaceae	EurA	Open upland & open sandy floodplain
Ludwigia peploides	Water Primrose also Floating Seedbox	OBL	Onagraceae	N	Calm spots in creek and edge of creek
Melilotus alba	White Sweetclover	FACU+	Fabaceae	EurA	Disturbed upland & floodplain
Mentha arvensis	Field mint	FACW	Lamiaceae	N	Shaded riparian on floodplain
Mentha spicata var. spicata	spearmint	OBL	Lamiaceae	Eur	Edge of creek on floodplain and moist shaded riparian
Myriophyllum sp	water milfoil	OBL	Haloragaceae		Slow shallow water of creek
Phalaris aquatica	Harding Grass	FAC+	Poaceae	MEur	fields, disturbed areas, usually low moist bun not wet areas
Phyla nodiflora (Lippia)	Lippia, mattgrass	FACW	Verbenaceae	N	Sandy open floodplain
Physocarpus capitatus	western ninebark	FACW	Rosaceae	N	North facing woodland sloped banks, west of the bridge
Piptatherum miliaceum	Smilo Grass	NI	Poaceae	EurA	disturbed areas on floodplain

SPECIES	COMMON NAME	INDICATOR STATUS	FAMILY	NATIVE STATUS	NOTES
Platanus racemosa	Calif. sycamore	FACW	Platanaceae	N	Component of riparian woodland
Polygonum punctatum	Perennial Smartweed [white c punctate glands]	OBL	Polygonaceae	N	Openings on sandy floodplain
Polypogon monspeliensis	Rabbitfoot Grass	FACW+	Poaceae	Eur	Creek edge, sandy floodplain
Populus fremonti	Fremont Cottonwood	FACW	Salicaceae	N	Component of riparian woodland, creek edge
Rubus discolor	Himalayan Blackberry	FACW*	Rosaceae	EurA	Floodplain, riparian, creek edge
Rubus ursinus	Calif. blackberry	FAC+	Rosacea	N	Floodplain, riparian, creek edge
Salix exigua	Narrow-leaved willow	OBL	Salicaceae	N	Creek edge, floodplain
Salix laevigata	red willow	FACW+	Salicaceae	N	Creek edge, floodplain
Salix lasiolepis	arroyo willow	FACW	Salicaceae	N	Creek edge, floodplain
Schoenoplectus acutus var. occidentalis (Scirpus)	Common Tule ☐	OBL	Cyperaceae	N	Creek edge, floodplain, riparian understory
Sparganium eurycarpum	Broadfruit bur reed	OBL	Typhaceae	N	Creek edge, shallow areas in riffle and pool complex
Toxicodendron diversilobum	Poison Oak	NI	Anacardiaceae	N	Upland woodland, upper floodplain
Typha domingensis	Southern Cattail	OBL	Typhaceae	N	Creek edge
Typha sp.	Cattail	OBL	Typha	N	Creek edge
Vitis californica	California wild grape	FACW	Vitaceae	N	Creek edge, riparian, north facing slope woodlands
Xanthium strumarium	Cocklebur	FAC+	Asteraceae	N	Sandy floodplain,

Key: **Afr** = Africa; **Aus** = Australia; **Eur** = Europe; **EurA** = Eurasia; **sEur** = southern Europe; **MEur =** Mediterranian Europe [Medit. area of Europe]

Hal Durio

Project Manager: Hal Durio Date: Dec. 3, 2010



State Route 84 Bridge Replacement Project
Alameda County, State Route84, PM 13.1 - 13.7 - Caltrans EA 160300

Figure 1
Jurisdictional Waters of the U.S.

URS Corp - Oakland CA - SLowe L:\Projects\Caltrans_TO_23_2818123_Alameda_Creek_Bridge\Maps\NES\Jurisdictional_waters_110910.mxd - 11/9/2010 @ 3:43:46 PM

PRELIMINARY JURISDICTIONAL DETERMINATION FORM
San Francisco District

This Preliminary Jurisdictional Determination finds that there *"may be"* waters of the United States in the subject review area and identifies all such aquatic features, based on the following information:

Regulatory Division: South Branch **File Number**: SPN-2010-203S **PJD Completion Date**: 15-Dec-2010

Review Area Location
City/County: Alameda State: California
Nearest Named Waterbody: Alameda Creek
Approximate Center Coordinates of Review Area
Latitude (degree decimal format): 37.5977°N
Longitude (degree decimal format): -121.94347°W
Approximate Total Acreage of Review Area: 10.84 acres

File Name: SR 84 Alameda Creek Bridge Replacement

Applicant or Requestor Information
Name: Jeffrey Jensen
Company Name: Calif. Dept. of Transportation
Street/P.O. Box: PO Box 23660
City/State/Zip Code: Oakland, CA 94623-0660

Estimated Total Amount of Waters in Review Area

Non-Wetland Waters: lineal feet feet wide and/or
2.06 acre(s) Flow Regime: Perennial

Wetlands: lineal feet feet wide and/or
0.36 acre(s) Cowardin Class: Riverine

Name of Section 10 Waters Occurring in Review Area
Tidal:
Non-Tidal:

☒ Office (Desk) Determination
☒ Field Determination:
Date(s) of Site Visit(s): 06-Sep-2010

SUPPORTING DATA: Data reviewed for Preliminary JD (check all that apply – checked items should be included in case file and, where checked and requested, appropriately reference sources below)

☒ Maps. Plans, plots or plat submitted by or on behalf of applicant/requestor (specify): "Preliminary Jurisdictional Determination, State Route 84 Alameda Creek Bridge Replacement Project", approved by our office on December 15, 2010.

☐ Data sheets submitted by or on behalf of applicant/requestor (specify):

- ☐ Corps concurs with data sheets/delineation report.
- ☐ Corps does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps.
☐ Corps navigable waters' study (specify):
☐ U.S. Geological Survey Hydrologic Atlas:
- ☐ USGS NHD data.
- ☐ USGS HUC maps.

☐ U.S. Geological Survey map(s) (cite quad name/scale):
☐ USDA Natural Resources Conservation Service Soil Survey.
☐ National wetlands inventory map(s) (specify):
☐ State/Local wetland inventory map(s) (specify):
☐ FEMA/FIRM maps.
☐ 100-year Floodplain Elevation (specify, if known):
☒ Photographs: ☐ Aerial (specify name and date):
☒ Other (specify name and date): Site photos taken by Hal Durio on 30-Aug-2010 and 16-Sep-2010
☐ Previous JD determination(s) (specify File No. and date of response letter):
☒ Other information (specify): Site assessment prepared by Hal Durio dated December 3, 2010

IMPORTANT NOTE: If the information recorded on this form has not been verified by the Corps, the form should not be relied upon for later jurisdictional determinations.

Amara Mein 12/15/10

Signature and Date of Regulatory Project Manager (REQUIRED)

Signature and Date of Person Requesting Preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

mOc - 2/2-3/10

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET, 16TH FLOOR
SAN FRANCISCO, CALIFORNIA 94103-1398

REPLY TO
ATTENTION OF

DEC 22 2010

Regulatory Division

Subject: File No. SPN-2010-00203 S

Mr. Jeffrey Jensen
Office of Biological Sciences and Permits
California Department of Transportation, District 4
P.O. Box 23660
Oakland, California 94623-0600

Dear Mr. Jensen:

This correspondence is in reference to your submittal of April 26, 2010, requesting a preliminary jurisdictional determination of the extent of waters of the United States within the 10.84-acre biological study area of the State Route 84 Alameda Creek Bridge Replacement Project in Alameda County, California. The site is located between post mile 13.1 and 13.7 on State Route 84 in Niles Canyon, east of Fremont, California.

The enclosed delineation map entitled, "U.S. Army Corps of Engineers, San Francisco District, Regulatory Division, Preliminary Jurisdictional Determination, California Department of Transportation, District 4, State Route 84 Alameda Creek Bridge Replacement Project", certified on December 15, 2010, depicts the extent and location of wetlands and other waters of the United States within the boundary area of the site that **may be** subject to U.S. Army Corps of Engineers' regulatory authority under Section 404 of the Clean Water Act. This preliminary jurisdictional determination is based on the current conditions of the site, as verified during a field investigation on August 30, 2010 and September 6, 2010, and a review of other data included in your submittal. While this preliminary jurisdictional determination was conducted pursuant to Regulatory Guidance Letter No. 08-02, *Jurisdictional Determinations*, it may be subject to future revision if new information or a change in field conditions becomes subsequently apparent. The basis for this preliminary jurisdictional determination is fully explained in the enclosed *Preliminary Jurisdictional Determination Form*. You are requested to sign and date this form and return it to this office within two (2) weeks of receipt.

You are advised that the preliminary jurisdictional determination may **not** be appealed through the U.S. Army Corps of Engineers' *Administrative Appeal Process*, as described in 33 C.F.R. Section 331 (65 Fed. Reg. 16,486; Mar. 28, 2000). Under the provisions of 33 C.F.R Section 331.5(b)(9), non-appealable actions include preliminary jurisdictional determinations since they are considered to be only advisory in nature and make no definitive conclusions on the jurisdictional status of the water bodies in question. However, you may request this office to provide an approved jurisdictional determination that precisely identifies the scope of

jurisdictional waters on the site; an approved jurisdictional determination may be appealed through the *Administrative Appeal Process*. If you anticipate requesting an approved jurisdictional determination at some future date, you are advised not to engage in any on-site grading or other construction activity in the interim to avoid potential violations and penalties under Section 404 of the Clean Water Act. Finally, you may provide this office new information for further consideration and request a reevaluation of this preliminary jurisdictional determination.

You may refer any questions on this matter to Andrea Meier of my Regulatory staff by telephone at (415) 503-6798 or by e-mail at andrea.j.meier@usace.army.mil. All correspondence should be addressed to the Regulatory Division, South Branch, referencing the file number at the head of this letter.

The San Francisco District is committed to improving service to our customers. My Regulatory staff seeks to achieve the goals of the Regulatory Program in an efficient and cooperative manner, while preserving and protecting our nation's aquatic resources. If you would like to provide comments on our Regulatory Program, please complete the Customer Service Survey Form available on our website: http://www.spn.usace.army.mil/regulatory/.

Sincerely,

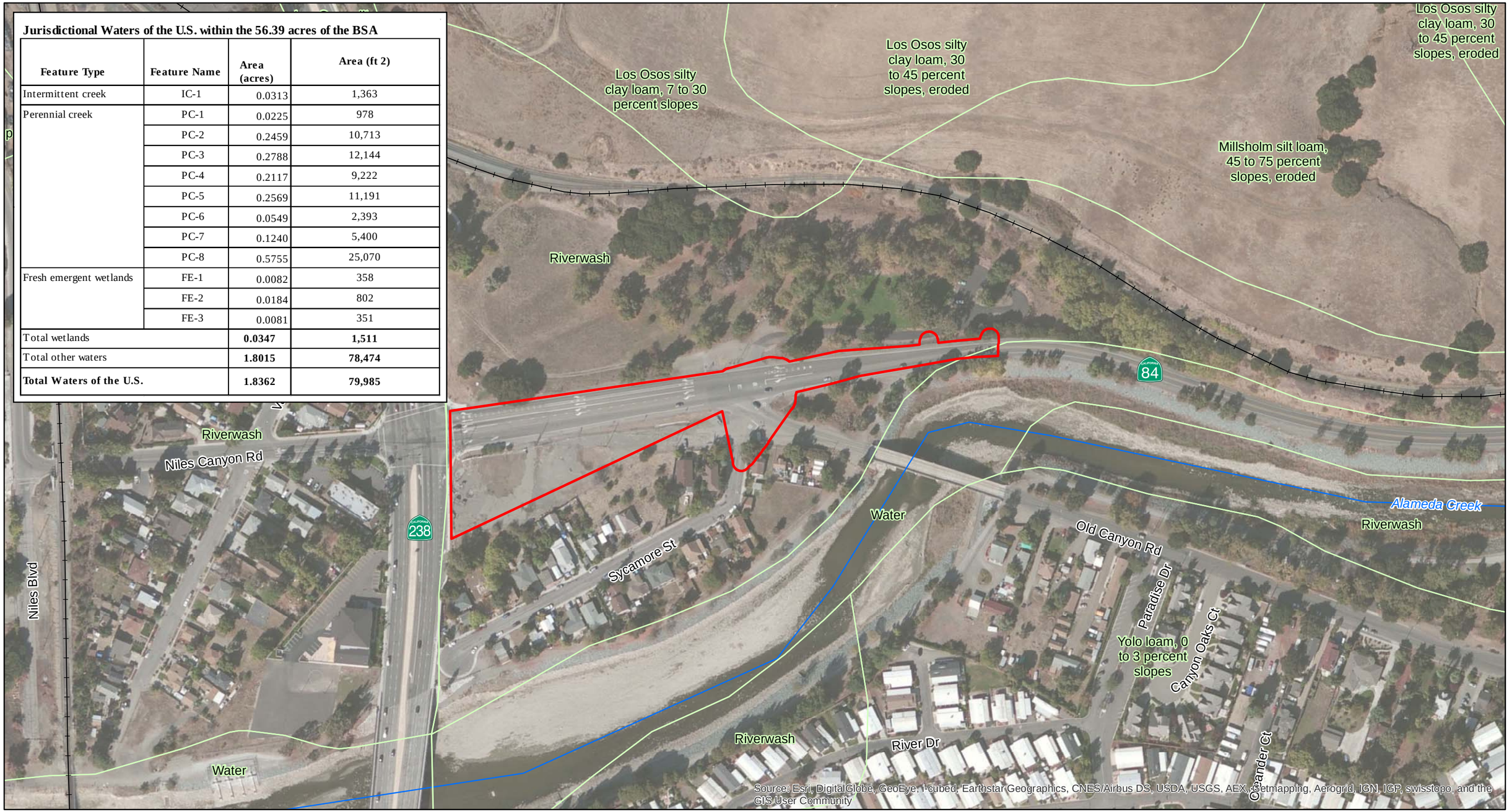
Jane M. Hicks
Chief, Regulatory Division

Enclosures

Appendix B:
Map of Water Features and Soil Types

Jurisdictional Waters of the U.S. within the 56.39 acres of the BSA

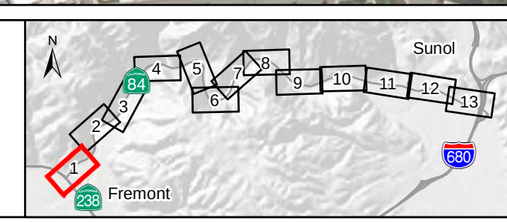
Feature Type	Feature Name	Area (acres)	Area (ft 2)
Intermittent creek	IC-1	0.0313	1,363
Perennial creek	PC-1	0.0225	978
	PC-2	0.2459	10,713
	PC-3	0.2788	12,144
	PC-4	0.2117	9,222
	PC-5	0.2569	11,191
	PC-6	0.0549	2,393
	PC-7	0.1240	5,400
	PC-8	0.5755	25,070
Fresh emergent wetlands	FE-1	0.0082	358
	FE-2	0.0184	802
	FE-3	0.0081	351
Total wetlands		**0.0347**	**1,511**
Total other waters		**1.8015**	**78,474**
Total Waters of the U.S.		**1.8362**	**79,985**



2014 Jurisdictional Waters
- Fresh Emergent Wetland (0.0163 Acres)
- Intermittent Creek (0.0313 Acres)
- Perennial Creek (WUS) (1.7703 Acres)

2010 Jurisdictional Waters
- Fresh Emergent Wetland

- Upland Sample Point (U1, U2)
- Wetland Sample Point (W1, W2)
- Soil Types
- Culvert
- Drainage Inlet
- Railroad
- Creek
- Biological Study Area



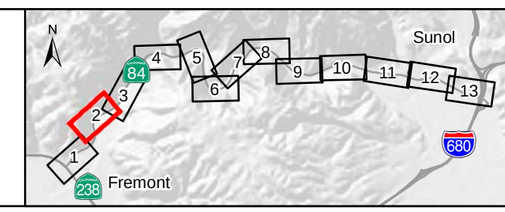
Appendix B: Map of Water Features and Soil Types
Niles Canyon
Safety Improvement Project
Map 1 of 13

0 100 200 Feet

2014 Jurisdictional Waters
- Fresh Emergent Wetland (0.0163 Acres)
- Intermittent Creek (0.0313 Acres)
- Perennial Creek (WUS) (1.7703 Acres)

2010 Jurisdictional Waters
- Fresh Emergent Wetland

- Upland Sample Point (U1, U2)
- Wetland Sample Point (W1, W2)
- Soil Types
- Culvert
- Drainage Inlet
- Railroad
- Creek
- Biological Study Area



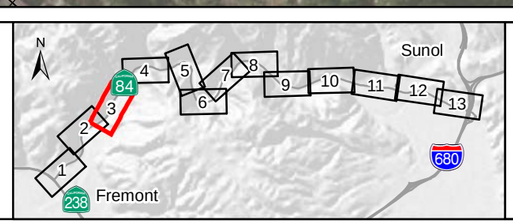
Appendix B: Map of Water Features and Soil Types
Niles Canyon
Safety Improvement Project
Map 2 of 13

0 100 200 Feet

2014 Jurisdictional Waters
- Fresh Emergent Wetland (0.0163 Acres)
- Intermittent Creek (0.0313 Acres)
- Perennial Creek (WUS) (1.7703 Acres)

2010 Jurisdictional Waters
- Fresh Emergent Wetland

- Upland Sample Point (U1, U2)
- Wetland Sample Point (W1, W2)
- Soil Types
- Culvert
- Drainage Inlet
- Railroad
- Creek
- Biological Study Area



Appendix B: Map of Water Features and Soil Types
Niles Canyon
Safety Improvement Project
Map 3 of 13

0 100 200 Feet

Millsholm silt loam, 30 to 45 percent slopes, eroded

Los Gatos-Los Osos complex, 30 to 75 percent slopes, eroded, MLRA 15

Millsholm silt loam, 30 to 45 percent slopes, eroded

Millsholm silt loam, 45 to 75 percent slopes, eroded

Rock land

Palomares Rd

Millsholm silt loam, 45 to 75 percent slopes, eroded

Millsholm silt loam, 30 to 45 percent slopes, eroded

IC-1

84

PC-3

Alameda Creek

Los Gatos-Los Osos complex, 30 to 75 percent slopes, eroded, MLRA 15

Los Osos and Millsholm soils, 7 to 30 percent slopes

Millsholm silt loam, 30 to 45 percent slopes, eroded

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

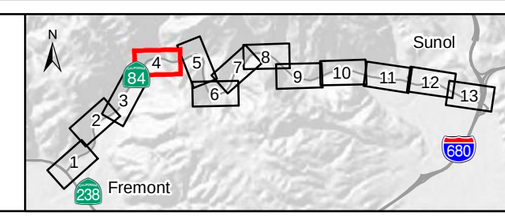
2014 Jurisdictional Waters

- Fresh Emergent Wetland (0.0163 Acres)
- Intermittent Creek (0.0313 Acres)
- Perennial Creek (WUS) (1.7703 Acres)

2010 Jurisdictional Waters

- Fresh Emergent Wetland

- Upland Sample Point (U1, U2)
- Wetland Sample Point (W1, W2)
- Soil Types
- Culvert
- Drainage Inlet
- Railroad
- Creek
- Biological Study Area



Appendix B: Map of Water Features and Soil Types

Niles Canyon

Safety Improvement Project

Map 4 of 13

0 100 200 Feet

N

Millsholm silt loam, 45 to 75 percent slopes, eroded

FE-2

PC-4

PC-5

Rock land

Alameda Creek

Los Gatos-Los Osos complex, 30 to 75 percent slopes, eroded, MLRA 15

84

Millsholm silt loam, 30 to 45 percent slopes, eroded

Millsholm silt loam, 45 to 75 percent slopes, eroded

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Project Location

2014 Jurisdictional Waters

- Fresh Emergent Wetland (0.0163 Acres)
- Intermittent Creek (0.0313 Acres)
- Perennial Creek (WUS) (1.7703 Acres)

2010 Jurisdictional Waters

- Fresh Emergent Wetland

- Upland Sample Point (U1, U2)
- Wetland Sample Point (W1, W2)
- Soil Types
- Culvert
- Drainage Inlet

- Railroad
- Creek
- Biological Study Area

N

Sunol

Fremont

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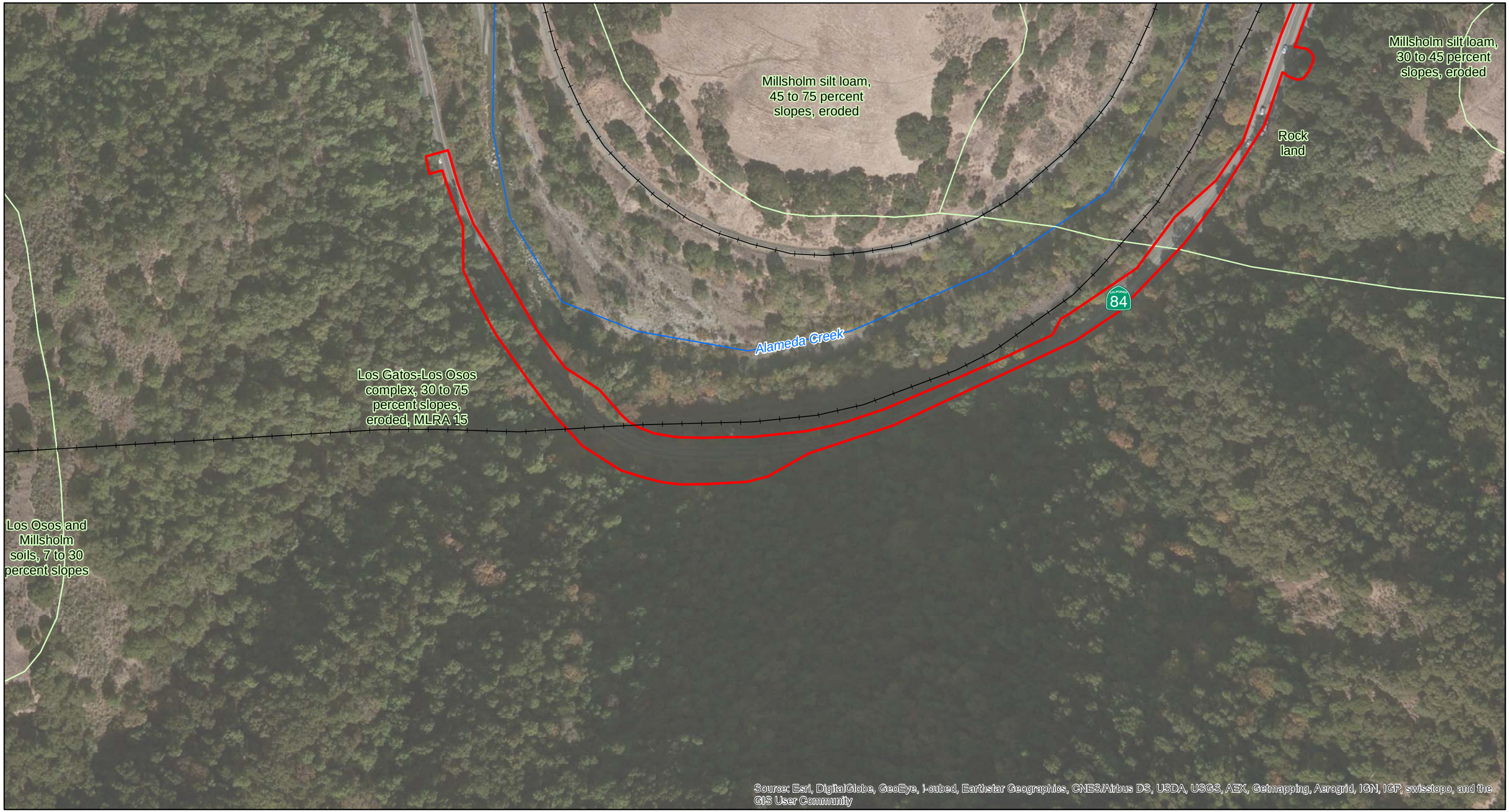
Appendix B: Map of Water Features and Soil Types

Niles Canyon

Safety Improvement Project

Map 5 of 13

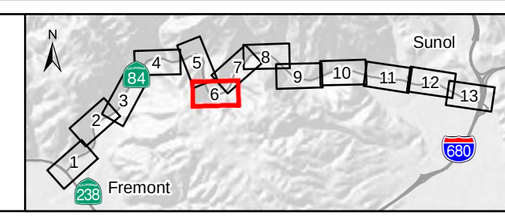
0 100 200 Feet



2014 Jurisdictional Waters
- Fresh Emergent Wetland (0.0163 Acres)
- Intermittent Creek (0.0313 Acres)
- Perennial Creek (WUS) (1.7703 Acres)

2010 Jurisdictional Waters
- Fresh Emergent Wetland

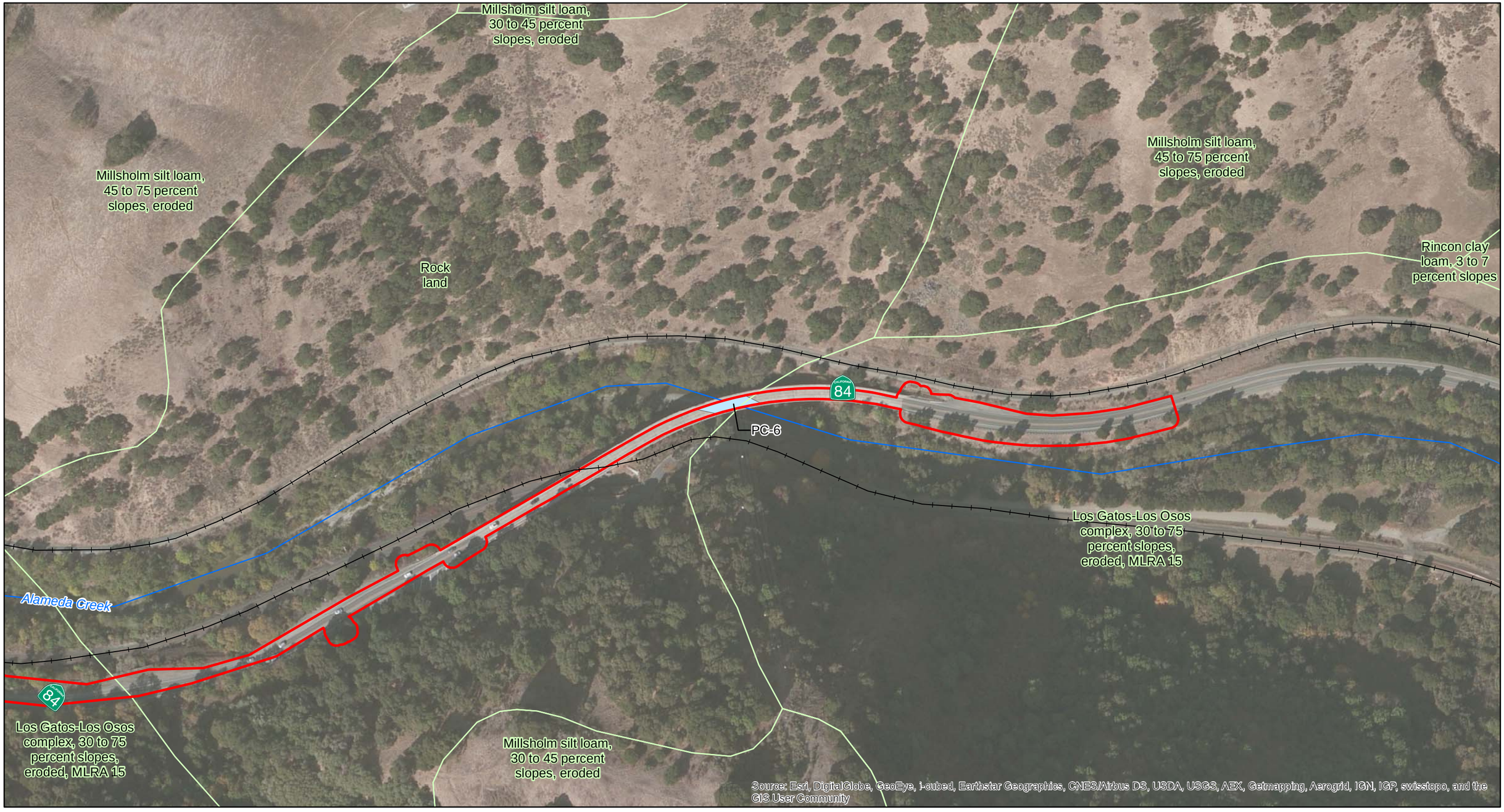
- Upland Sample Point (U1, U2)
- Wetland Sample Point (W1, W2)
- Soil Types
- Culvert
- Drainage Inlet
- Railroad
- Creek
- Biological Study Area



Appendix B: Map of Water Features and Soil Types
Niles Canyon
Safety Improvement Project
Map 6 of 13

0 100 200 Feet

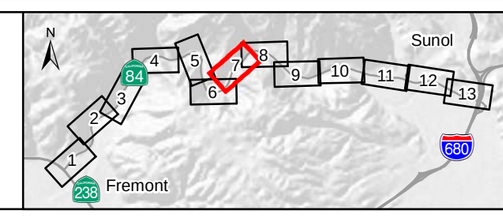
N



2014 Jurisdictional Waters
- Fresh Emergent Wetland (0.0163 Acres)
- Intermittent Creek (0.0313 Acres)
- Perennial Creek (WUS) (1.7703 Acres)

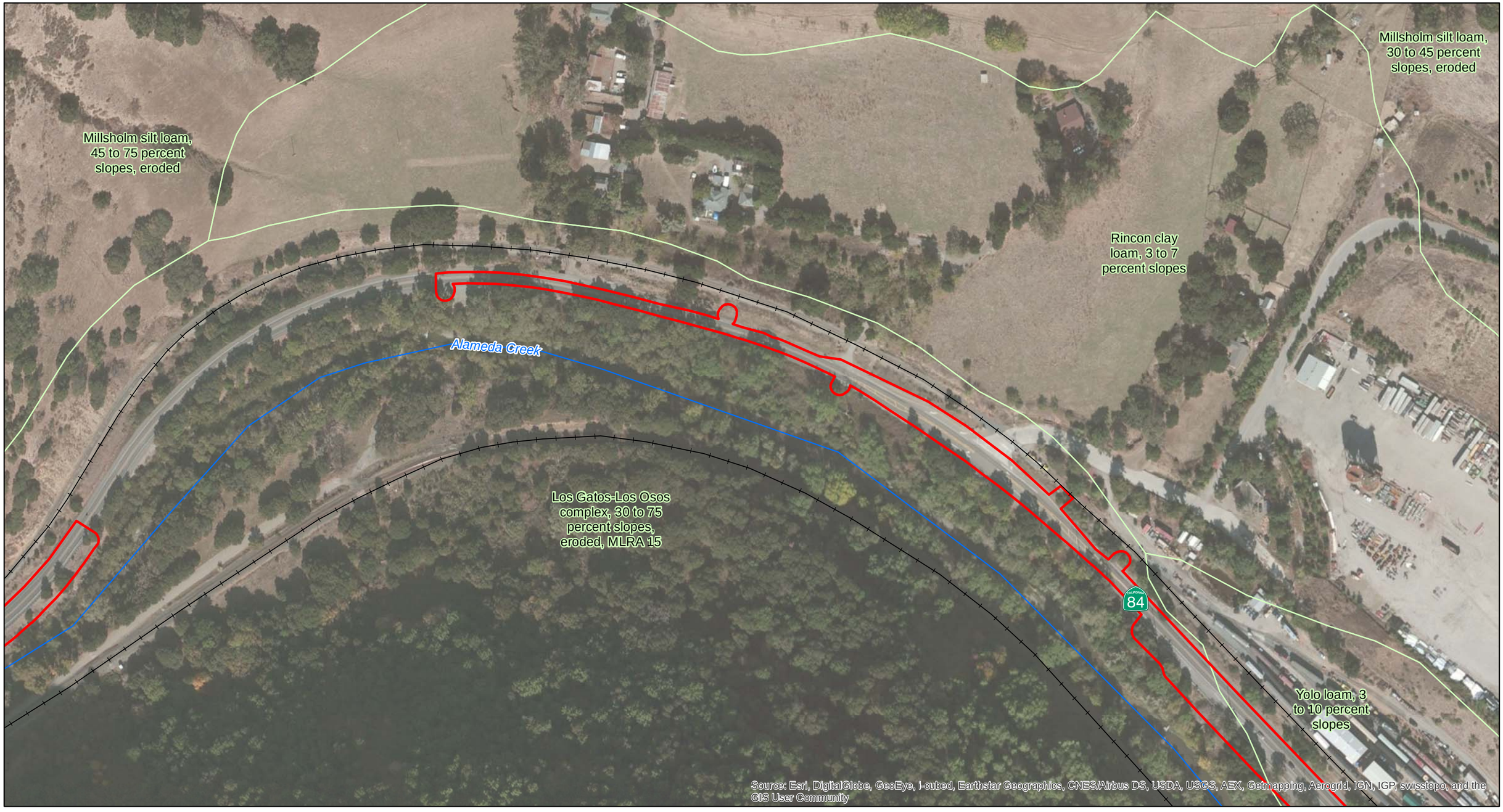
2010 Jurisdictional Waters
- Fresh Emergent Wetland

- Upland Sample Point (U1, U2)
- Wetland Sample Point (W1, W2)
- Soil Types
- Culvert
- Drainage Inlet
- Railroad
- Creek
- Biological Study Area



Appendix B: Map of Water Features and Soil Types
Niles Canyon
Safety Improvement Project
Map 7 of 13

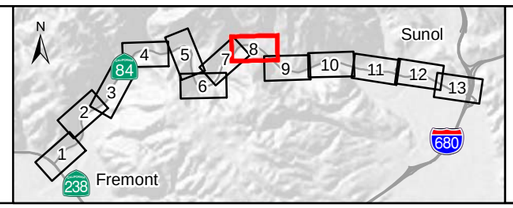
0 100 200 Feet



2014 Jurisdictional Waters
- Fresh Emergent Wetland (0.0163 Acres)
- Intermittent Creek (0.0313 Acres)
- Perennial Creek (WUS) (1.7703 Acres)

2010 Jurisdictional Waters
- Fresh Emergent Wetland

- Upland Sample Point (U1, U2)
- Wetland Sample Point (W1, W2)
- Soil Types
- Culvert
- Drainage Inlet
- Railroad
- Creek
- Biological Study Area



Appendix B: Map of Water Features and Soil Types
Niles Canyon
Safety Improvement Project
Map 8 of 13

0 100 200 Feet

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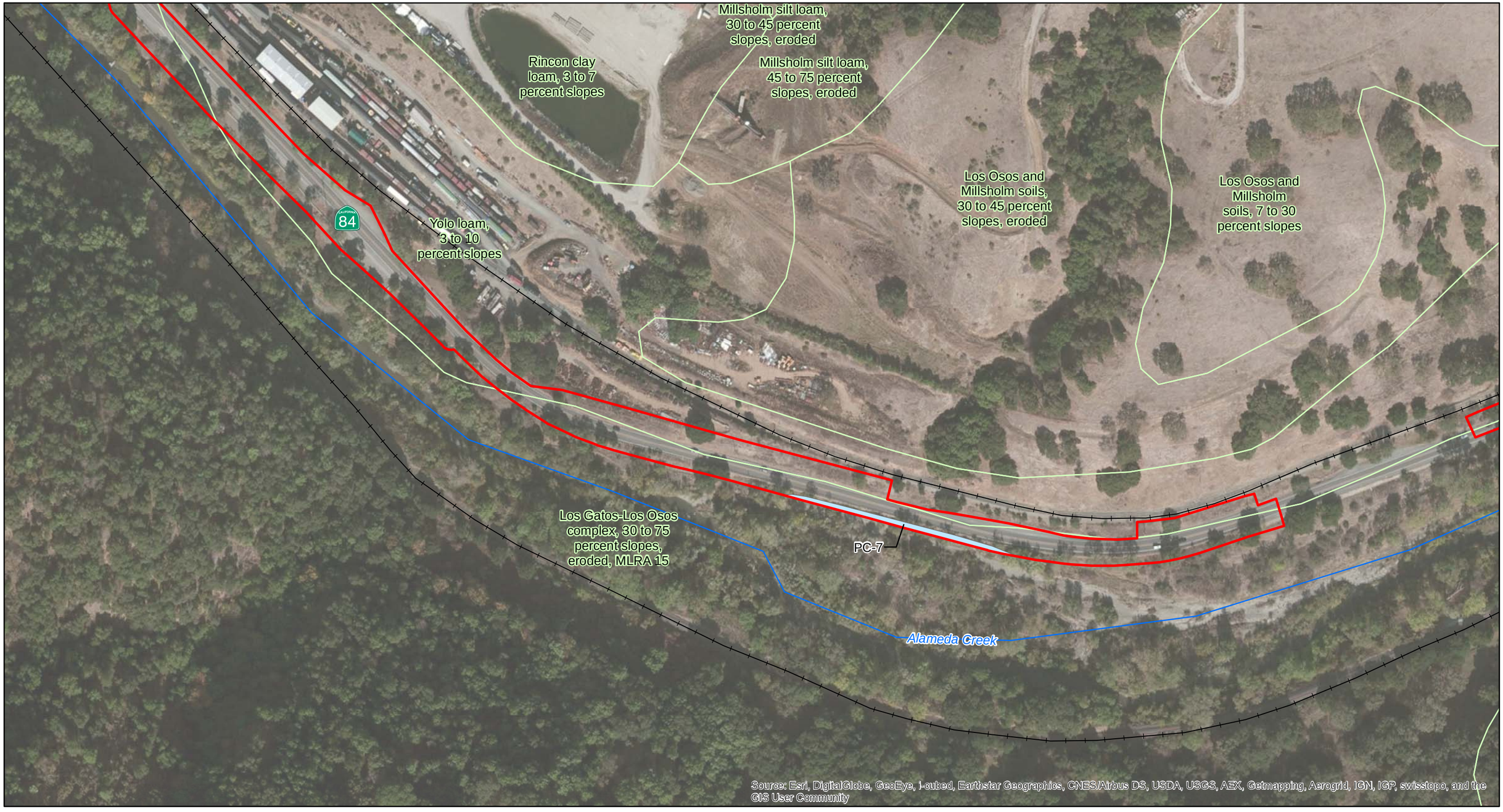
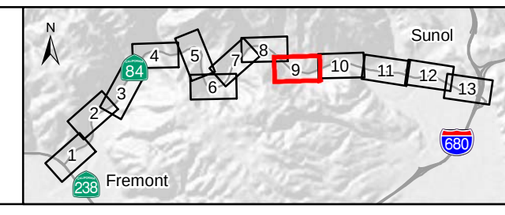


2014 Jurisdictional Waters
- Fresh Emergent Wetland (0.0163 Acres)
- Intermittent Creek (0.0313 Acres)
- Perennial Creek (WUS) (1.7703 Acres)

2010 Jurisdictional Waters
- Fresh Emergent Wetland

- Upland Sample Point (U1, U2)
- Wetland Sample Point (W1, W2)
- Soil Types
- Culvert
- Drainage Inlet
- Railroad
- Creek
- Biological Study Area



Appendix B: Map of Water Features and Soil Types
Niles Canyon
Safety Improvement Project
Map 9 of 13

0 100 200 Feet

N

Los Osos and Millsholm soils, 7 to 30 percent slopes

Los Osos and Millsholm soils, 7 to 30 percent slopes

Millsholm silt loam, 30 to 45 percent slopes, eroded

Los Osos and Millsholm soils, 30 to 45 percent slopes, eroded

Los Osos loam, seeped variant, 3 to 15 percent slopes

84

Los Gatos-Los Osos complex, 30 to 75 percent slopes, eroded, MLRA 15

Alameda Creek

Foothill Rd

Yolo loam, 3 to 10 percent slopes

W2

PC-8

U2

FE-3

Yolo loam, 0 to 3 percent slopes

Los Osos loam, seeped variant, 3 to 15 percent slopes

Yolo loam, 3 to 10 percent slopes

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Project Location

2014 Jurisdictional Waters

- Fresh Emergent Wetland (0.0163 Acres)
- Intermittent Creek (0.0313 Acres)
- Perennial Creek (WUS) (1.7703 Acres)

2010 Jurisdictional Waters

- Fresh Emergent Wetland

- Upland Sample Point (U1, U2)
- Wetland Sample Point (W1, W2)
- Soil Types
- Culvert
- Drainage Inlet

- Railroad
- Creek
- Biological Study Area

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1 2 3 4 5 6 7 8 9 10 11 12 13

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Appendix B: Map of Water Features and Soil Types

Niles Canyon

Safety Improvement Project

Map 10 of 13

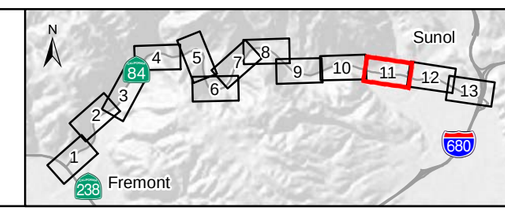
0 100 200 Feet

N

2014 Jurisdictional Waters
- Fresh Emergent Wetland (0.0163 Acres)
- Intermittent Creek (0.0313 Acres)
- Perennial Creek (WUS) (1.7703 Acres)

2010 Jurisdictional Waters
- Fresh Emergent Wetland

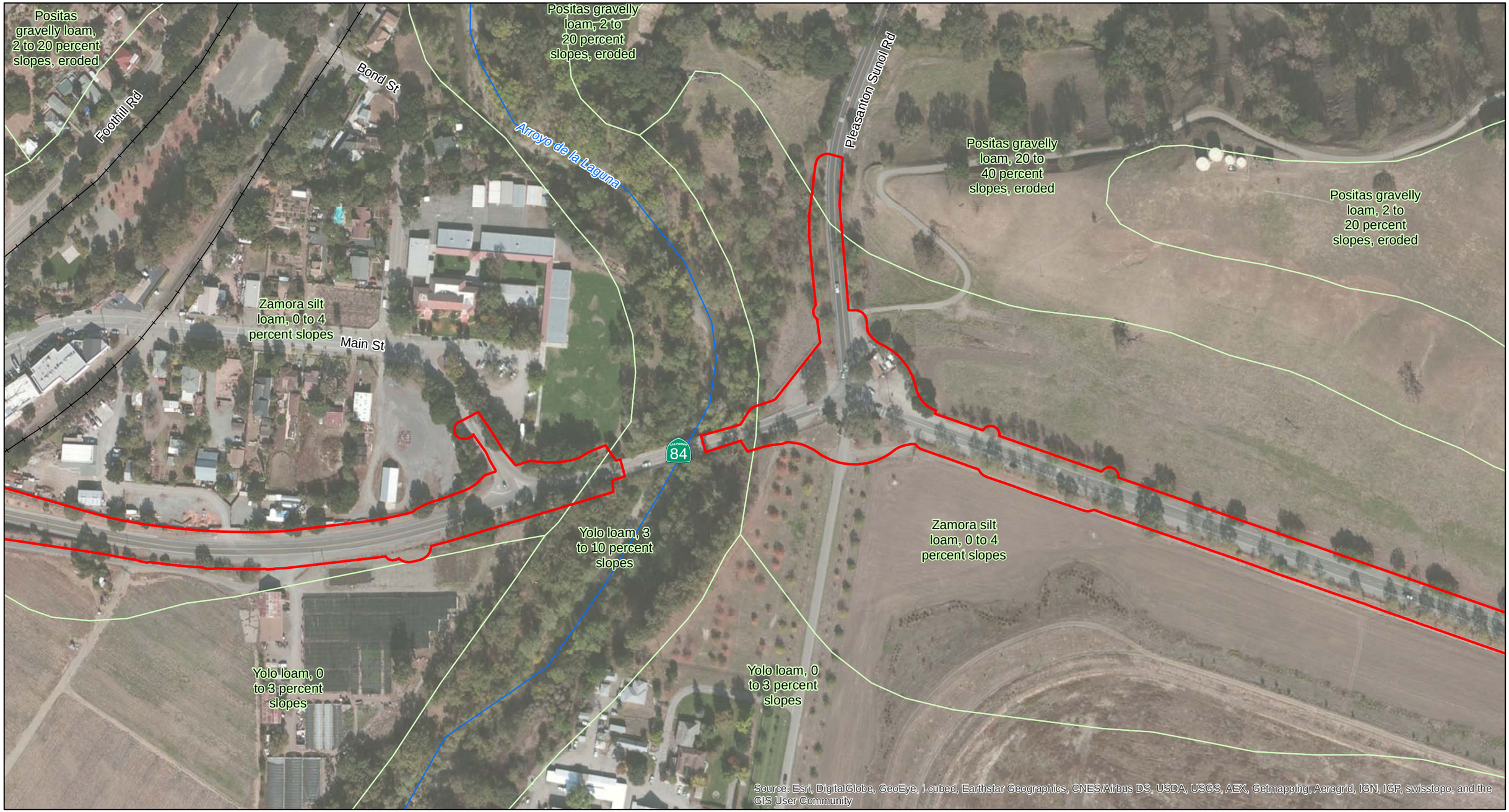
- Upland Sample Point (U1, U2)
- Wetland Sample Point (W1, W2)
- Soil Types
- Culvert
- Drainage Inlet
- Railroad
- Creek
- Biological Study Area



Appendix B: Map of Water Features and Soil Types
Niles Canyon
Safety Improvement Project
Map 11 of 13

0 100 200 Feet

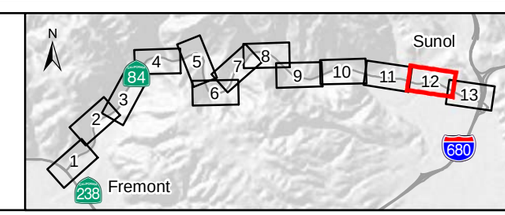
N



2014 Jurisdictional Waters
- Fresh Emergent Wetland (0.0163 Acres)
- Intermittent Creek (0.0313 Acres)
- Perennial Creek (WUS) (1.7703 Acres)

2010 Jurisdictional Waters
- Fresh Emergent Wetland

- Upland Sample Point (U1, U2)
- Wetland Sample Point (W1, W2)
- Soil Types
- Culvert
- Drainage Inlet
- Railroad
- Creek
- Biological Study Area



Appendix B: Map of Water Features and Soil Types
Niles Canyon
Safety Improvement Project
Map 12 of 13

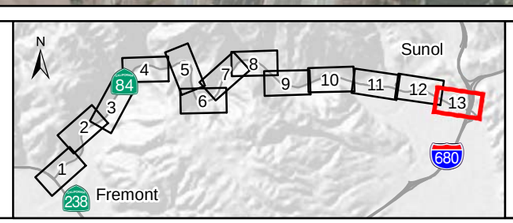
0 100 200 Feet

N

2014 Jurisdictional Waters
- Fresh Emergent Wetland (0.0163 Acres)
- Intermittent Creek (0.0313 Acres)
- Perennial Creek (WUS) (1.7703 Acres)

2010 Jurisdictional Waters
- Fresh Emergent Wetland

- Upland Sample Point (U1, U2)
- Wetland Sample Point (W1, W2)
- Soil Types
- Culvert
- Drainage Inlet
- Railroad
- Creek
- Biological Study Area



Appendix B: Map of Water Features and Soil Types
Niles Canyon
Safety Improvement Project
Map 13 of 13

0 100 200 Feet

N

Appendix C:
Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Niles Canyon Safety Improvement Project City/County: Fremont, Alameda Sampling Date: 9/5/14

Applicant/Owner: Caltrans State: CA Sampling Point: U1

Investigator(s): Constance Ganong, Meghan Bishop Section, Township, Range: S15, T4S, R1W

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 37.589999 Long: -121.957659 Datum: WGS 84

Soil Map Unit Name: Los Gatos-Los Osos complex, 30-70% slopes, eroded NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

2014 has been California's warmest year to date in 118 years of record keeping. 2013-2014 is among the top 3 driest water years on record, and this follows the all-time driest calendar year in 2013.

The upland plot was taken in a very narrow area behind k-rail, adjacent to State Route 13 and at the bottom of a very steep hillside. The area was very rocky.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 5'x5')			
1. Salix laevigata	3	Y	FACW
2. Eriogonum fasciculatum	2	Y	NL
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: 5'x5')			
1. Avena fatua	20	Y	NL
2. Vicia sativa	10	Y	FACU
3. Melilotus indicus	10	Y	FACU
4. Dittrichia graveolens	7		NL
5. unknown grass	2		
6. Foeniculum vulgare	1		NL
7.			
8.			
	50 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

25% = 50% total cover (herb stratum)
10% = 20% of total cover (herb stratum)
The upland area was very rocky and most plants were already dead because of the late season site visit.

SOIL

Sampling Point: U1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 4/4	100					loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: rocky soil

Depth (inches): 6"

Hydric Soil Present? Yes ___ No ✓

Remarks:

The area adjacent to SR-84 at the bottom of the large, steep hillside was very rocky.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Niles Canyon Safety Improvement Project City/County: Fremont, Alameda Sampling Date: 9/5/14

Applicant/Owner: Caltrans State: CA Sampling Point: W1

Investigator(s): Constance Ganong, Meghan Bishop Section, Township, Range: S15, T4S, R1W

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 37.589809 Long: -121.957686 Datum: WGS 84

Soil Map Unit Name: Los Gatos-Los Osos complex, 30-75% slopes, eroded NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

2014 has been California's warmest year to date in 118 years of record keeping. 2013-2014 is among the top 3 driest water years on record, and this follows the all-time driest calender year in 2013.

The wetland area is very narrow, between a steep hillslope and State Route 13. It is contained by k-rail and two drainage inlets at the west end to not overflow onto the road. There is a culvert outfall for the drainage inlets across SR-13 where Alameda Creek is located. The wetland is fed by metal pipe with flowing water, possibly a hillside seep.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5'x5')			
1. Typha angustifolia	100	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	100 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	____	x 1 = ____
FACW species	____	x 2 = ____
FAC species	____	x 3 = ____
FACU species	____	x 4 = ____
UPL species	____	x 5 = ____
Column Totals:	____ (A)	____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

The 5'x5' plot was located between k-rail and a steep embankment. There was standing water at the time of the site visit and the cattail was partially submerged.

SOIL

Sampling Point: W1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ✓ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

The soil smelled like hydrogen sulfide, and the entire wetland with cattail was in standing water.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): _____

Water Table Present? Yes ✓ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

The 5'x5' plot was located between k-rail and a steep embankment. There was standing water at the time of the site visit. The wetland is fed by a pipe on the hillside with running water at the time of the site visit, possibly a hillside seep.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Niles Canyon Safety Improvement Project City/County: Fremont, Alameda Sampling Date: 9/5/14

Applicant/Owner: Caltrans State: CA Sampling Point: U2

Investigator(s): Constance Ganong, Meghan Bishop Section, Township, Range: S7, T4S, R1E

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): convex Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 37.594621 Long: -121.908492 Datum: WGS 84

Soil Map Unit Name: Los Gatos-Los Osos complex, 30-70% slopes, eroded NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

2014 has been California's warmest year to date in 118 years of record keeping. 2013-2014 is among the top 3 driest water years on record, and this follows the all-time driest calendar year in 2013.

The upland plot was taken within the floodplain of Alameda Creek, adjacent to the wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5x5)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix laevigata	40	Y	FACW
2.			
3.			
4.			
	40 = Total Cover		
Sapling/Shrub Stratum (Plot size: 5'x5')			
1. Sambucus nigra ssp. caerulea	50	Y	FAC
2.			
3.			
4.			
5.			
	50 = Total Cover		
Herb Stratum (Plot size: 5'x5')			
1. Scirpus microcarpus	5	Y	OBL
2. Conium maculatum	2	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	7 = Total Cover		
Woody Vine Stratum (Plot size: 5x5)			
1. Rubus ursinus	50	Y	FAC
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

3.5% = 50% total cover (herb stratum)
1.4% = 20% of total cover (herb stratum)
The upland plot was taken within the floodplain of Alameda Creek.

SOIL

Sampling Point: U2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/3	100					loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): _____

Water Table Present? Yes ____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Niles Canyon Safety Improvement Project City/County: Fremont, Alameda Sampling Date: 9/5/14

Applicant/Owner: Caltrans State: CA Sampling Point: W2

Investigator(s): Constance Ganong, Meghan Bishop Section, Township, Range: S7, T4S, R1E

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): convex Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 37.594658 Long: -121.908501 Datum: WGS 84

Soil Map Unit Name: Los Gatos-Los Osos complex, 30-75% slopes, eroded NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:

2014 has been California's warmest year to date in 118 years of record keeping. 2013-2014 is among the top 3 driest water years on record, and this follows the all-time driest calendar year in 2013.

The wetland area is narrow, within the floodplain of Alameda Creek, and adjacent to a retaining wall for SR-13. It is fed by 1 large culvert, which originates across SR-13 and railroad tracks, that transports overland flow from the hillside north of SR-13.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5x5)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix laevigata	50	Y	FACW
2. Salix lasiolepis	15	Y	FACW
3.			
4.			
	65	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: 5'x5')			
1. Scirpus microcarpus	90	Y	OBL
2. Epilobium ciliatum	2	N	
3.			
4.			
5.			
6.			
7.			
8.			
	92	= Total Cover	
Woody Vine Stratum (Plot size: 5x5)			
1. Rubus armeniacus	5	Y	FACU
2.			
	5	= Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

SOIL

Sampling Point: W2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 2/2	80	7.5YR 4/6	10	C	M	clay loam	
0-12	2.5/N	10						Gley chart 1

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

The soil was wet at the time of the survey. The wetland seems partially created by the culvert run-off that empties within the wetland. The culvert crosses underneath SR-84 and the railroad and is fed by hillside run-off.

Appendix D:
Photographs of Study Area

Photograph 1. Location of sample point W1 in narrowleaf cattail in fresh emergent wetland (FE-1). Photo facing west.

Photograph 2. Location of sample point U1 within rocky soil adjacent to FE-1 (in the background). Photo facing southwest.

Photograph 3. Representative photo of FE-1 between k-rail and a steep hillside. Photo facing southwest.

Photo 4. Flowing water from a pipe from the steep hillside feeds FE-1. It may be from a hillside seep. Photo facing west.

Photo 5. Location of sample point W2 in panicled bulrush in fresh emergent wetland (FE-2). Photo facing north.

Photo 6. Location of sample point U2 in predominately California blackberry, adjacent to fresh emergent wetland 2 (FE-2). Photo facing north.

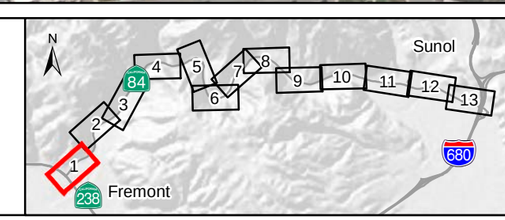
Photo 7. Stonybrook Creek (IC-1) culvert underneath SR-84, photo taken from south of SR-84, facing north.

Appendix E: Land Cover Types in the Biological Study Area

Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



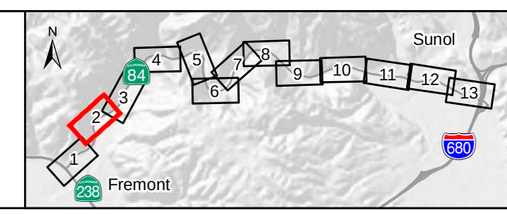
Appendix E: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 1 of 13

0 100 200 Feet

Railroad
Creek
Biological Study Area

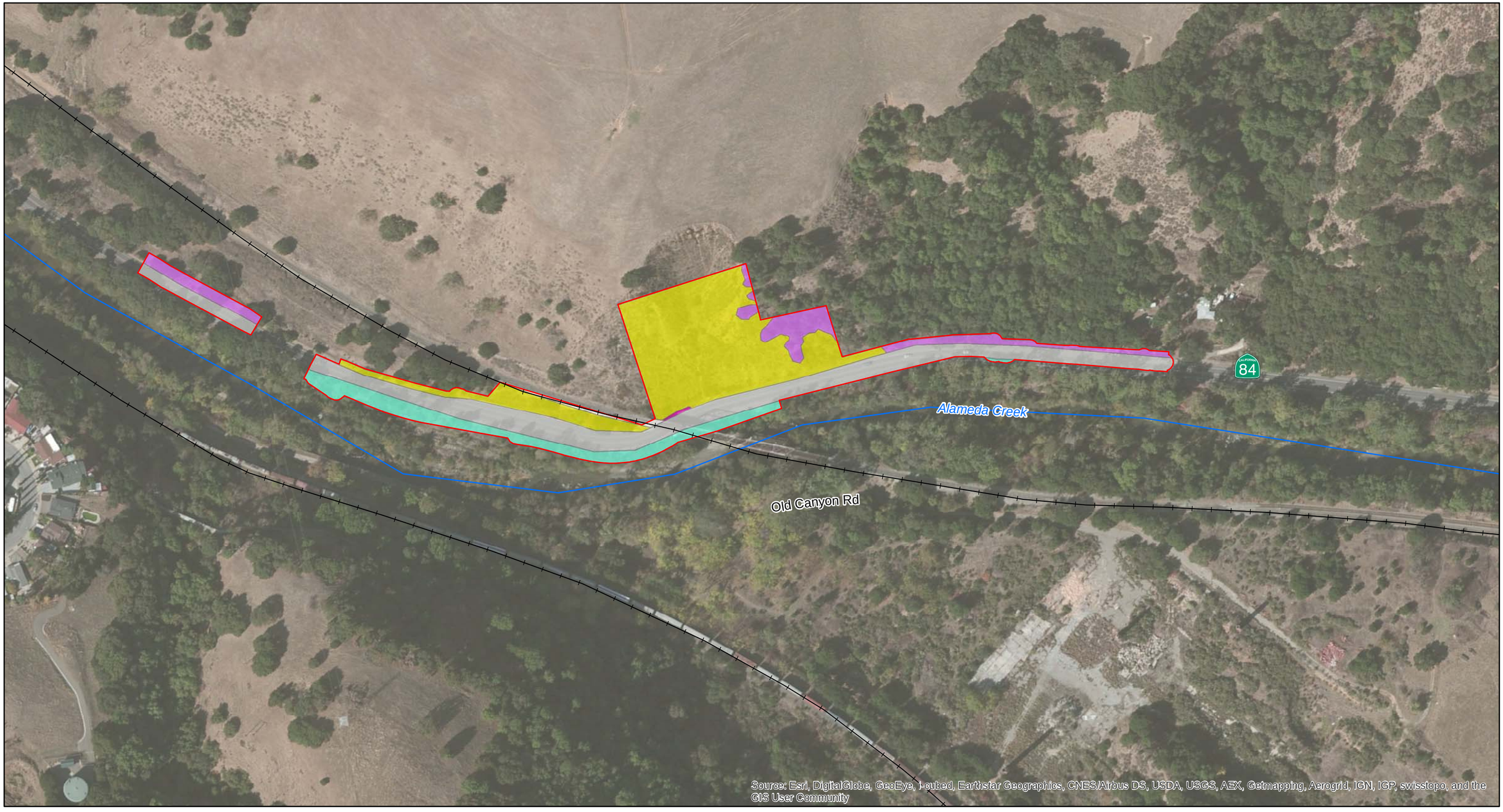
Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



Appendix E: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 2 of 13

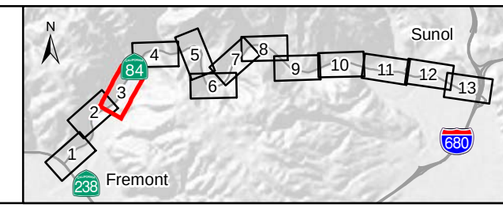
0 100 200 Feet



Railroad
Creek
Biological Study Area

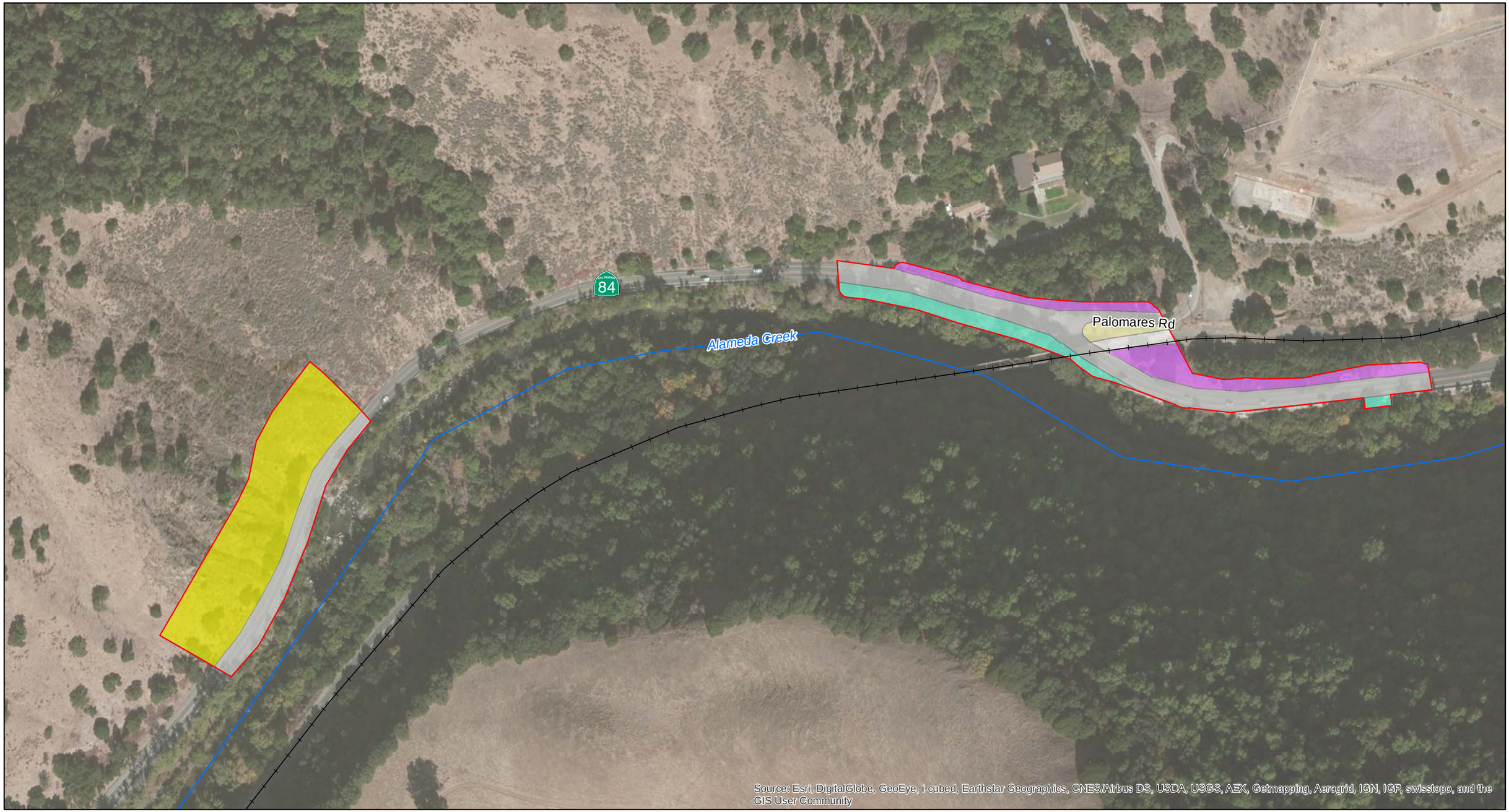
Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



Appendix E: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 3 of 13

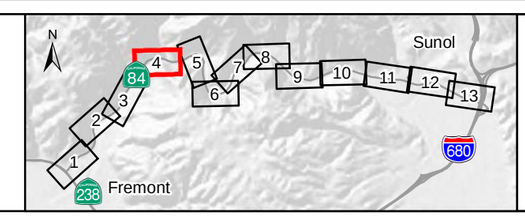
0 100 200 Feet



Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

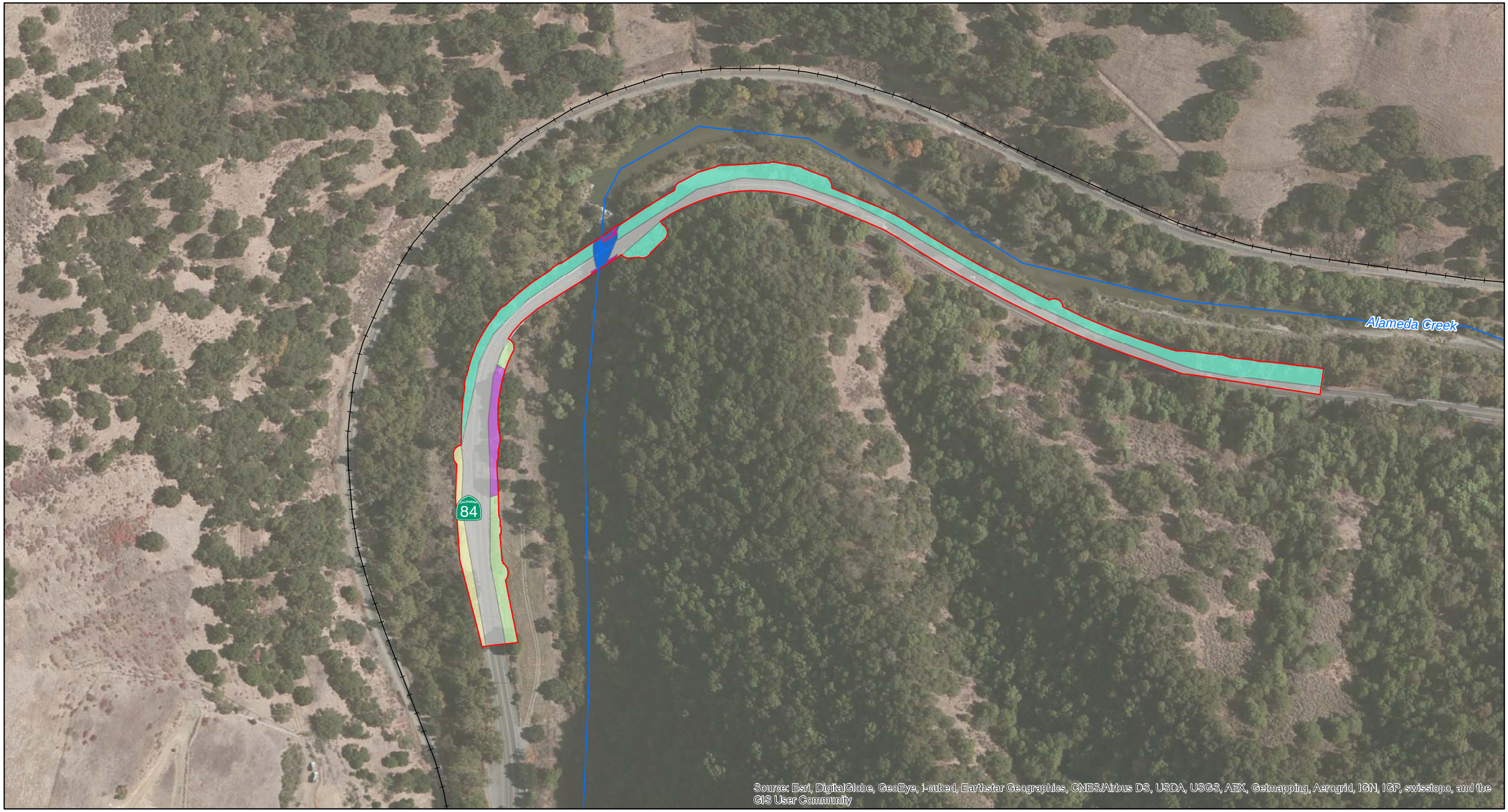
- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



Appendix E: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 4 of 13

0 100 200 Feet

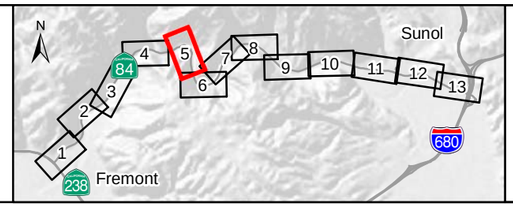
N



Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



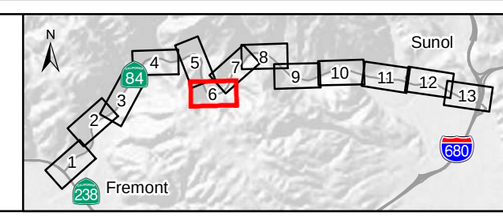
Appendix E: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 5 of 13

0 100 200 Feet

Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

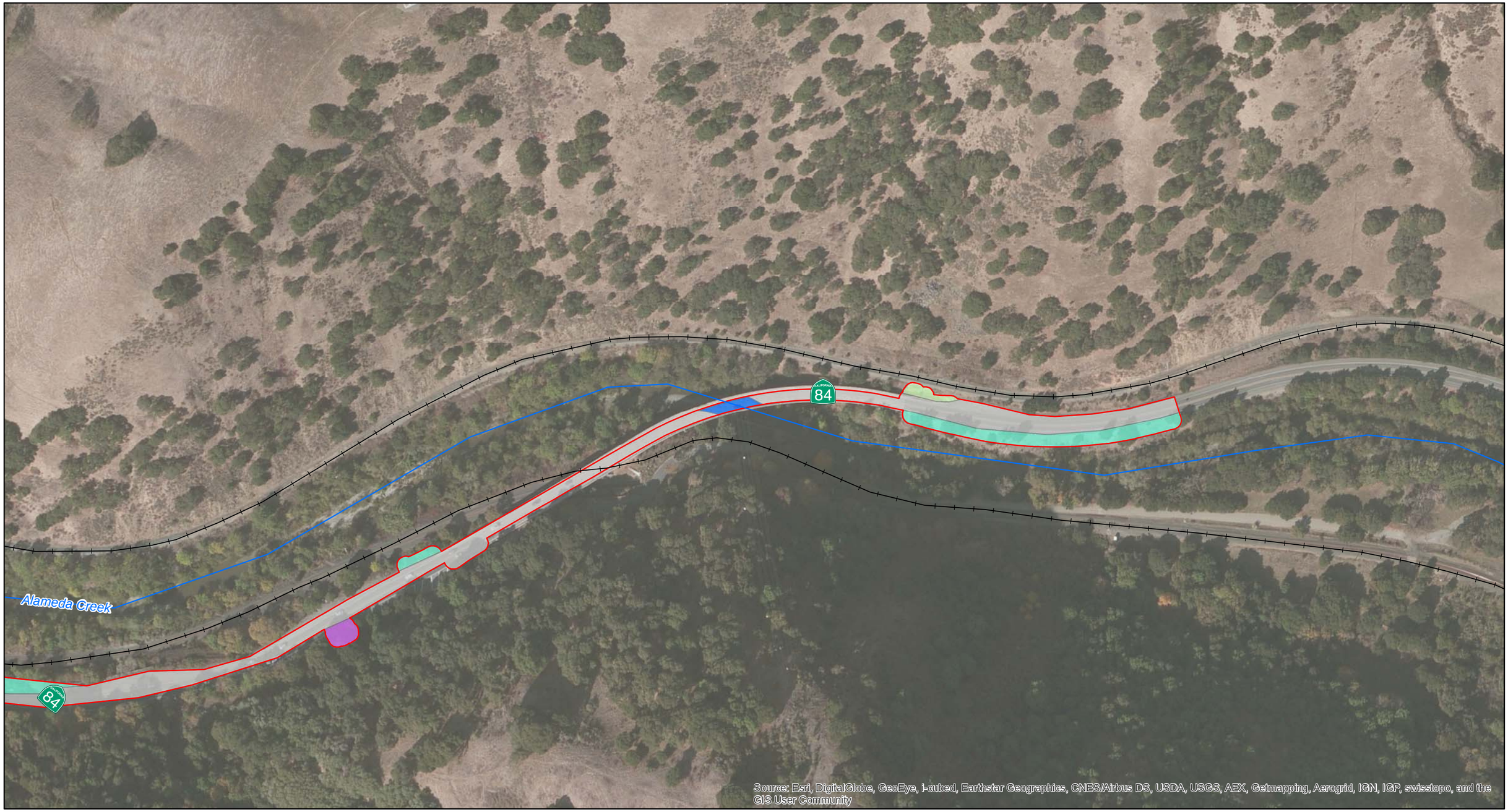
Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Urban-Landscaped
Urban-Railroad



Appendix E: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 6 of 13

0 100 200 Feet

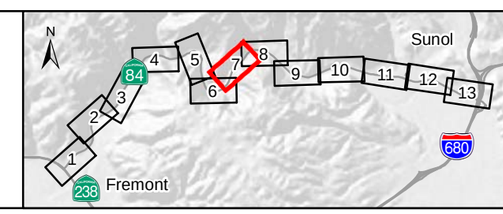
N



Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



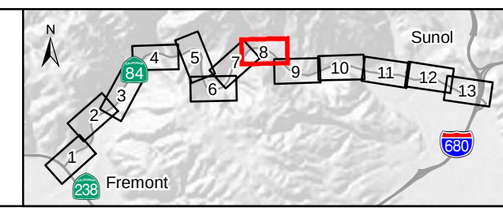
Appendix E: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 7 of 13

0 100 200 Feet

Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



Appendix E: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 8 of 13

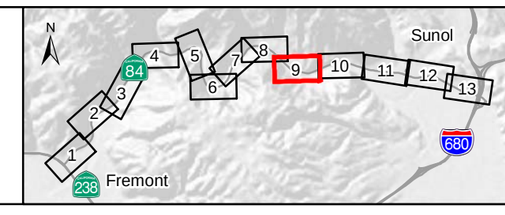
0 100 200 Feet

N

Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Urban-Landscaped
Urban-Railroad



Appendix E: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 9 of 13

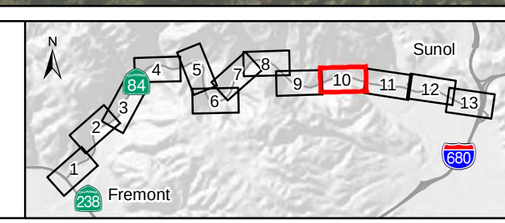
0 100 200 Feet

N

Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



Appendix E: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 10 of 13

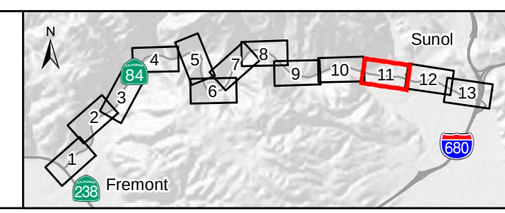
0 100 200 Feet

N

Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Urban-Landscaped
- Urban-Railroad



Appendix E: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 11 of 13

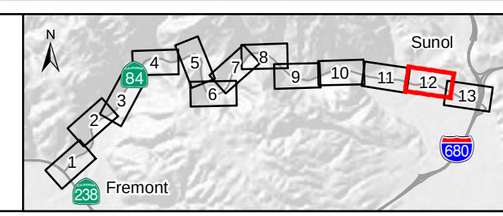
0 100 200 Feet

N

Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Urban-Landscaped
Urban-Railroad



Appendix E: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 12 of 13

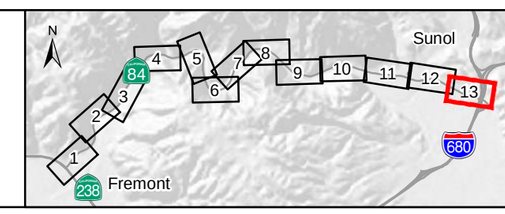
0 100 200 Feet

N

Railroad
Creek
Biological Study Area

Landcover and Vegetation Types

Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Urban-Landscaped
Urban-Railroad



Appendix E: Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 13 of 13

0 100 200 Feet

N

Aquatic Resources Delineation Report

State Route 84 Stonybrook Creek Project

Caltrans District 04
Alameda County
State Route 84
PM 12.91
EA 04-2A332

August 2016

For individuals with sensory disabilities, this document is available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternative formats, please write to Caltrans, Attn: Chris States, Office of Biological Sciences and Permits, 111 Grand Avenue, Oakland, CA 94623-0660; or call (510) 286-7185 (voice); or use the California Relay Service TTY number, (800) 735-2929.

Aquatic Resources Delineation Report 2016

State Route 84 Stonybrook Creek

Culvert Replacement Project

Caltrans District 04
Alameda County
State Route 84
PM 12.91
EA 04-2A332

August 2016

STATE OF CALIFORNIA
Department of Transportation

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Summary

The California Department of Transportation (Caltrans) proposes to replace the existing 57-foot reinforced box culvert that drains Stonybrook Creek into Alameda Creek. The proposed action will take place within Niles Canyon in Alameda County along State Route (SR) 84 at post mile (PM) 12.91. Replacing the box culvert with a single span bridge over Stonybrook Creek will provide increased capacity to meet storm requirements, reduce channel maintenance, and facilitate passage of anadromous fish from Alameda Creek to Stonybrook Creek.

The Project is part of a larger improvement project within Niles Canyon. The Niles Canyon Safety Improvement Project would construct safety improvements at several specific locations along the SR 84 corridor from PM 10.8 at SR 238 (Mission Boulevard) in Fremont to PM 18.0 at Interstate 680 (I-680) near the town of Sunol. Safety improvements will be constructed in eleven isolated locations along SR 84. A previous iteration of the Niles Canyon Safety Improvement Project was put on hold in 2011 and the current project has updated design alternatives for less impacts to biological resources. Caltrans will propose the Project for mitigation for the Niles Canyon Safety Improvement Project, which will result in impacts on both Alameda and Stonybrook Creeks.

This report was prepared to assist Caltrans with planning efforts within the biological study area (BSA) and to identify U.S. Army Corps of Engineers' (USACE) jurisdiction pursuant to Section 404 of the Clean Water Act (CWA). Jurisdictional determination for the previous Niles Canyon project, which included areas of the Project, was verified by USACE in 2010 (File Number SPN-2004-286510 S; Appendix A). The 2010 jurisdictional determination expired on February 5, 2015. This investigation followed the methods described in the *Army Corps of Engineers Wetland Delineation Manual* (USACE 1987), supplemented with guidance as directed by the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008), *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008), and *Regulatory Guidance Letter Subject: Ordinary High Water Mark Identification* (USACE 2005).

Garcia and Associates (GANDA) botanist Constance Ganong and GANDA biologist Tiffany Ngo conducted field investigations on March 1, March 22, and July 14, 2016 to delineate waters and assess wetlands. On March 1, investigations concentrated on areas of Stonybrook Creek and its confluence with Alameda Creek. On March 22 and July 14, investigations concentrated on areas of Alameda Creek.

Previous wetland delineations conducted for Niles Canyon improvement projects (Appendix A; unpublished Caltrans 2015) have not identified any wetlands on Alameda Creek in this area of the BSA. This investigation did not identify any wetlands within the BSA adjacent to Alameda Creek or Stonybrook Creek. Two water features, with a total area of 1.57 acres, were delineated and mapped in the 6.09 acre BSA (Appendix D). Stonybrook Creek is approximately 0.24 acre and Alameda Creek is approximately 1.33 acres within the BSA. Each creek is proposed to be jurisdictional.

List of Abbreviated Terms

Abbreviation	Definition
BSA	Biological Study Area
Caltrans	California Department of Transportation
CFR	Code of Federal Regulations
CWA	Clean Water Act
EBRPD	East Bay Regional Parks District
F	Fahrenheit
FAC	Facultative
FACW	Facultative wetland
FACU	Facultative upland
GANDA	Garcia and Associates
GPS	Global Positioning System
I	Interstate
NL	Not listed
NRCS	National Resource Conservation Service
NWI	National Wetlands Inventory
OBL	Obligate wetland
OHWM	Ordinary high water mark
PM	Post Mile
Project	State Route 84 Stonybrook Creek Project
Quad	USGS 7.5 minute topographic quadrangle
SFPUC	San Francisco Public Utilities Commission
SR	State Route
UPL	Upland
U.S.	United States
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

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Appendix C Custom Soil Report

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1.0 INTRODUCTION

The California Department of Transportation (Caltrans) proposes to replace the existing 57-foot reinforced box culvert that drains Stonybrook Creek into Alameda Creek under the Stonybrook Culvert Replacement Project (Project). The Project will take place within Niles Canyon in Alameda County along State Route (SR) 84 at post mile (PM) 12.91. Replacing the box culvert with a single span bridge over Stonybrook Creek will provide increased capacity to meet storm requirements, reduce channel maintenance, and facilitate passage of anadromous fish from Alameda Creek to Stonybrook Creek. The Project will also provide the following:

- The bridge design will pass the 100-year design discharge with one foot of freeboard under the bridge;
- The proposed bridge abutments will be skewed to be more in-line with the approaching creek (given site constraints);
- The channel profile and substrate will be restored to conditions similar to upstream and downstream conditions;
- The vertical bridge abutments will be spaced wider than the active channel width to allow unimpeded bed-load transport under the bridge;
- The re-graded channel bottom section will be shaped to match upstream channel sections and the creek bed will be overlaid with native materials. A slight centerline depression in the channel section will be provided to initiate the formation of a low flow channel, and
- The creek bed will be allowed to aggrade or degrade naturally over time while the creek's side slopes will be hardened as necessary to protect adjacent structures and embankments.

The Project is part of a larger improvement project within Niles Canyon. The Niles Canyon Safety Improvement Project would construct safety improvements at several specific locations along the SR 84 corridor from PM 10.8 at SR 238 (Mission Boulevard) in Fremont to PM 18.0 at Interstate 680 (I-680) near the town of Sunol. Safety improvements will be constructed in eleven isolated locations along SR 84. A previous iteration of the Niles Canyon Safety Improvement Project was put on hold in 2011 and the current project has updated design alternatives for less impacts to biological resources. Caltrans will propose the Project for mitigation for the Niles Canyon Safety Improvement Project, which will result in impacts on both Alameda and Stonybrook Creeks.

This report was prepared to assist Caltrans with planning efforts within the BSA and to identify USACE jurisdiction pursuant to Section 404 of the Clean Water Act (CWA). The jurisdictional determination for the previous Niles Canyon project, which included areas

of the Project, was verified by U.S. Army Corps of Engineers (USACE) in 2010 (File Number SPN-2004-286510 S; Appendix A). The 2010 jurisdictional determination expired on February 5, 2015. This investigation followed the methods described in the *Army Corps of Engineers Wetland Delineation Manual* (USACE 1987), supplemented with guidance as directed by the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008), *A Field Guide to the Identification of the Ordinary High Water mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008), and *Regulatory Guidance Letter: Ordinary High Water Mark Identification* (USACE 2005).

2.0 ENVIRONMENTAL SETTING

2.1. Biological Study Area

The biological study area (BSA), which is intended as the study area for the delineation, is located in Alameda County, California, in Township 4 south, Range 1 west, Section 11 of the *Niles* U.S. Geological Survey (USGS) 7.5 minute (‘) topographic quadrangle (quad) (USGS 1961). The BSA is located within Niles Canyon along a rural, two-lane portion of SR 84 at PM 12.91, which has become a major transportation corridor between I-680 to the east and I-880 to the west (Figure 1). Niles Canyon is a steep-walled canyon that runs roughly east-west between Fremont and Sunol, with Alameda Creek flowing westward and Stonybrook Creek flowing south to Alameda Creek. The BSA includes the confluence of Alameda and Stonybrook Creeks and includes approximately 775 linear feet of Alameda Creek and approximately 673 linear feet of Stonybrook Creek. The BSA encompasses approximately 6.09 acres.

2.2. Directions/Permit to Access

To access the BSA, take SR 238 towards the City of Fremont. From SR 238 in Fremont take SR 84 east. Follow SR 84 until Palomares Road, which is within the BSA. Parcels within the BSA are owned by one private entity, Golden Gate Primitive Church, and three state entities, State of California, Alameda County, and East Bay Regional Park District (EBRPD).

Permits to Enter were obtained by Caltrans. The following are the contact information for each property owner:

Alameda County
1221 Oak Street Suite 536
Oakland, CA 94612
510-670-5587

Golden Gate Primitive Baptist Church
8740 Hopedale CT
Elk Grove, CA 95624
707-628-8717

East Bay Regional Park District
P.O. BOX 5381
Oakland, CA 94605
510-554-2560

2.3. Climate

The BSA is located within riparian forest and rolling hills in Alameda County to the east of the San Francisco Bay, which moderates the typically Mediterranean climate. Annual

precipitation averages 18 inches, and is typically delivered as rainfall between November and April. Average temperatures range from 39 to 56 degrees (°) Fahrenheit (F) in winter, and from 57 to 89 ºF in summer (National Oceanic and Atmospheric Administration National Weather Service 2016).

2.4. Land Use

The local topography of the area has been modified by SR 84 and the railroad lines that are now run by the Niles Canyon Railway and Union Pacific Railroad. Otherwise, the natural riparian landscape of the Niles Canyon is maintained by the three primary landowners within Niles Canyon: Alameda County (Public Works Department and Alameda County Water District), San Francisco Public Utilities Commission (SFPUC), and EBRPD. The BSA is also composed of one private property (see above) besides Alameda County, State of California, and EBRPD.

2.5. Hydrology

The BSA includes two creeks, Alameda and Stonybrook Creeks. The BSA is located within the Lower Alameda Creek Watershed, an area that includes the southern two-thirds of Alameda County and drains approximately 700 square miles. Alameda Creek carries runoff from the upper Alameda Creek watershed and the watersheds of Arroyo de la Laguna, Calaveras Creek, and Arroyo Hondo. Alameda Creek has high winter and spring flows, but for most of the year the creek, in the vicinity of the BSA, exhibits slow to moderate flows with several deep pools and some riffles. The SFPUC regulates the flows in Alameda Creek for flood protection and water management at San Antonio Reservoir, Calaveras Reservoir, and the Upper Alameda Creek Diversion Dam. As a result, fluctuations in flow are usually moderated during rain events. Alameda Creek runs for 45 miles from a lake northeast of Packard Ridge to the eastern shore of San Francisco Bay by way of Niles Canyon and a flood control channel. Stonybrook Creek is an intermittent tributary which flows south to Alameda Creek (USFWS NWI 2016).

2.6. Vegetation and Land Cover Types

There are two terrestrial vegetation types and three land cover types within the BSA (Appendix C). The classification of vegetation used in this report is based on *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988) and *A Manual of California Vegetation* (Sawyer et. al 2009). In addition, the BSA includes the following land cover types: road, urban-landscaped, and urban-railroad areas.

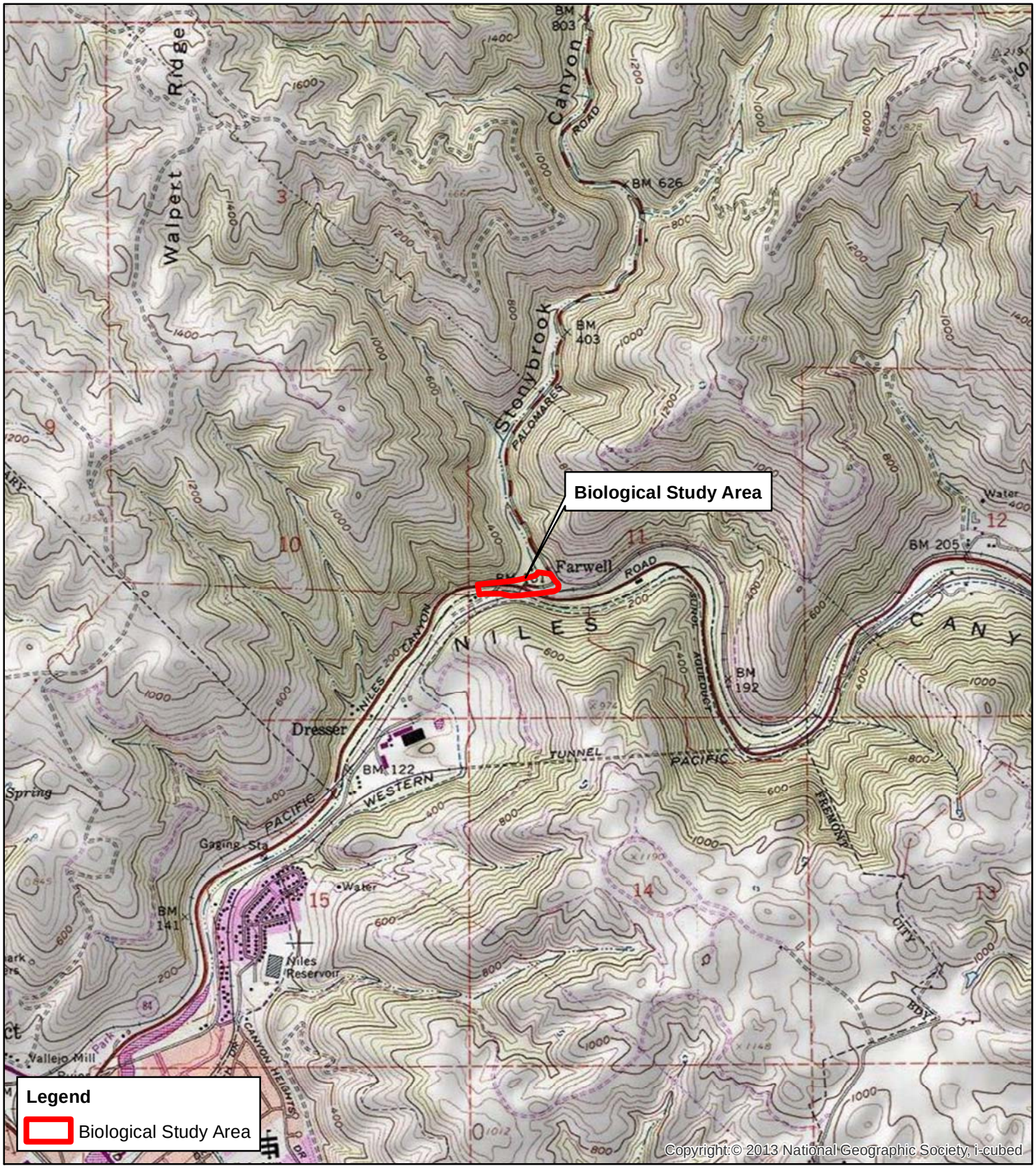
The two vegetation types are described below.

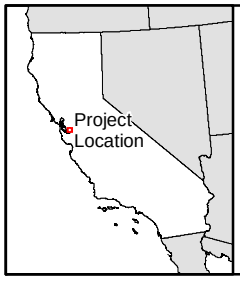
2.6.1. California Bay/Coast Live Oak Forest

California bay/coast live oak forest is an uncommon hardwood habitat comprised of a pronounced hardwood layer dominated by California bay (*Umbellularia californica*) and coast live oak (*Quercus agrifolia*). This upland hardwood community is typically found on north- and west-facing slopes with soils derived from sandstone. Understory vegetation is mostly scattered woody shrubs such as poison oak (*Toxicodendron diversilobum*) and California blackberry (*Rubus ursinus*). In California, most large stands of this habitat have been cut and cleared for urban uses such as agriculture and housing over the past century. Within the BSA, California bay/coast live oak forest is the predominate canopy that covers Stonybrook Creek north of SR 84. Approximately 2.26 acres of this habitat occurs within the limits of the BSA (Appendix B).

2.6.2. Valley Foothill Riparian

The valley foothill riparian community within the BSA is characterized by mature riparian forest with 40 to 80 percent canopy cover, often dominated by winter deciduous trees. It occurs along the edges of Alameda Creek within the BSA. Dominant over-story species include California sycamore (*Platanus racemosa*), Fremont's cottonwood (*Populus fremontii*), big leaf maple (*Acer macrophyllum*), and white alder (*Alnus rhombifolia*). Sub-canopy species include arroyo willow (*Salix lasiolepis*) and red willow (*Salix laevigata*). Understory species include poison oak, Himalayan blackberry (*Rubus armeniacus*), and wild grape (*Vitis californica*). Valley foothill riparian comprises approximately 1.84 acres of the BSA and is the dominate canopy cover over Alameda Creek (Appendix B).





USGS 7.5' Quad:
Niles (1980)

Legal Description:
T4S, R1W Section 11

Scale: 1:24,000
1 inch = 2,000 feet

N

0 1,000 2,000 Feet

Figure 1:
Stonybrook Creek Location Map
Niles Canyon
Safety Improvement Project

Alameda County, California

3.0 APPLIED METHODS

This section provides the methodology used to identify potential wetlands as well as OHWM in the BSA. This investigation followed the methods described in the *Army Corps of Engineers Wetland Delineation Manual* (USACE 1987), supplemented with guidance as directed by the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008), *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008), and *Regulatory Guidance Letter Subject: Ordinary High Water Mark Identification* (USACE 2005).

3.1. Preliminary Data Gathering and Review of Existing Materials

A pre-field review of the study areas was conducted to identify potential wetlands and other waters, as well as information on hydrophytic vegetation, hydric soils, and wetland hydrology. Existing materials reviewed included geospatial wetlands information provided online by the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) (USFWS 2016) and aerial photography of the study areas and vicinity. The *Niles* California USGS 7.5' topographic quadrangles was also reviewed (USGS 2016).

Soil types in the study areas were identified using the Web Soil Survey, a resource provided by the National Resources Conservation Service ([NRCS] 2016) (shown in Appendix B). The locations of these soil types in the study areas and the boundaries between them are depicted in the vegetation and land cover and soils map in Appendix B. The following two soil units were identified within the study areas (see Appendix C for Soil Reports for soil descriptions):

- Los Gatos-Los Osos complex, 30-75 percent slopes, eroded, MRLA 15 (LpF2)
- Millsholm silt loam, 45 to 75 percent slopes, eroded (MhF2)

3.2. Field Investigations

Garcia and Associates (GANDA) botanist Constance Ganong and GANDA biologist Tiffany Ngo conducted field investigations on March 3, March 22 and July 14, 2016 to delineate waters and assess wetlands. On March 3, investigations concentrated on areas of Stonybrook Creek and it's confluence with Alameda Creek. On March 22 and July 14, investigations concentrated on areas of Alameda Creek.

Previous wetland delineations conducted for Niles Canyon improvement projects (Appendix A; unpublished Caltrans 2015) have not identified any wetlands on Alameda Creek in this area of the BSA. This investigation did not identify any wetlands within the BSA adjacent to Alameda Creek or Stonybrook Creek.

The OHWMs were mapped in the field using a Trimble Global Positioning System (GPS) survey unit capable of one meter accuracy (Appendix D). Representative photos taken at GPS point locations are provided in Appendix E.

3.2.1. Wetlands

3.2.1.1. Vegetation

Wetland vegetation is identified in the field based on species composition and corresponding wetland indicator status. The percent cover of each plant species in the field is visually estimated. The "50/20" rule is used to select dominant species from each stratum (tree, shrub, and herb) of the community, as defined in the *Arid West Regional Supplement* (USACE 2008). Plants are identified according to *The Jepson Manual, Vascular Plants of California, Second Edition* (Baldwin *et al*. eds, 2012). The wetland indicator status of each species is determined based on the *Arid West 2013 Regional Wetland Plant List* (USACE 2013). Vegetation is considered hydrophytic if more than 50% of the dominant plant species from all strata were obligate (OBL), facultative wetland (FACW) or facultative (FAC), or the Prevalence Index is 3.0 or less.

Wetland indicator species include those listed as OBL, FACW, or FAC in the *National List*, for California Region 0 (Lichvar 2013). Upland indicator categories include facultative upland (FACU) or upland (UPL). Plant indicator status categories are described in Table 2-1. The status not listed (NL) is used to indicate that a plant species is not listed within *Arid West 2013 Regional Wetland Plant List* (Lichvar 2013). Appendix E provides the list of species encountered during the surveys and their wetland indicator status.

Table 2-1. Wetland Indicator Categories

Indicator Category	Definition
Obligate wetland plants (OBL)	Almost always occur in wetlands. With few exceptions, these plants (herbaceous or woody) are found in standing water or seasonally saturated soils (14 or more consecutive days) near the surface.
Facultative wetland plants (FACW)	Usually occur in wetlands, but may occur in non-wetlands. These plants predominately occur with hydric soils, often in geomorphic settings where water saturates the soils or floods the soil surface at least seasonally.
Facultative plants (FAC)	Occurs in wetlands and non-wetlands. These plants can grow in hydric, mesic, or xeric habitats. The occurrence of these plants in different habitats represents responses to a variety of environmental variables other than hydrology, such as shade tolerance, soil pH, and elevation, and they have a wide tolerance of soil moisture conditions.
Facultative upland plants (FACU)	Usually occur in non-wetlands, but may occur in wetlands. These plants predominately occur on drier or more mesic sites in geographic settings where water rarely saturates the soils or floods the soil surface seasonally.
Upland plants (UPL)	Almost never occur in wetlands. These plants occupy mesic to xeric non-wetland habitats. They almost never occur in standing water or saturated soils. Typical growth forms include herbaceous, shrubs, woody vines, and trees.
Source: Lichvar et. al. 2012	

3.2.1.2. Hydrology

Hydrology is characterized in the field using the methods provided in the *Arid West Supplement* (USACE 2008). Areas that support wetland hydrology are either permanently inundated or frequently saturated for sufficient duration to develop hydric soils and support vegetation adapted for life in periodically anaerobic conditions (typically, at least 7 to 14 days during the growing season).

3.2.1.3. Soils

Soils are characterized in the field using the methods provided in the *Arid West Supplement* (USACE 2008). The determination of whether soils are hydric was based on hydric soil indicators, which are a function of soil texture, matrix color, and/or the presence of other hydric soil indicators such as redoximorphic features. Soil colors are classified according to the *Munsell Soil Color Charts* (Munsell 2000).

3.2.2. Mapping of Intermittent and Perennial Creek Channels

The lateral edges of the intermittent and perennial creek channels were mapped at the locations of the OHWM. The OHWM for non-tidal waters courses (without adjacent wetlands) is defined as "...the line on the [watercourse banks] established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas" (33 Code of Federal Regulations [CFR] 328). The bank-to-bank extent of the channel that contains the water-flow during a normal rainfall year generally serves as a good first approximation of the lateral limit of the OHWM. The upstream limit of non-tidal water features is defined as the point where the OHWM is no longer perceptible.

The location of the OHWM for non-tidal water bodies under the CWA includes evaluating physical characteristics of the area that are determined to be reliable indications of the OHWM (USACE 2005). Physical evidence to be evaluated includes those items listed in 33 CFR 329.11 (a)(1) and including, but not limited, to:

Natural line impressed on bank	Sediment sorting
Shelving	Leaf litter disturbed or washed away
Changes in the character of soil	Scour
Destruction of terrestrial vegetation	Deposition
Presence of litter and debris	Multiple observed flow events
Wracking	Bed and bank
Vegetation matted down, bent, or absent	Water staining
Change in plant community	

4.0 RESULTS

A total of approximately 1.57 acres of potential waters of the U.S. were delineated within the 6.09 acres of the study areas. These features are illustrated in Appendix D and summarized in Table 3-1. Representative photographs are included in Appendix E.

4.1. Wetland Features

Within the BSA, the riparian overstory on the creek banks of Stonybrook Creek was dominated by California bay and coast live oak. The riparian overstory of Alameda Creek was dominated by California sycamore, Fremont cottonwood (*Populus fremontii*), red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), and white alder (*Alnus rhombifolia*). The understory of both creeks was dominated by poison oak and California blackberry with invasive periwinkle (*Vinca major*) and smilograss (*Piptatherum miliaceum*).

Although California sycamore, white alder, arroyo willow, and red willow are FACW species, riparian trees are known to use deep rooting systems to access water deep in the ground, and are not a reliable indicators of wetland conditions. In addition, California bay is a FAC species, and is known to occur in drier areas. The herbaceous layer is typically more indicative of surface wetland conditions, and in this case is dominated by upland invasive species. California blackberry, the dominant plant in the shrub layer is also known to thrive in upland sites, particularly in riparian areas even though it is a FAC species. The vegetation at this site exhibits riparian characteristics, but does not meet the vegetation criterion for a USACE jurisdictional wetland.

No hydric soils were noted within the BSA. The soils are a sandy clay loam and well drained as noted by the Custom Soil Report (Appendix C). Both Alameda and Stonybrook Creeks have relatively incised banks within the BSA, and Stonybrook Creek flows between moderately steep slopes. These steep rocky slopes on Stonybrook Creek do not support terrace areas of saturation for wetlands (Photos 2-6 Appendix E). The south banks of Stonybrook Creek within the BSA, which runs parallel to SR 84, are covered in cement for erosion control (Photo 4 Appendix E). In addition, Stonybrook Creek is dry during the summer months. During the site visit of July 14, Stonybrook Creek was dry. The banks of Alameda Creek within the BSA have the most potential for wetlands but none were observed. The banks within the BSA do not appear to be inundated at a frequency and duration sufficient to support wetland hydrology. This conclusion is supported by the lack of wetland soils, sloping topography, and lack of ponding or a perched water table.

4.2. Water Features

Two water features, with a total area of 1.57 acres, were delineated and mapped in the 6.09 acre BSA (Appendix D). Stonybrook Creek is approximately 0.24 acre and Alameda Creek is approximately 1.33 acres. Stonybrook Creek is considered an intermittent riverine that is seasonally flooded (USFWS NWI 2016). Alameda Creek is considered upper perennial riverine with an unconsolidated bottom that is permanently flooded (USFWS NWI 2016). Stonybrook flows south into Alameda Creek, which flows to the San Francisco Bay.

The OHWM of both Alameda and Stonybrook Creeks were identified by field indicators including the following:

Flow line impressed on bank	Deposition
Shelving	Leaf litter disturbed or washed away
Changes in the character of soil	Scour
Destruction of terrestrial vegetation	Vegetation matted down, bent, or absent
Presence of litter and debris	Change in plant community
Wracking	Bed and bank
Water staining	

Both creeks have natural lined bottoms and as described above are relatively incised. Each creek is lined with riparian canopies of California bay/coast live oak forest over Stonybrook Creek and valley foot riparian forest over Alameda Creek.

Table 3-1. Summary of Acreage of Aquatic Resources within the 6.09 acres of the BSA (see Appendix D)

Aquatic Resource Name	Type of Feature		Area (acres)	Linear feet
Feature Type (Name)	**Cowardin**	**Location (Lat/Long)**		
Intermittent Creek (Stonybrook Creek)	Riparian loctic forested evergreen	37.622253/-121.809222	0.24	673
Perennial Creek (Alameda Creek)	Riparian loctic forested deciduous	37.622881/-121.809053	1.33	775
		Total Aquatic Resources	**1.57**	**1,448**

5.0 PRELIMINARY USACE JURISDICTIONAL DETERMINATION

Approximately 1.57 acres (1,448 square feet) of potentially USACE jurisdictional waters were identified in the 6.09 acre BSA (Table 3-1 and Appendix D). All of the total 1.57 acres of potential USACE waters of the U.S. mapped within the 6.09 acres are proposed to be jurisdictional.

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Appendix A:
USACE Jurisdictional Determination File Number SPN-2204-286510 S

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

FEB 5 - 2010

REPLY TO

Regulatory Division

SUBJECT: File Number SPN-2004-286510 S

Mr. John Yeakel
Office of Biological Sciences and Permits
California Department of Transportation, District 4
111 Grand Avenue
Oakland, California 94623

Dear Mr. Yeakel:

This letter is written in response to your submittal of September 16, 2005, requesting confirmation of the extent of Corps of Engineers jurisdiction for the State Route 84 Niles Canyon Safety Widening Project between Fremont and Pleasanton in Alameda County, California.

Enclosed are maps showing the extent and location of Corps of Engineers jurisdiction. There are 0.016 acres of wetlands and 0.42 acres of other waters of the United States in the 2.873 acre delineation study area. We have based this jurisdictional delineation on the current conditions on the site. A change in those conditions may also change the extent of our jurisdiction. This jurisdictional delineation will expire in five years from the date of this letter. However, if there has been a change in circumstances that affects the extent of Corps jurisdiction, a revision may be completed before that date.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; March 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal" form (NAO-RFA). If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA form within sixty (60) days of the date of the NAO-RFA.

Should you have any questions regarding this matter, please call Andrea Meier of our Regulatory Division at 415-503-6798 or email her at andrea.j.meier@usace.army.mil. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter. If you would like to provide comments on our permit review process, please complete the Customer Survey Form available online at http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

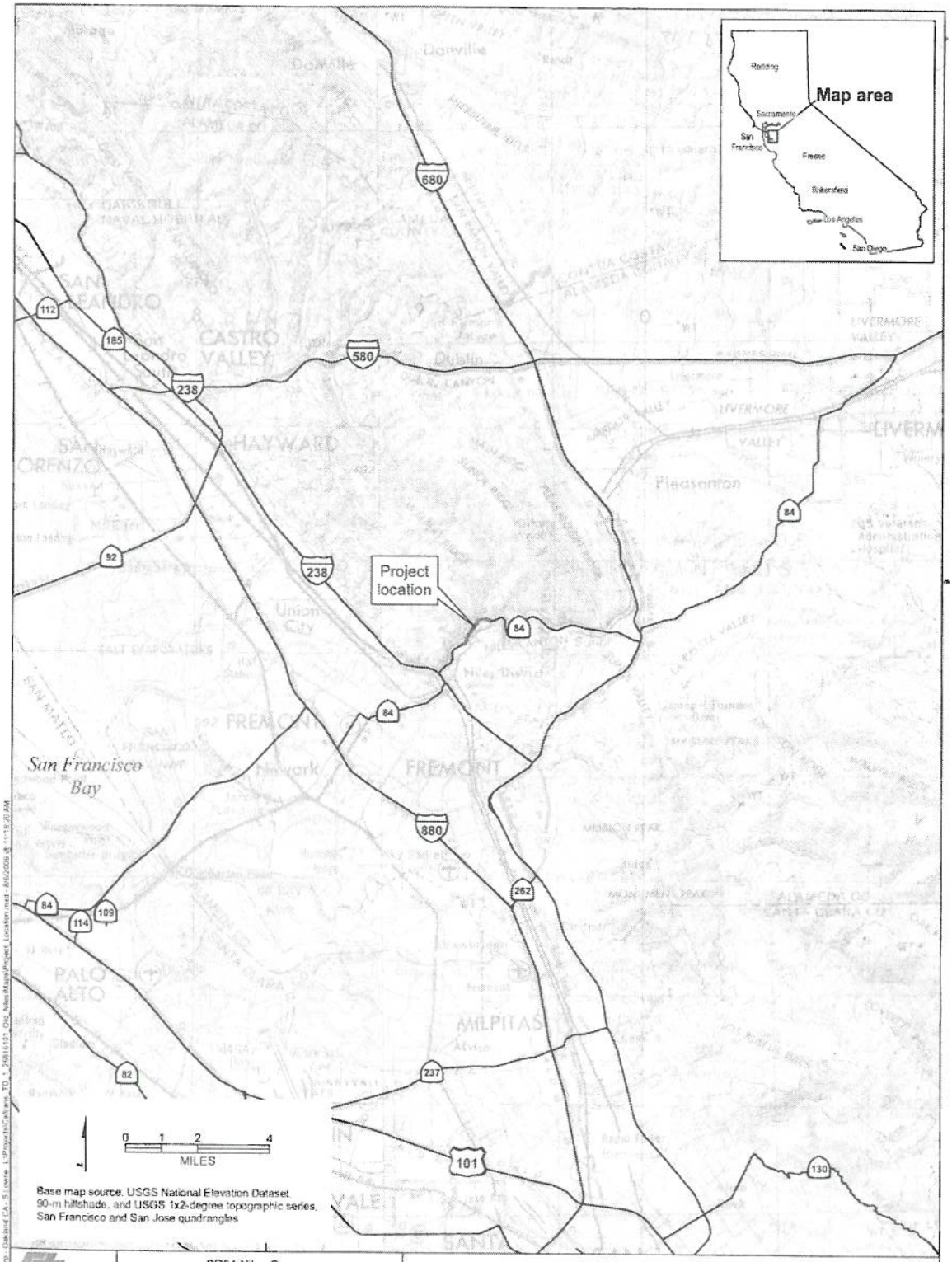
Jane M. Hicks

Jane M. Hicks
Chief, Regulatory Division

Enclosures

Copy Furnished:

CA RWQCB, Oakland, CA



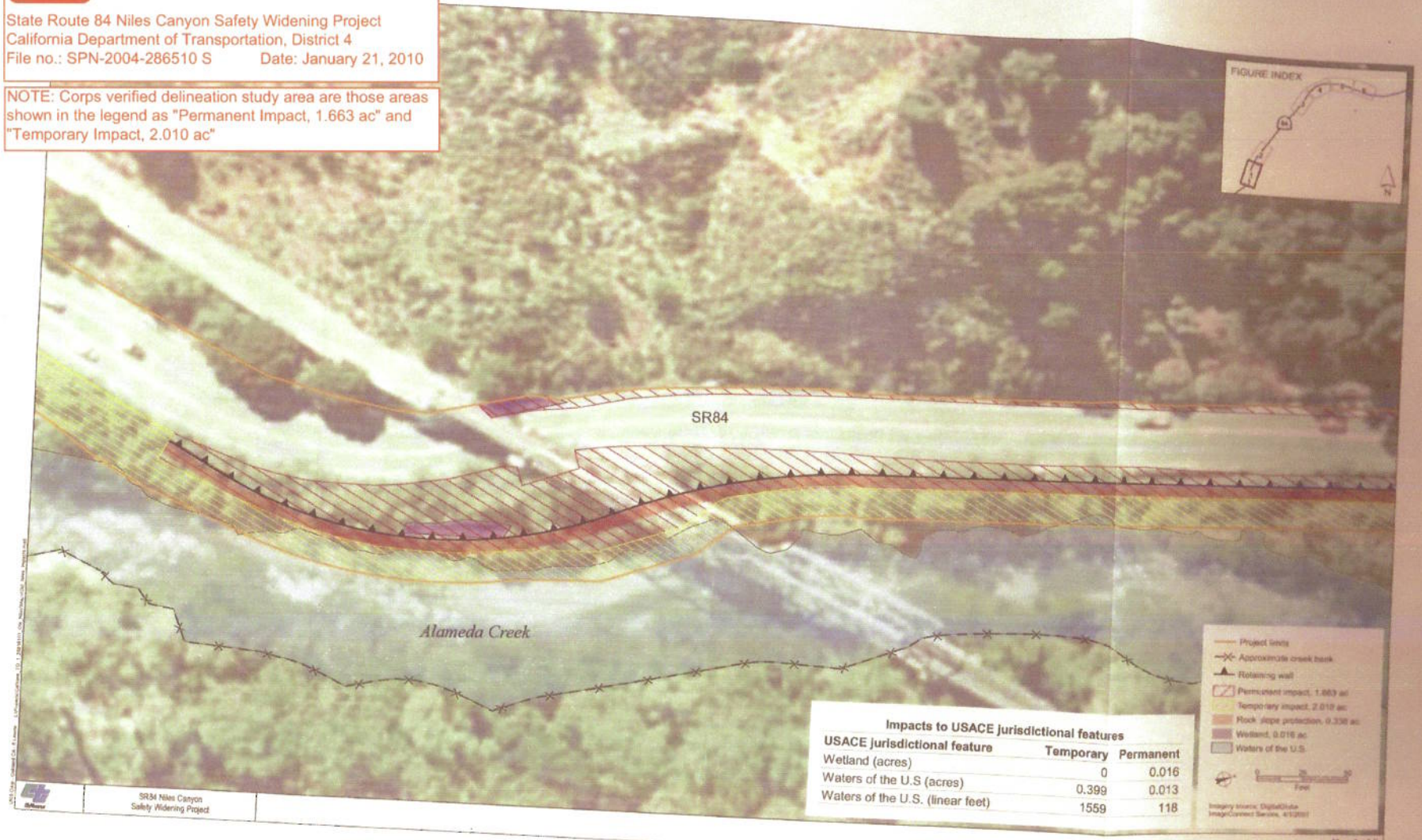
SR84 Niles Canyon
Safety Widening Project

Figure 1
Project location

U.S. Army Corps of Engineers
San Francisco District, Regulatory Division
Approved Jurisdictional Determination

State Route 84 Niles Canyon Safety Widening Project
California Department of Transportation, District 4
File no.: SPN-2004-286510 S Date: January 21, 2010

NOTE: Corps verified delineation study area are those areas shown in the legend as "Permanent Impact, 1.663 ac" and "Temporary Impact, 2.010 ac"



Impacts to USACE jurisdictional features

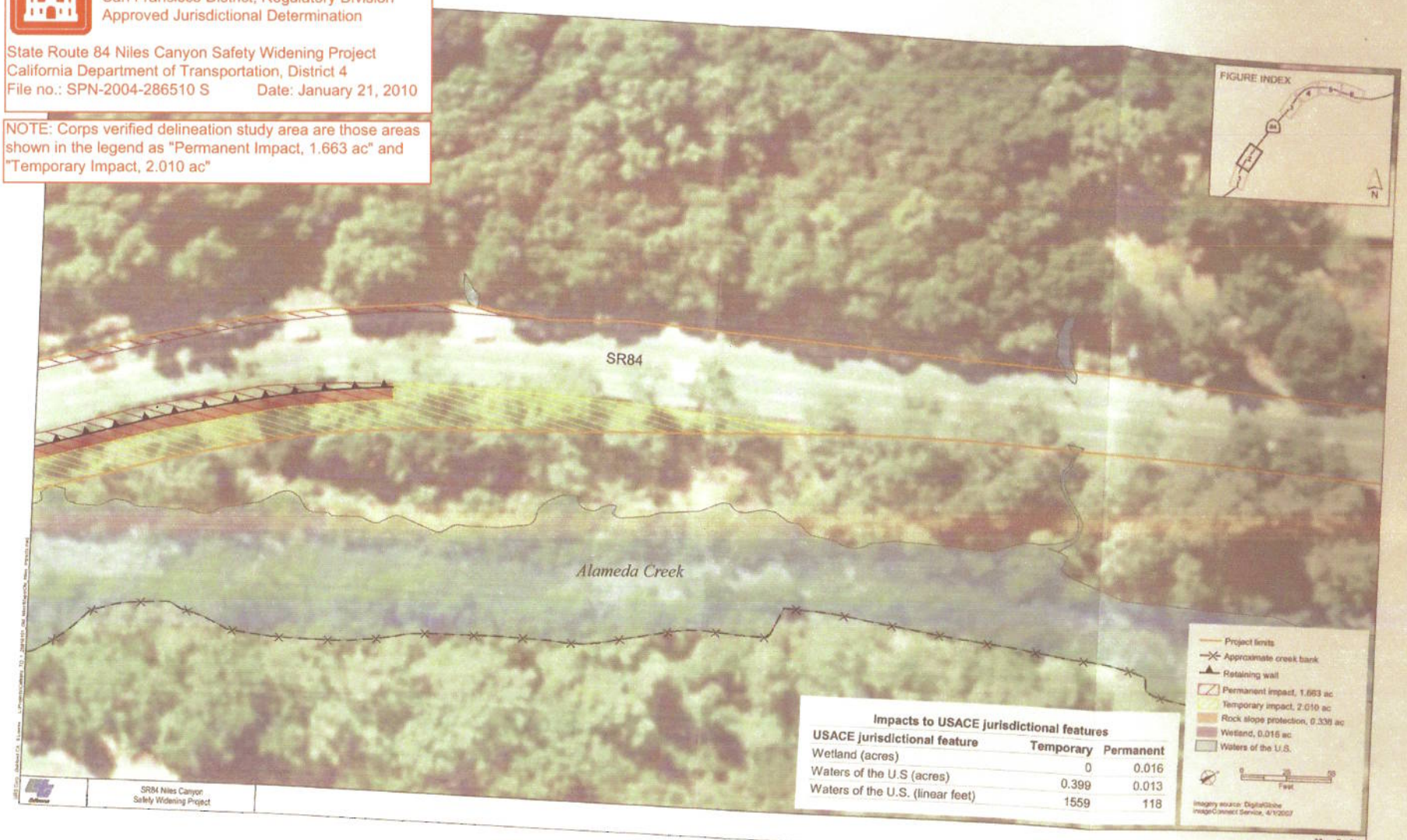
USACE jurisdictional feature	Temporary	Permanent
Wetland (acres)	0	0.016
Waters of the U.S (acres)	0.399	0.013
Waters of the U.S. (linear feet)	1559	118

Map 1 of 6
Project impacts and waters of the U.S.

U.S. Army Corps of Engineers
San Francisco District, Regulatory Division
Approved Jurisdictional Determination

State Route 84 Niles Canyon Safety Widening Project
California Department of Transportation, District 4
File no.: SPN-2004-286510 S Date: January 21, 2010

NOTE: Corps verified delineation study area are those areas shown in the legend as "Permanent Impact, 1.663 ac" and "Temporary Impact, 2.010 ac"



Impacts to USACE jurisdictional features

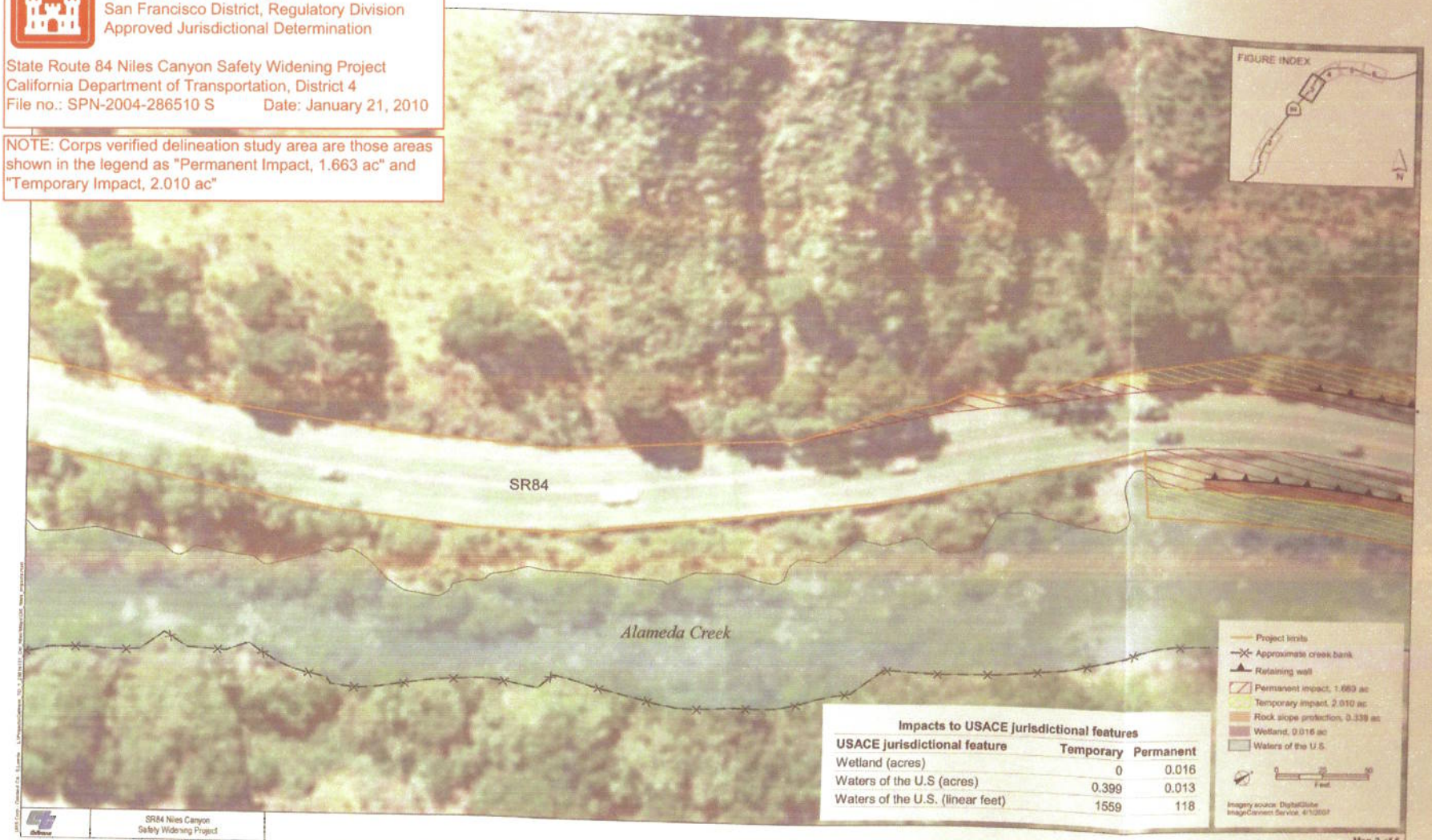
USACE jurisdictional feature	Temporary	Permanent
Wetland (acres)	0	0.016
Waters of the U.S (acres)	0.399	0.013
Waters of the U.S. (linear feet)	1559	118

Map 2 of 6
Project impacts and waters of the U.S.

U.S. Army Corps of Engineers
San Francisco District, Regulatory Division
Approved Jurisdictional Determination

State Route 84 Niles Canyon Safety Widening Project
California Department of Transportation, District 4
File no.: SPN-2004-286510 S Date: January 21, 2010

NOTE: Corps verified delineation study area are those areas shown in the legend as "Permanent Impact, 1.663 ac" and "Temporary Impact, 2.010 ac"



Impacts to USACE jurisdictional features

USACE jurisdictional feature	Temporary	Permanent
Wetland (acres)	0	0.016
Waters of the U.S (acres)	0.399	0.013
Waters of the U.S. (linear feet)	1559	118

SR84 Niles Canyon
Safety Widening Project

Map 3 of 6
Project impacts and waters of the U.S.

U.S. Army Corps of Engineers
San Francisco District, Regulatory Division
Approved Jurisdictional Determination

State Route 84 Niles Canyon Safety Widening Project
California Department of Transportation, District 4
File no.: SPN-2004-286510 S Date: January 21, 2010

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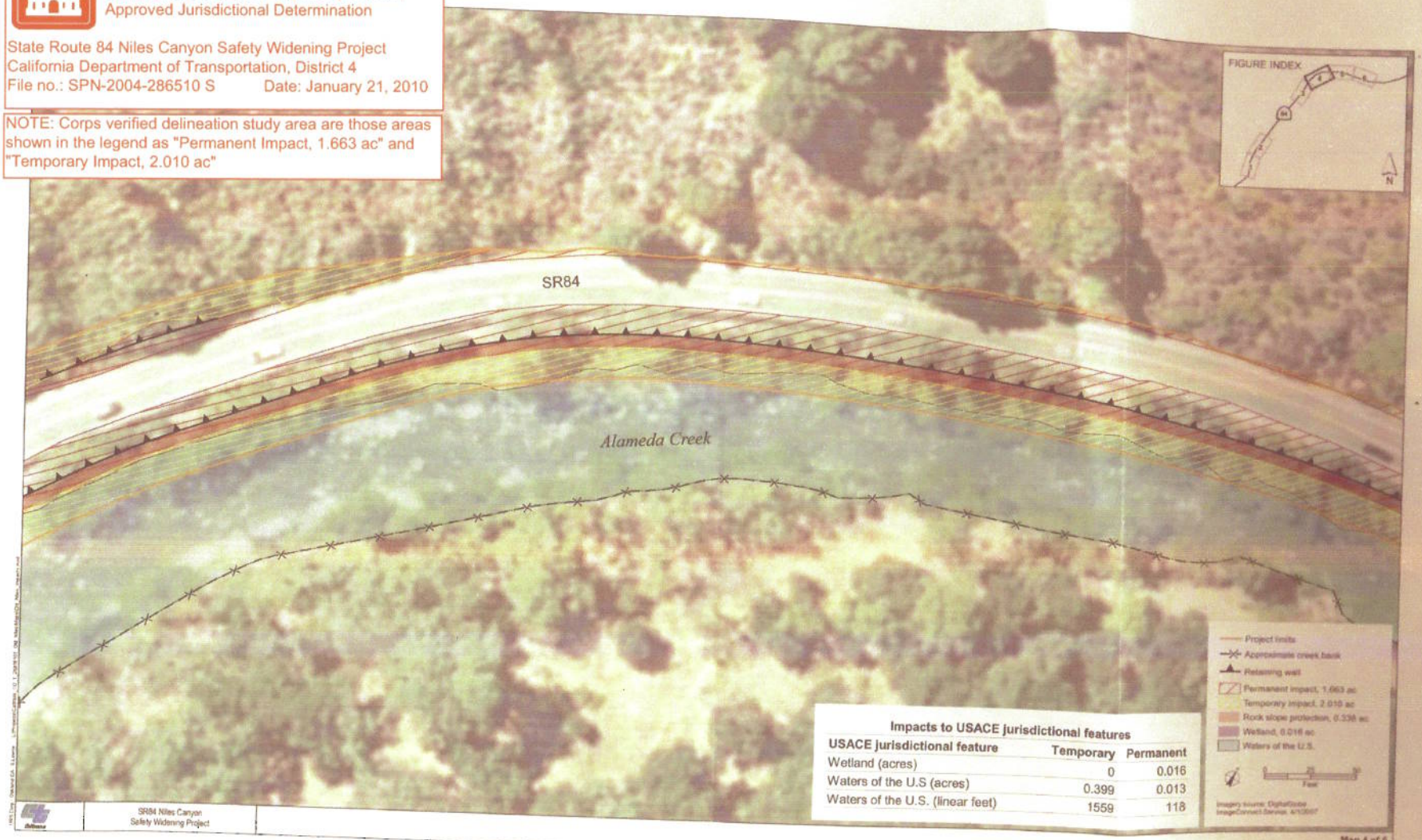


Impacts to USACE jurisdictional features

USACE jurisdictional feature	Temporary	Permanent
Wetland (acres)	0	0.016
Waters of the U.S (acres)	0.399	0.013
Waters of the U.S. (linear feet)	1559	118

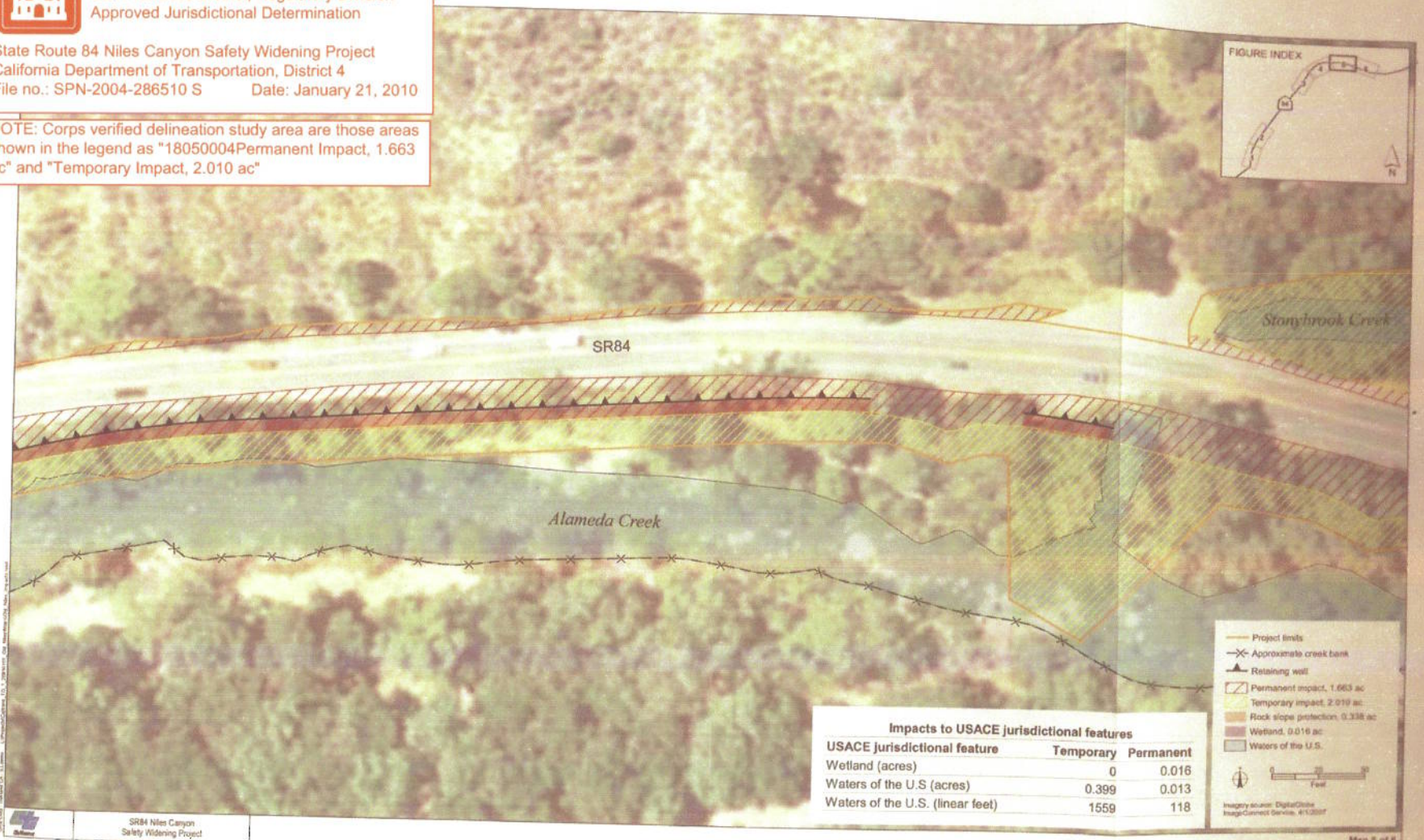
SR84 Niles Canyon
Safety Widening Project

Map 4 of 6
Project impacts and waters of the U.S.

U.S. Army Corps of Engineers
San Francisco District, Regulatory Division
Approved Jurisdictional Determination

State Route 84 Niles Canyon Safety Widening Project
California Department of Transportation, District 4
File no.: SPN-2004-286510 S Date: January 21, 2010

NOTE: Corps verified delineation study area are those areas shown in the legend as "18050004Permanent Impact, 1.663 ac" and "Temporary Impact, 2.010 ac"



Impacts to USACE jurisdictional features

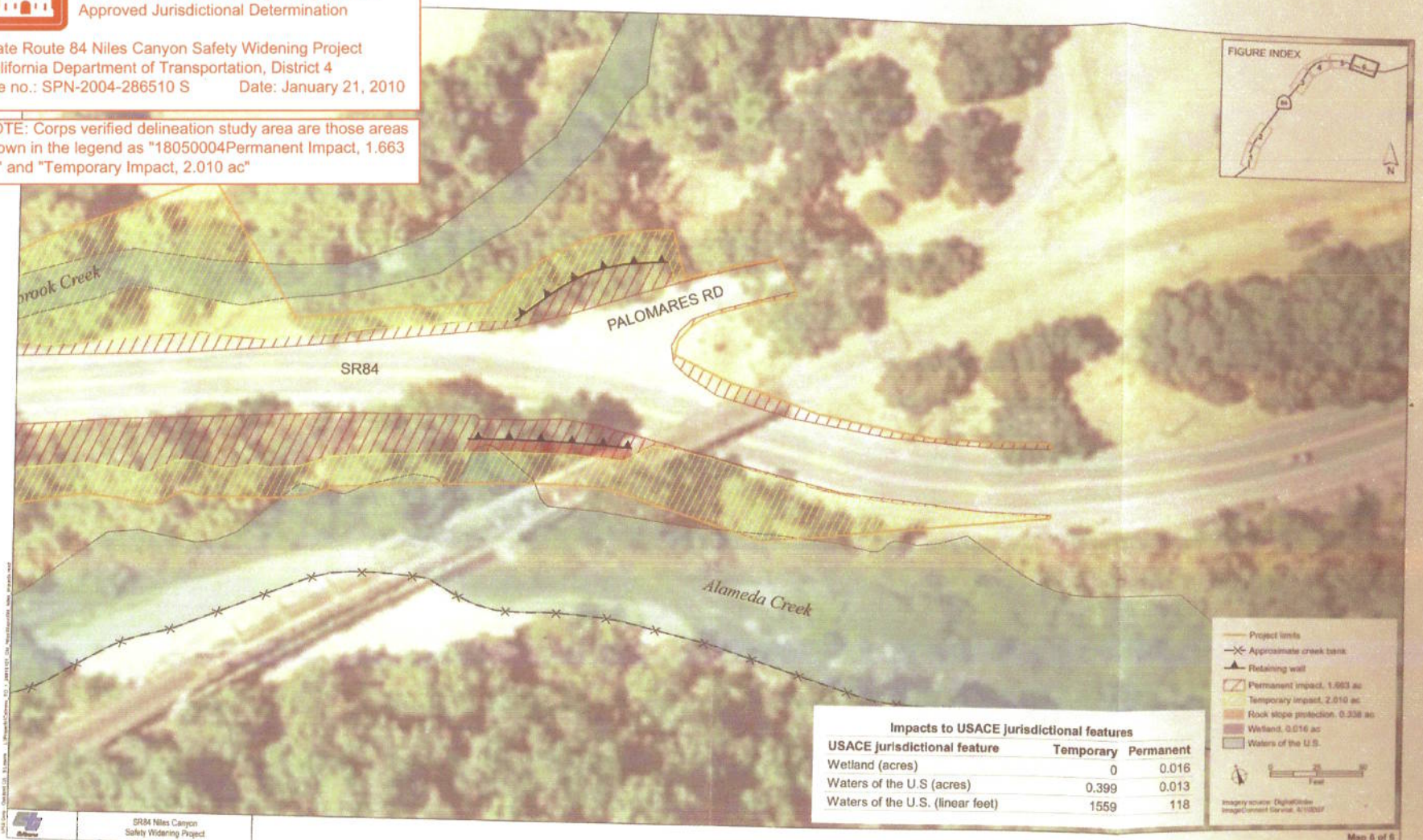
USACE jurisdictional feature	Temporary	Permanent
Wetland (acres)	0	0.016
Waters of the U.S (acres)	0.399	0.013
Waters of the U.S. (linear feet)	1559	118

Map 5 of 6
Project impacts and waters of the U.S.

U.S. Army Corps of Engineers
San Francisco District, Regulatory Division
Approved Jurisdictional Determination

State Route 84 Niles Canyon Safety Widening Project
California Department of Transportation, District 4
File no.: SPN-2004-286510 S Date: January 21, 2010

NOTE: Corps verified delineation study area are those areas shown in the legend as "18050004Permanent Impact, 1.663 ac" and "Temporary Impact, 2.010 ac"



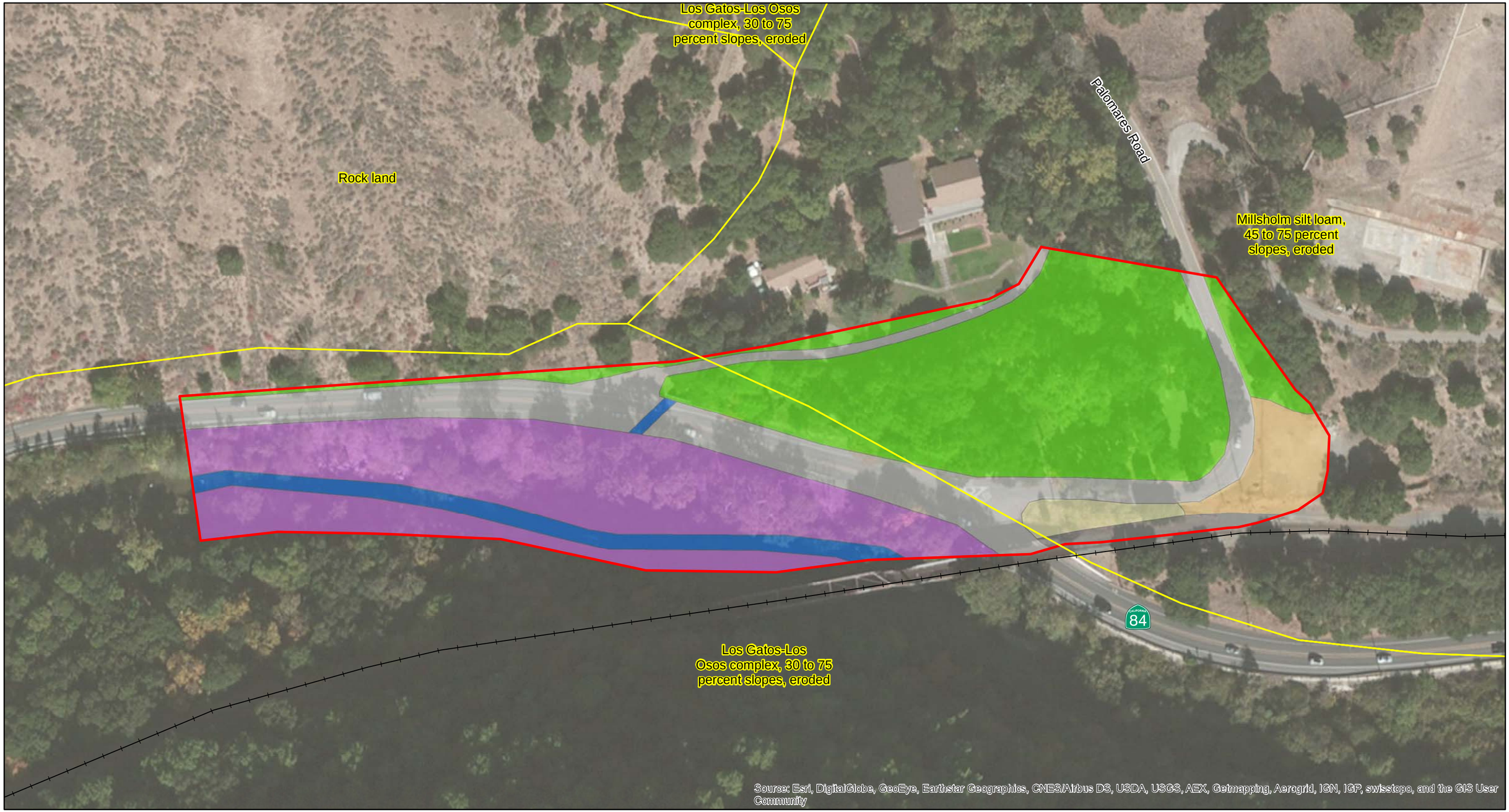
Impacts to USACE jurisdictional features

USACE jurisdictional feature	Temporary	Permanent
Wetland (acres)	0	0.016
Waters of the U.S (acres)	0.399	0.013
Waters of the U.S. (linear feet)	1559	118

SR84 Niles Canyon
Safety Widening Project

Map 6 of 6
Project impacts and waters of the U.S.

Appendix B: Vegetation and Land Cover Types and Soil Map



Biological Study Area
Railroad
Creek
Soil Type

VegetationLand Cover Types
California Bay/Coast Live Oak
Valley Foothill Riparian
Urban-Landscaped
Urban-Railroad
Road
Barren
Creek

Scale: 1:1,200
1 inch = 100 feet

N

0 50 100 Feet

Appendix B:
Stonybrook Vegetation and Land Cover Types and Soil Map
Niles Canyon
Safety Improvement Project

Appendix C:
Custom Soil Report

United States Department of Agriculture

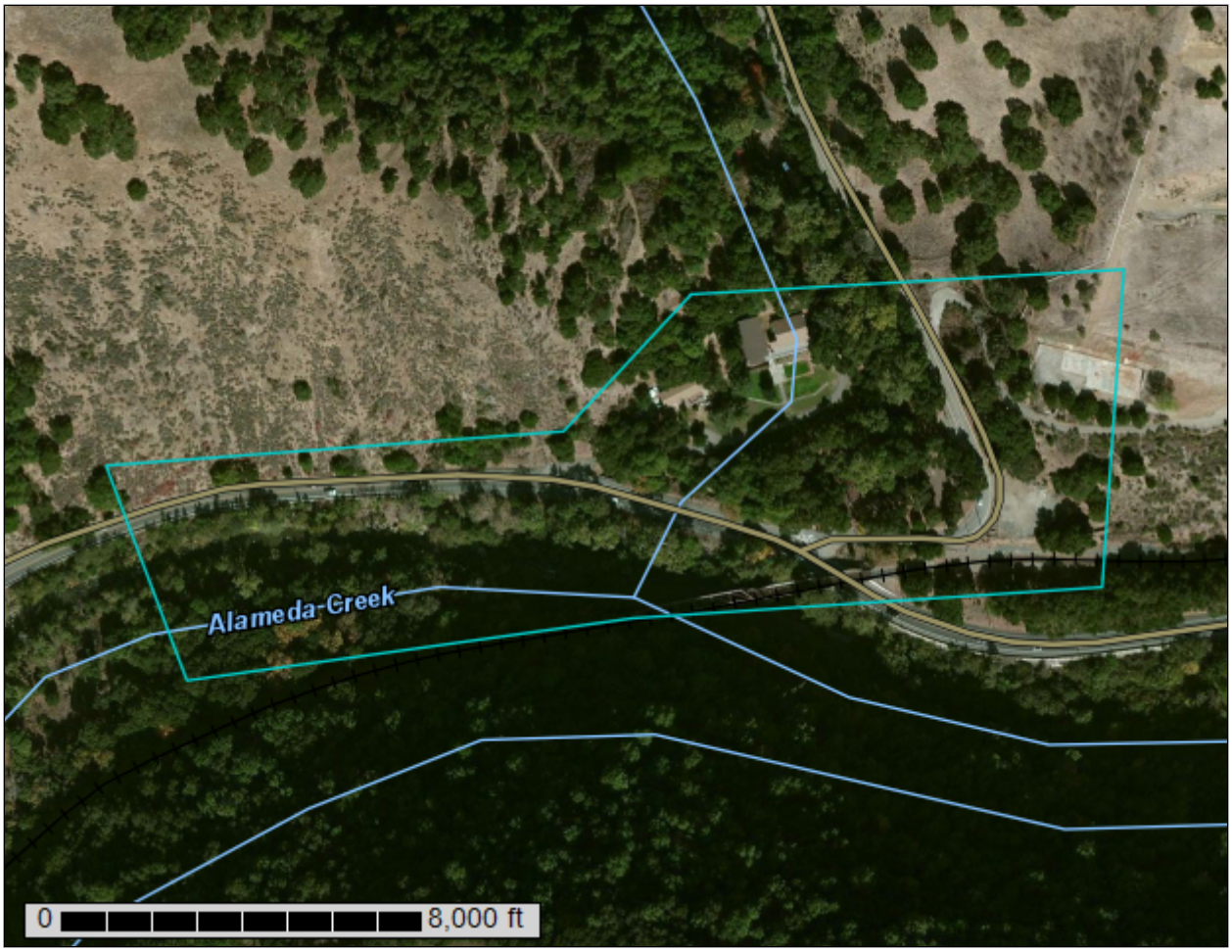
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Alameda Area, California



July 19, 2016

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

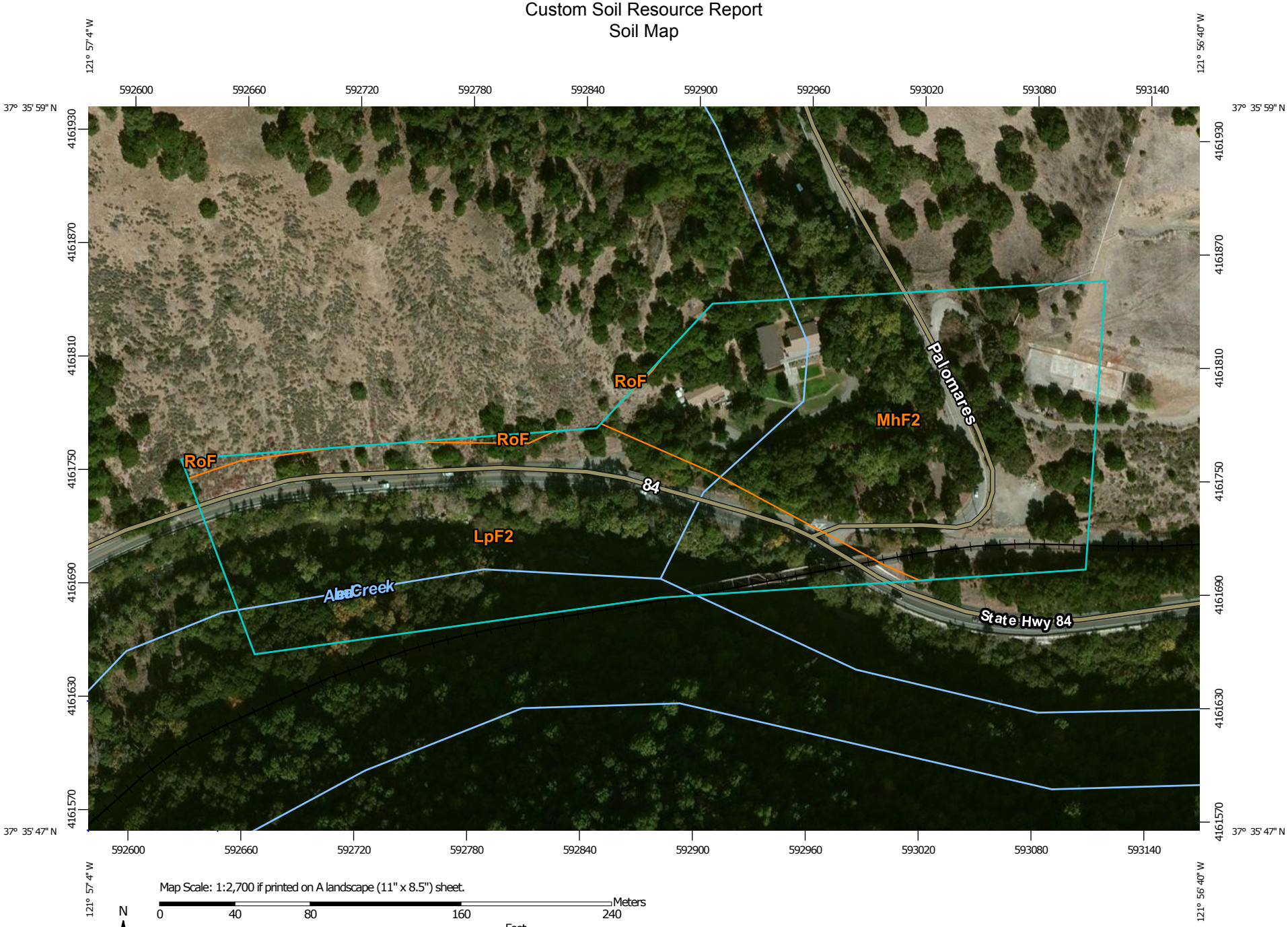
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Alameda Area, California
Survey Area Data: Version 9, Sep 25, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 12, 2010—Nov 15, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Alameda Area, California (CA609)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
LpF2	Los Gatos-Los Osos complex, 30 to 75 percent slopes, eroded, MLRA 15	7.0	47.8%
MhF2	Millsholm silt loam, 45 to 75 percent slopes, eroded	7.5	51.3%
RoF	Rock land	0.1	0.9%
Totals for Area of Interest		**14.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments

on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Alameda Area, California

LpF2—Los Gatos-Los Osos complex, 30 to 75 percent slopes, eroded, MLRA 15

Map Unit Setting

National map unit symbol: 2tb6z
Elevation: 90 to 3,810 feet
Mean annual precipitation: 13 to 29 inches
Mean annual air temperature: 55 to 63 degrees F
Frost-free period: 300 to 365 days

Map Unit Composition

Los gatos and similar soils: 40 percent
Los osos and similar soils: 40 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Los Osos

Setting

Landform: Hillslopes, mountain slopes
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone, shale and in some places from conglomerate

Typical profile

A - 0 to 8 inches: silty clay loam
Bt - 8 to 30 inches: silty clay loam
R - 30 to 40 inches: weathered bedrock

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: 24 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: STEEP LOAMY SLOPES (R015XD139CA)

Description of Los Gatos

Setting

Landform: Mountain slopes, hillslopes
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and shale

Typical profile

A - 0 to 11 inches: loam
Bt - 11 to 39 inches: loam
R - 39 to 49 inches: bedrock

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: 24 to 39 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: STEEP SHALLOW LOAMY UPLANDS (R015XD130CA)

Minor Components

Gaviota

Percent of map unit: 10 percent

Henneke

Percent of map unit: 5 percent

Millsholm

Percent of map unit: 4 percent

Rock outcrop

Percent of map unit: 1 percent

MhF2—Millsholm silt loam, 45 to 75 percent slopes, eroded

Map Unit Setting

National map unit symbol: hb43
Elevation: 600 to 2,500 feet
Mean annual precipitation: 15 to 20 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 280 to 360 days
Farmland classification: Not prime farmland

Map Unit Composition

Millsholm and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Millsholm

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 17 inches: silt loam
H2 - 17 to 22 inches: clay loam
H3 - 22 to 26 inches: unweathered bedrock

Properties and qualities

Slope: 45 to 75 percent
Depth to restrictive feature: 22 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: STEEP LOAMY SLOPES (R015XD139CA)

Minor Components

Gaviota

Percent of map unit: 5 percent

Lobitos

Percent of map unit: 5 percent

Los osos

Percent of map unit: 5 percent

RoF—Rock land

Map Unit Setting

National map unit symbol: hb4m
Elevation: 600 to 3,800 feet
Mean annual precipitation: 10 to 25 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 360 days

Farmland classification: Not prime farmland

Map Unit Composition

Rock land: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rock Land

Setting

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Alluvium derived from sandstone and shale

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

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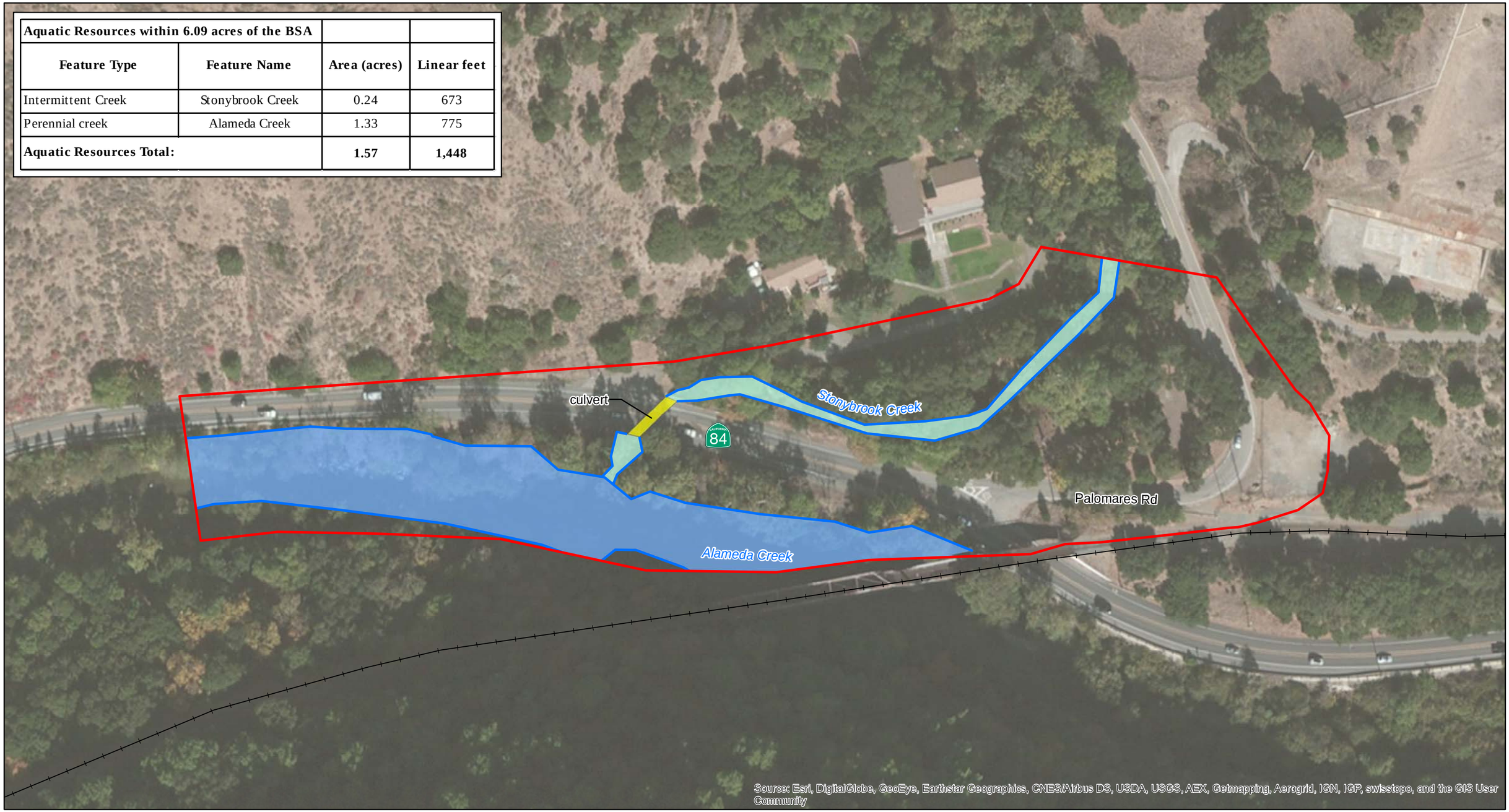
Appendix D:
Stonybrook Creek Aquatic Resources Delineation within the BSA

Aquatic Resources within 6.09 acres of the BSA			
Feature Type	**Feature Name**	**Area (acres)**	**Linear feet**
Intermittent Creek	Stonybrook Creek	0.24	673
Perennial creek	Alameda Creek	1.33	775
Aquatic Resources Total:		**1.57**	**1,448**



USGS Topo Quad: Niles (1980)
PLSS: T4S, R1W, Section 11
37.598168 N, -121.948006 W

Project Name: Stonybrook Creek
Surveyors: Constance Ganong and Tiffany Ngo
Dates of Surveys: March 1, March 22, and July 14, 2016
Date of Map: 07/26/2016

- Biological Study Area
- Railroad
- Intermittent Creek (Stonybrook Creek)
- Perennial Creek (Alameda Creek)
- Culvert
- OHWM Delineation

Scale: 1:1,200
1 inch = 100 feet

N

0 50 100 Feet

Appendix D:
Stonybrook Creek Aquatic Resources Delineation within the BSA
Niles Canyon
Safety Improvement Project
July 26, 2016

Appendix E:
Photos of the BSA

Photo 1. Box culvert where Stonybrook Creek flows to Alameda Creek. Photo facing northeast, on the south side of SR 84. March 1, 2016

Photo 2. Box culvert where Stonybrook Creek flows to Alameda Creek. Photo facing southwest, on the north side of SR 84. March 1, 2016

Photo 3. Stonybrook Creek just north of the culvert on the north side of SR 84. Photo facing northeast. March 1, 2016

Photo 4. Stonybrook Creek area that parallels SR 84. Note the cement lining of the south bank to control for erosion and the scour marking. Photo facing northeast. March 1, 2016

Photo 5. Stonybrook Creek near the northern portion of the BSA.
Photo facing northeast. March 1, 2016

Photo 6. Stonybrook Creek at the northern most portion of the BSA.
Photo facing north. March 1, 2016

Photo 7. Alameda Creek just downstream of the confluence of Stonybrook Creek. Note the concrete debris from possibly a remnant road or bridge. Photo facing northwest. March 1, 2016

Photo 8. Alameda Creek at the railroad bridge at the south end of the BSA. Photo facing southeast. March 1, 2016

Photo 9. Alameda Creek downstream of the railroad bridge and downstream of Photo 8. Photo facing southeast. March 22, 2016

Photo 10. Active channel portion of Alameda Creek at the railroad bridge. Photo facing north. August 2, 2016.

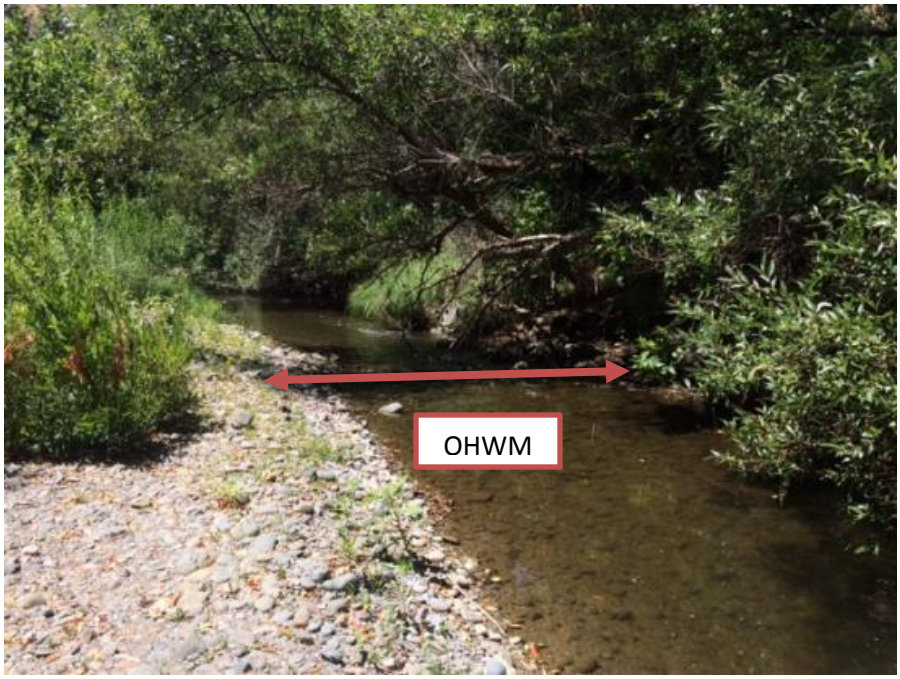


Photo 11. Alameda Creek looking downstream. Photo facing west. August 2, 2016.

Photo 12. Alameda Creek looking downstream near the western end of the BSA. Photo facing west. August 2, 2016.

Appendix F:
Plant List

SCIENTIFIC NAME[1]	COMMON NAME	INDICATOR STATUS
FERNS AND FERN ALLIES		
EQUISETACEAE	HORSETAIL FAMILY	
Equisetum telmateia ssp. *braunii*	Giant horsetail	FACW
FLOWERING PLANTS: DICOTS		
ADOXACEAE	MUSKROOT FAMILY	
Sambucus nigra ssp. cerulea	Blue elderberry	FAC
ANACARDIACEAE	SUMAC FAMILY	
Toxicodendron diversilobum	Poison oak	NL
APIACEAE	CARROT FAMILY	
*Conium maculatum**	Poison hemlock	FACW
*Foeniculum vulgare**	Wild fennel	NL
APOCYNACEAE	DOGBANE FAMILY	
*Vinca major**	Greater periwinkle	NL
ARALIACEAE	GINSENG FAMILY	
*Hedera helix**	English Ivy	NL
ASTERACEAE	SUNFLOWER FAMILY	
Artemisia californica	California sagebrush	NL
Artemisia douglasiana	Mugwort	FAC
Baccharis pilularis	Coyote brush	NL
*Carduus pycnocephalus**	Italian thistle	NL

SCIENTIFIC NAME[1]	COMMON NAME	INDICATOR STATUS
*Helminthotheca echioides**	Bristly ox-tongue	FACU
*Lactuca serriola**	Prickly lettuce	FACU
Senecio hydrophilus	Alkali ragwort	OBL
*Senecio vulgaris**	Common groundsel	FACU
BETULACEAE	BIRCH FAMILY	
Alnus rhombifolia	White Alder	FACW
BRASSICACEAE	MUSTARD FAMILY	
*Brassica nigra**	Black mustard	NL
FABACEAE	PEA FAMILY	
*Genista monspessulana**	French broom	NL
*Medicago polymorpha**	Bur clover	FACU
*Melilotus albus**	White sweet-clover	NL
FAGACEAE	OAK FAMILY	
Quercus agrifolia	Coast live oak	NL
Quercus chrysolepis	Canyon live oak	NL
JUGLANDACEAE	WALNUT FAMILY	
Juglans hindsii	Northern California black walnut	FAC
LAURACEAE	LAUREL FAMILY	
Umbellularia californica	California bay	FAC
ONAGRACEAE	EVENING-PRIMROSE FAMILY	
Epilobium brachycarpum	Panicled willow-herb	NL

SCIENTIFIC NAME[1]	COMMON NAME	INDICATOR STATUS
PLATANACEAE	SYCAMORE FAMILY	
Platanus racemosa	Western sycamore	FAC
ROSACEAE	ROSE FAMILY	
*Rubus armeniacus**	Himalayan blackberry	FACU
Rubus ursinus	California blackberry	FAC
Prunus sp.	Species unknown	Status unknown
RUBIACEAE	MADDER FAMILY	
Galium aparine	Goose-grass	FACU
SALICACEAE	WILLOW FAMILY	
Salix laevigata	Red willow	FACW
Salix lasiolepis	Arroyo willow	FACW
Populus fremontii ssp. *fremontii*	Fremont cottonwood	FAC
SAPINDACEAE	SOAPBERRY FAMILY	
Acer negundo	Box elder	FACW
Acer macrophyllum	Big-leaf maple	FAC
Aesculus californica	California buckeye	NL
SCROPHULARIACEAE	FIGWORT FAMILY	
Scrophularia californica	Bee plant	FAC
*Verbascum thapsus**	Wooly mullein	FACU
VITACEAE	GRAPE FAMILY	
Vitis californica	California wild grape	FACU
FLOWERING PLANTS: MONOCOTS		

SCIENTIFIC NAME[1]	COMMON NAME	INDICATOR STATUS
POACEAE	GRASS FAMILY	
*Avena fatua**	Wild oat	NL
*Bromus diandrus**	Ripgut brome	NL
*Bromus hordeaceus**	Soft chess	FACU
*Cynosurus echinatus**	Spiny dogtail	NL
*Festuca perennis**	Italian ryegrass	FAC
*Hordeum marinum**	Seaside barley	FAC
*Hordeum murinum**	Foxtail	FACU
*Paspalum dilatatum**	Dallisgrass	FAC
*Phalaris aquatica**	Harding grass	FACU
*Stipa miliacea **	Smilo grass	NL

Notes:

1. Common and scientific names from Baldwin *et al*. (2012) and CalFlora (2016)

   * = non-native species

Appendix F Tree Inventory

Tree Inventory

Niles Canyon Safety Improvement Project

Caltrans District 4

Alameda County
State Route 84
ALA 84 (PM 10.8/18.0)
EA 2A332

July 2016

CALIFORNIA DEPARTMENT OF TRANSPORTATION

For individuals with sensory disabilities, this document is available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternative formats, please write to Caltrans, Attn: Jo Ann Cullom, Office of Biological Sciences and Permits, 111 Grand Avenue, Oakland, CA 94623-0660; or call (510) 286-6046 (voice); or use the California Relay Service TTY number, (800) 735-2929.

TREE INVENTORY

NILES CANYON SAFETY IMPROVEMENT PROJECT

Caltrans District 4
State Route 84
ALA 84 (PM 10.8/18.0)
EA 2A332

STATE OF CALIFORNIA
Department of Transportation

Prepared By: _____ Date: 8/23/16
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Introduction

The California Department of Transportation (Caltrans) proposes to construct safety improvements at specific site locations along the State Route 84 (SR 84) corridor between SR 237 (Mission Boulevard) post mile (PM) 10.8 and Interstate 680 (I-680) PM 18.0 (Figure 1). The proposed project involves several components including: installation of traffic signs and lighting, low speed curve improvements, installation of k-rail and Midwest guardrail system, installation of rock drapery system, signalization, and limited shoulder widening. In addition, an existing box culvert directing Stonybrook Creek under the SR 84 will be replaced with a clear-span bridge as a part of this project.

This report documents the 2014 and 2016 tree inventory conducted by Garcia and Associates (GANDA). Because of the overlap of the Biological Study Area (BSA) with previous tree inventories conducted, only areas that were not covered in previous surveys were inventoried. The data from the Alameda Creek Bridge Replacement Project Tree Inventory (GANDA 2014), a project planned to go to construction in 2017, and the New Niles Project Tree Inventory (GANDA 2012), a previous project that did not go to construction, were used to complete the inventory of all trees within the BSA. The purpose of the survey was to measure and record the location, species, and diameter at breast height (DBH) of all trees with 4-inch and greater DBH within the BSA for the Niles Canyon Safety Improvement Project (project). The results of this survey will be used to assess tree impacts and associated mitigation for the project.

Project Location

The project is located in Alameda County, California, Niles U.S. Geological Survey (USGS) 7.5 minute (‘) topographic quadrangle (quad). The BSA is located along portions of SR 84 between PM 10.8 and PM 18.0, dependent on the safety improvement locations. SR 84 has become a major transportation corridor between Interstate 680 to the east and Interstate 880 to the west (Figure 1). The BSA is approximately 7.2 miles long and encompasses approximately 61.13 acres.

The majority of the project is located in Niles Canyon, a steep-walled canyon in Alameda County that runs roughly east-west between Fremont and Sunol, with Alameda Creek flowing westward through the bottom. The Union Pacific Railroad tracks and SR 84 both run through the canyon, alternating along the north and the south sides via several road and rail bridges spanning Alameda Creek. This stretch of SR 84 is named Niles Canyon Road, and is a two-lane highway used as an alternative commute corridor to the highly utilized I-680. The bottom of Niles Canyon is densely forested with riparian and oak woodland vegetation that is occasionally broken with scattered patches of scrub and grassland. Larger patches of scrub and grassland are present at higher elevations on the

north wall of the canyon, while the south wall remains largely wooded up to the south ridgeline. A small portion of the project incorporates Stonybrook Creek where it confluences with Alameda Creek near Palomares Road. The habitat in the BSA along Stonybrook Creek north of SR 84 is California bay and coast live oak.

There are several rural residences located along Niles Canyon Road. At the east end of Niles Canyon, the roadway runs along the south edge of the Town of Sunol. The BSA crosses Alameda Creek at two locations: the Alameda Creek Bridge (Bridge #33-0036) and the Alameda Creek Overhead (Bridge #33-0039). Alameda Creek drains a large watershed east of Niles Canyon, including the Sunol Regional Wilderness area to the southeast and Livermore Valley to the northeast (via a tributary named Arroyo de la Laguna). Flows in Alameda Creek are controlled by water agencies such as the San Francisco Public Utilities Commission (SFPUC) through releases from reservoirs upstream of the BSA.

The project also extends east of Niles Canyon to I-680, along a stretch of SR 84 named Paloma Way. An area of low, rolling hills covered in open grassland is located immediately north of Paloma Way. To the south, there is a large field that contains an active open-pit gravel mine. The edges of this field, including the areas immediately adjacent to Paloma Way, are subject to periodic disking. Paloma Way is lined on both sides by a row of planted trees, the majority of which are oaks and sycamores. Interstate 680 is located just outside of the BSA, immediately east of the eastern end.

The BSA for this project includes the project footprint and a 15-foot buffer from the project footprint.

Methods

Prior to the tree surveys, Garcia and Associates' biologist Meghan Bishop reviewed the previous data collected for the Alameda Creek Bridge Project and New Niles Project to determine the areas that had not been previously surveyed within the BSA. Garcia and Associates biologists Eric Jepsen, Constance Ganong, Tiffany Ngo, Meghan Bishop, Alex Pries, Deanna de Castro, and Jennifer Addison conducted pedestrian tree surveys within the areas of the project BSA that had not previously been surveyed. The biologists worked in teams of two or three people during nine site visits on August 18-21 and December 2, 2014, March 22, 25, 29, and July 14, 2016. Weather conditions were predominantly mild with temperatures ranging from the 60s to the 80s degrees Fahrenheit.

All trees of four inches or larger DBH were included in the inventory. Previous surveys conducted in 2012 marked trees with a DBH of three inches or larger, we included all these trees in the inventory since growth has likely occurred since 2012. Trees were marked with individual, numerically-stamped, aluminum tree tags and nails, and measured at DBH (4.5 feet from the base) with a DBH measuring tape. DBH was measured to the nearest tenth of an inch. Tree tags were placed facing away from SR 84. If a main branch occurred at breast height, the DBH measurement was adjusted to below the branch. Trees with multiple trunks were treated as one tree if the trunk separation occurred above ground, but below DBH. Each limb (up to a maximum of six limbs) with DBH greater than or equal to four inches was measured and recorded for each tree. Trunks were considered separate trees if the trunk separation occurred below ground. Only living trees were included in this survey.

GANDA biologists recorded the following for each tree: tag number, tree species, DBH, location, and whether a woodrat nest was present against or adjacent to the tree base. Tree data and woodrat nest locations were recorded using a handheld Trimble Geoexplorer GPS data logger with sub-meter accuracy. For areas where foliage and/or topography blocked satellite reception to the GPS unit, offsets were recorded using a rangefinder and drawn in on aerial imagery maps. In limited instances when the Trimble GPS data logger was still not able to collect data, data was taken with a Garmin GPS unit. Offsets were also taken when safety concerns or access restrictions prevented direct access to trees. Offsets were created by recording the distance to the tree from the GPS point using a rangefinder, and using a compass-bearing to provide direction from the GPS point to the tree. Tree locations were corrected later in ArcGIS, based on individual recorded offsets and notes taken on aerial imagery maps. For trees that were inaccessible due to steep slopes or other unsafe conditions, an estimated DBH was recorded and the tree was not marked with an aluminum tag. Data were also recorded with pencil and paper as a backup. Some trees had already been marked with aluminum tags during previous tree surveys. For these trees, no new tags were added and the data collected was retrieved from previous tree inventories performed by GANDA.

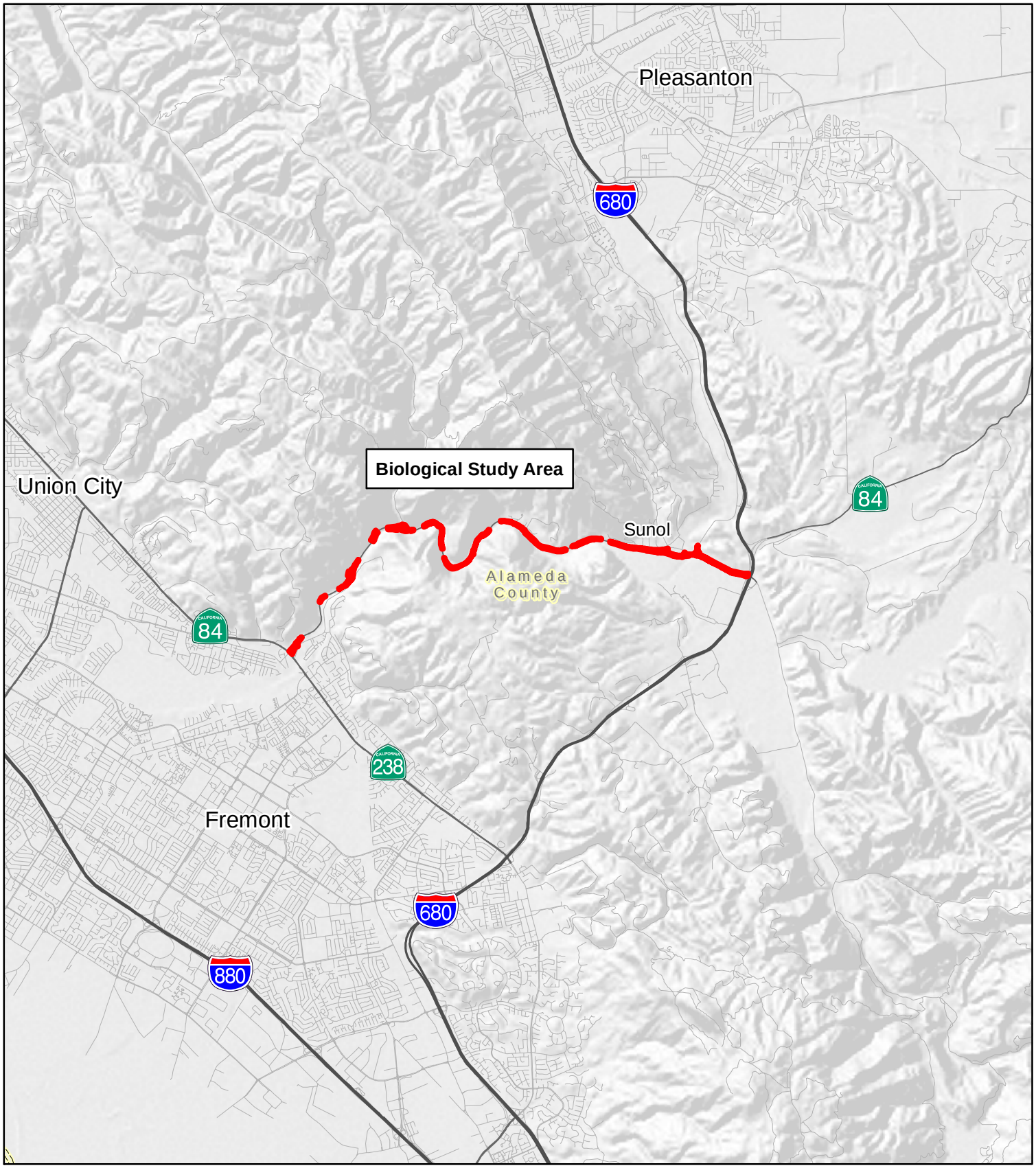
GPS accuracy was not always exact and not all trees could be mapped with precision. Because of the potential GPS inaccuracies, and to ensure that all trees in the BSA were included, trees that appeared at or just outside the BSA were included in the survey. This method assured that no trees within the BSA were missed.

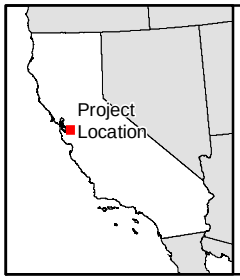
Results

A total of 1,201 trees were recorded within the BSA (Table 1 and Table 2). Figure 2 illustrates the location of each tree within the BSA. GANDA biologists recorded data for 464 new trees, and used data on an additional 737 trees that had been marked in previous surveys.

Thirty-five different tree species were identified within the BSA, 20 of which are California native flora (Table 1). Native trees represented the bulk of the trees observed in the survey (1,121 trees, Table 2). The areas immediately surrounding Alameda Creek and Stonybrook Creek were dominated by valley foothill riparian species, including arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), white alder (*Alnus rhombifolia*), Fremont cottonwood (*Populus fremontii*), and western sycamore (*Platanus racemosa*). Upland habitat was dominated by coastal oak woodland species, including big leaf maple (*Acer macrophyllum*), California bay laurel (*Umbellularia californica*), and coast live oak (*Quercus agrifolia*). The remaining 80 non-native trees (15 species) included tree of heaven (*Ailanthus altissima*), olive (*Olea* sp.), and black locust (*Robinia pseudoacacia*) (Table 2).

A complete list of the species, identification number, and DBH data for each individual tree counted during the inventory is provided in Table 3.





Biological Study Area

Scale: 1:100,000
1 inch = 8,333 feet

N

0 1 2 Miles

Figure 1:
Project Location Map
Niles Canyon
Safety Improvement Project

Alameda County,
California

Table 1. Native tree species and abundance within the Biological Study Area

Common Name	Scientific Name	Status	Abundance
Arroyo willow	*Salix lasiolepis*	Native	**29**
Big leaf maple	*Acer macrophyllum*	Native	**112**
Bishop pine	*Pinus muricata*	Native	**2**
Blue elderberry	*Sambucus mexicana*	Native	**17**
Blue oak	*Quercus douglasii*	Native	**1**
California bay tree	*Umbellularia californica*	Native	**104**
California buckeye	*Aesculus californica*	Native	**45**
Canyon live oak	*Quercus chrysolepis*	Native	**3**
Coast live oak	*Quercus agrifolia*	Native	**361**
Fremont cottonwood	*Populus fremontii*	Native	**50**
Madrone	*Arbutus menziesii*	Native	**4**
Monterey pine	*Pinus radiata*	Native	**2**
Northern California black walnut	*Juglans hindsii*	Native	**67**
Oak	*Quercus* spp.	Native	**3**
Ponderosa pine	*Pinus ponderosa*	Native	**3**
Red willow	*Salix laevigata*	Native	**59**
Valley oak	*Quercus lobata*	Native	**60**
Western sycamore	*Platanus racemosa*	Native	**97**
White alder	*Alnus rhombifolia*	Native	**76**
Willow	*Salix* spp.	Native	**26**
		Total	**1,121**

Table 2. Non-native tree species and abundance within Biological Study Area

Common Name	Scientific Name	Status	Abundance
Almond	*Prunus dulcis*	Non-native	**5**
Black acacia	*Acacia melanoxylon*	Non-native	**3**
Black locust	*Robinia pseudoacacia*	Non-native	**16**
Canary Islands pine	*Pinus canariensis*	Non-native	**1**
Casuarina	*Casuarina* spp.	Non-native	**1**
Cork oak	*Quercus suber*	Non-native	**1**
Eucalyptus	*Eucalyptus globulus*	Non-native	**18**
Glossy privet	*Ligustrum lucidum*	Non-native	**1**
Italian alder	*Alnus cordata*	Non-native	**1**
Olive	*Olea* spp.	Non-native	**11**
Other-unknown	n/a	Non-native	**5**
Peruvian pepper	*Schinus molle*	Non-native	**4**
Plum	*Prunus* sp.	Non-native	**1**
Red bud	*Cercis canadensis*	Non-native	**3**
Tree of heaven	*Ailanthus altissima*	Non-native	**9**
		Total	**80**

Railroad
Creek
Biological Study Area
Tree

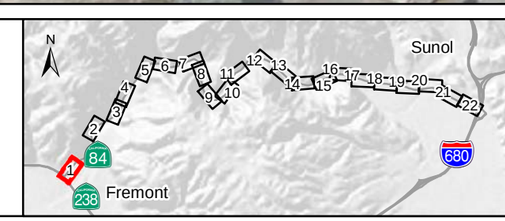
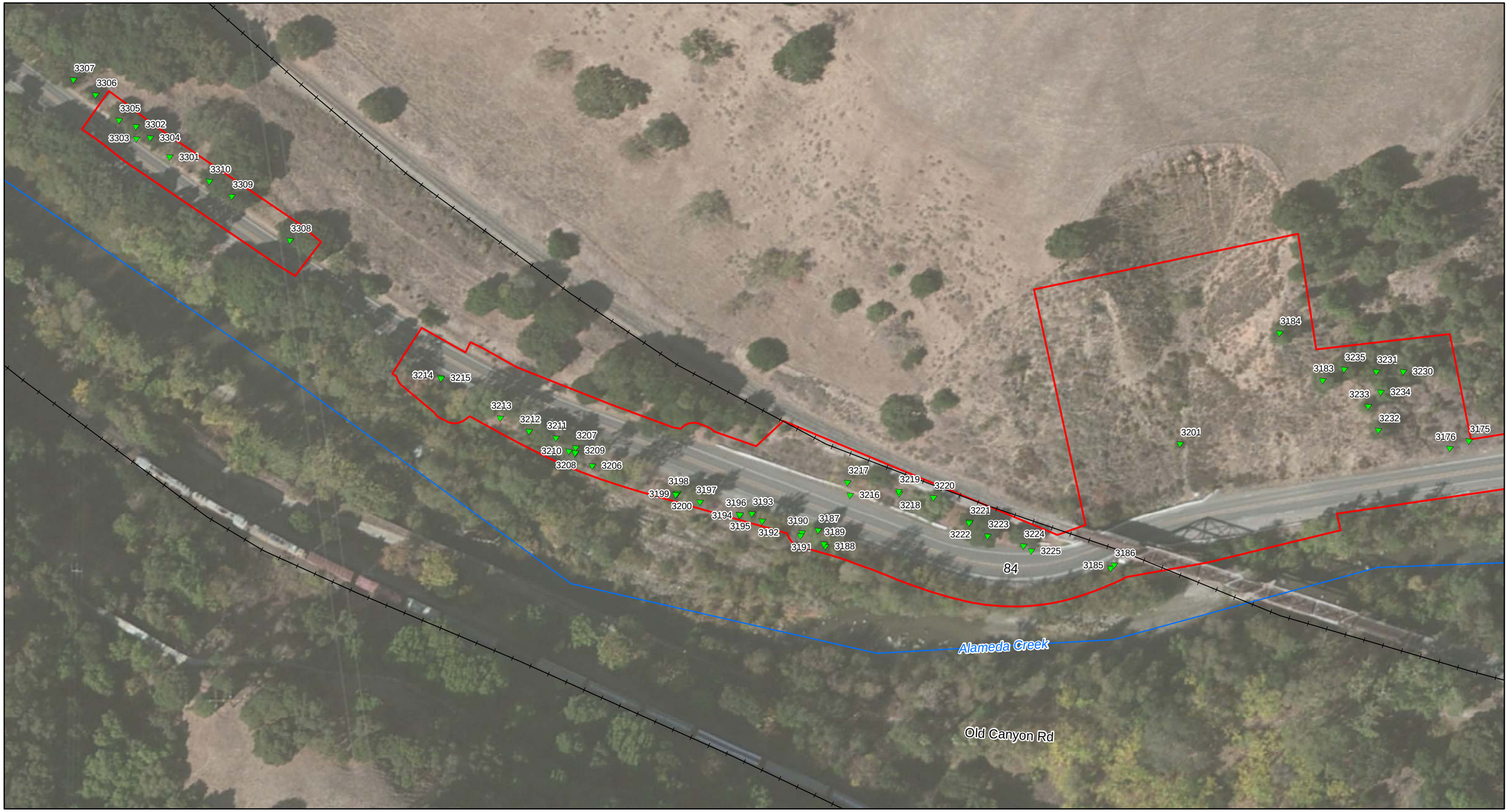


Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 1 of 22
0 100 200 Feet

Railroad
Creek
Biological Study Area
Tree

Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 2 of 22
0 100 200 Feet

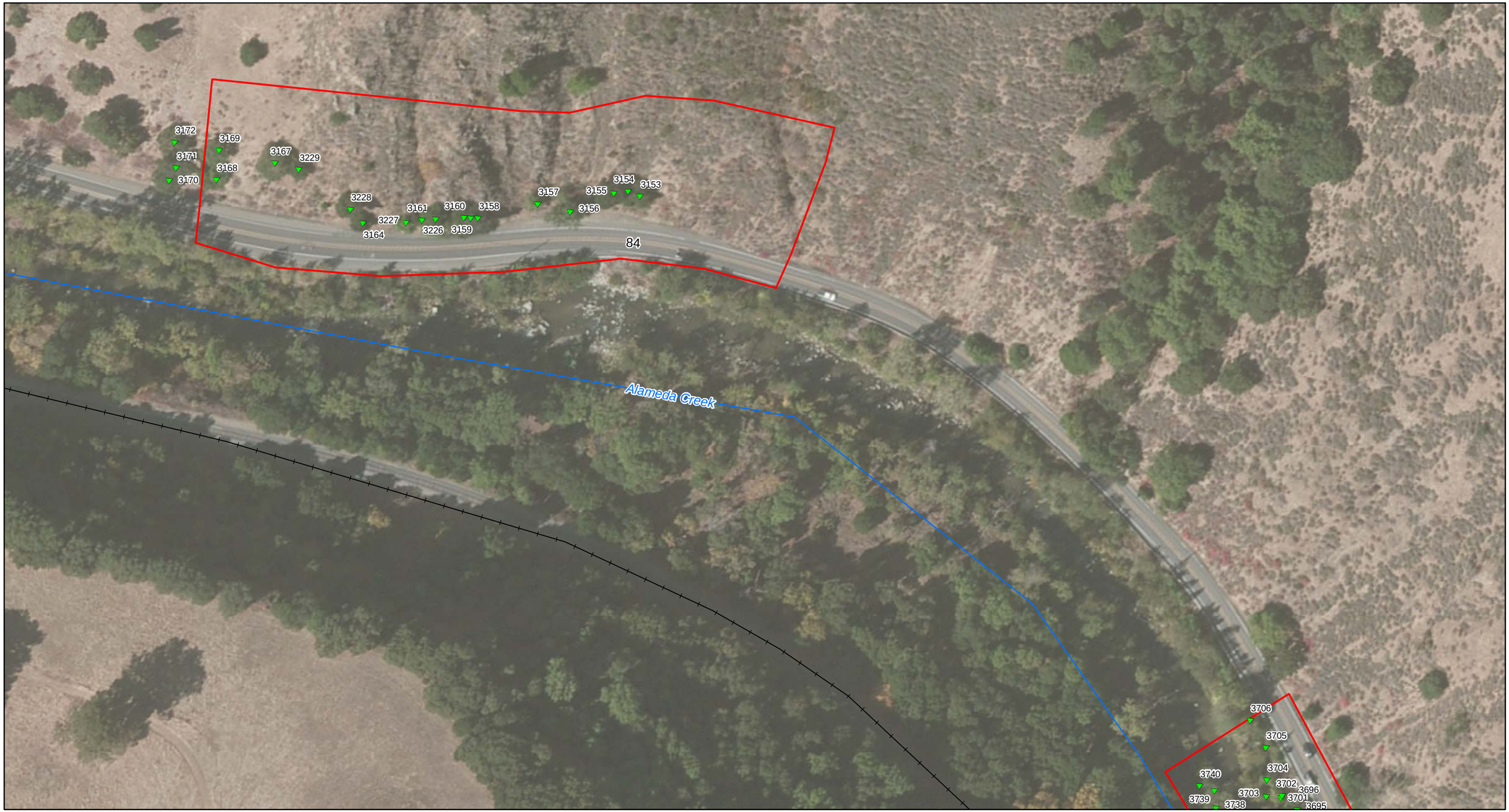


Railroad
Creek
Biological Study Area
Tree

Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 3 of 22
0 100 200 Feet

Railroad
Creek
Biological Study Area
Tree

Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 4 of 22
0 100 200 Feet



Railroad
Creek
Biological Study Area
Tree

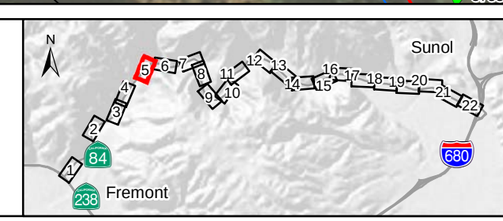
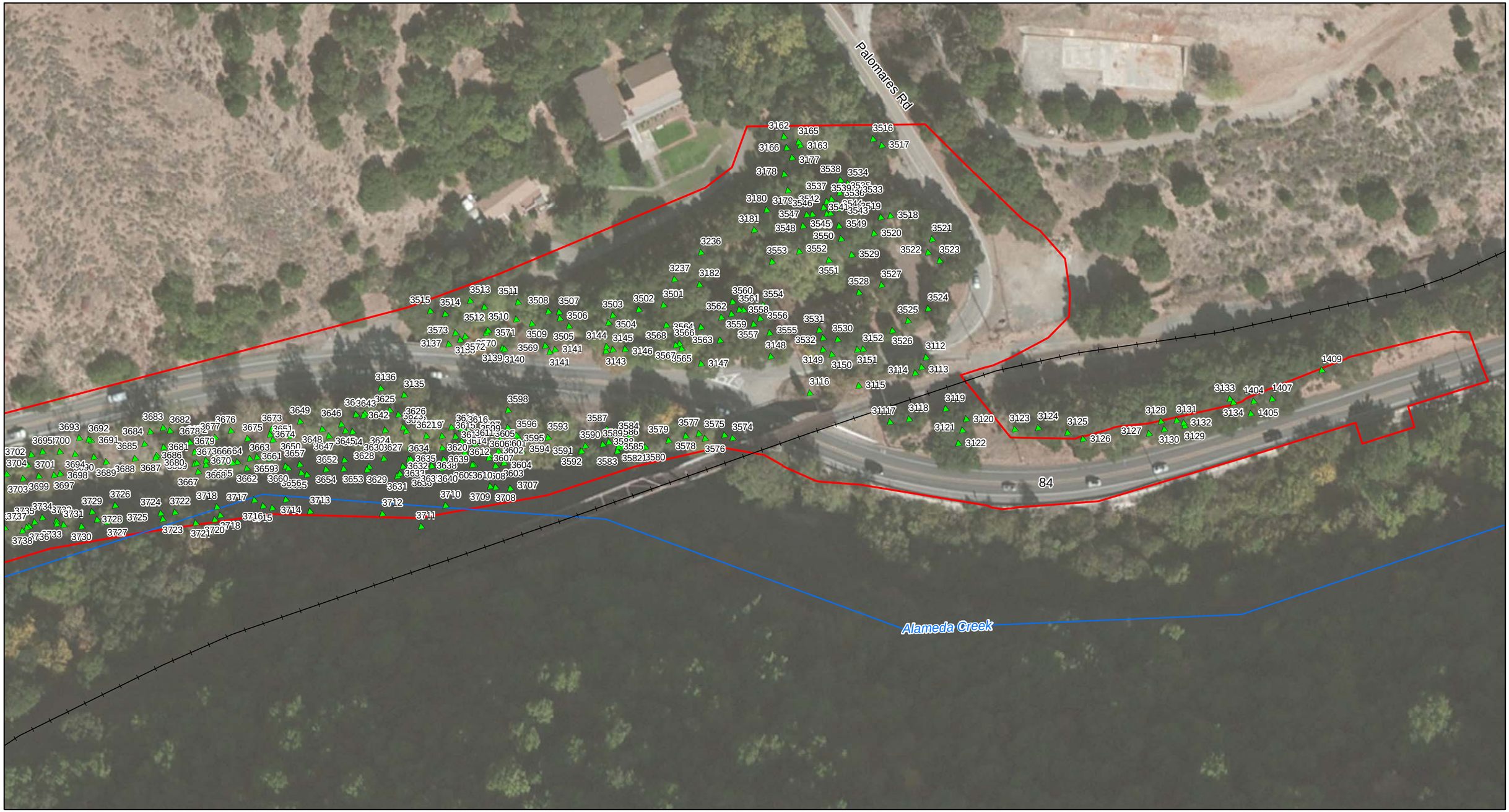


Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 5 of 22
0 100 200 Feet



Railroad
Creek
Biological Study Area
Tree

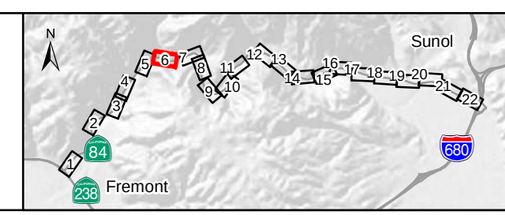
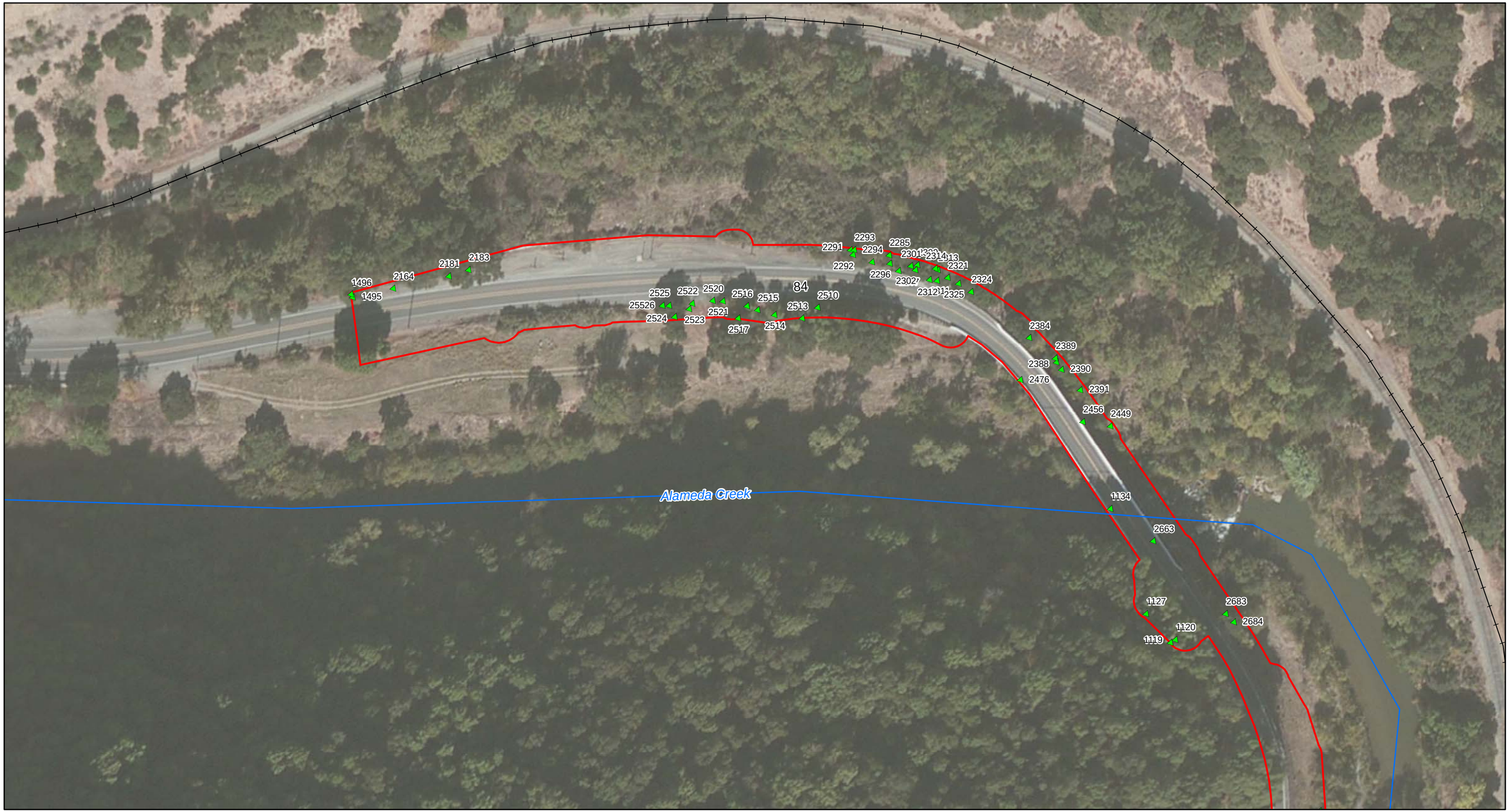


Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 6 of 22
0 100 200 Feet



Railroad
Creek
Biological Study Area
Tree

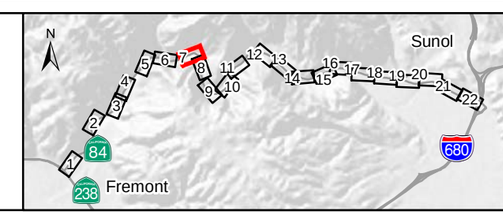


Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 7 of 22
0 100 200 Feet

Railroad
Creek
Biological Study Area
Tree

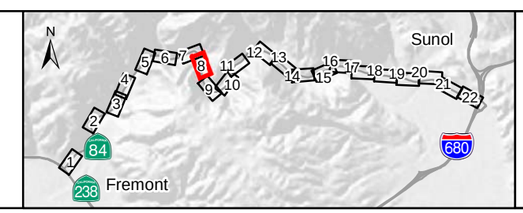
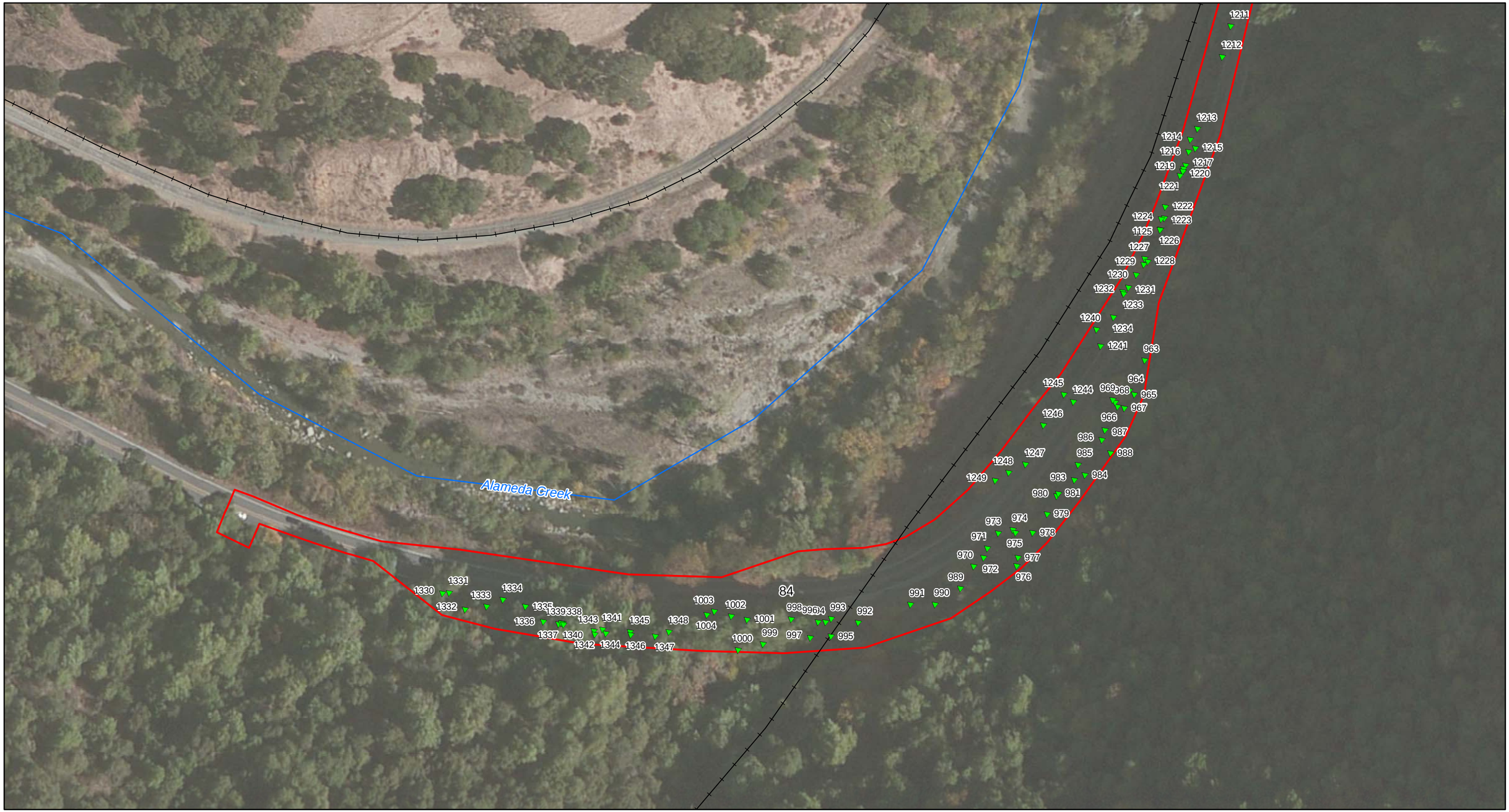


Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 8 of 22

0 100 200 Feet



Railroad
Creek
Biological Study Area
Tree

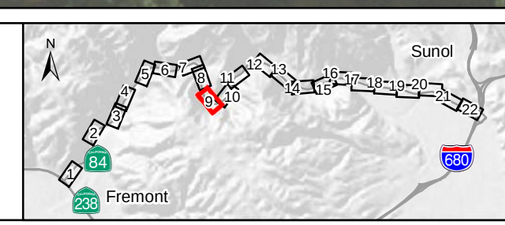


Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 9 of 22
0 100 200 Feet

Railroad
Creek
Biological Study Area
Tree

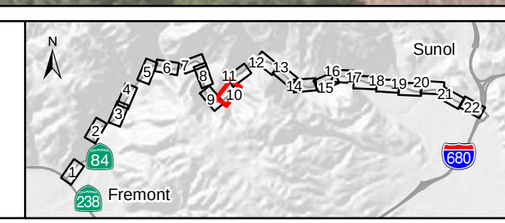


Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 10 of 22
0 100 200 Feet

Railroad
Creek
Biological Study Area
Tree

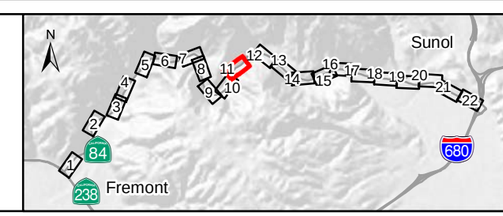
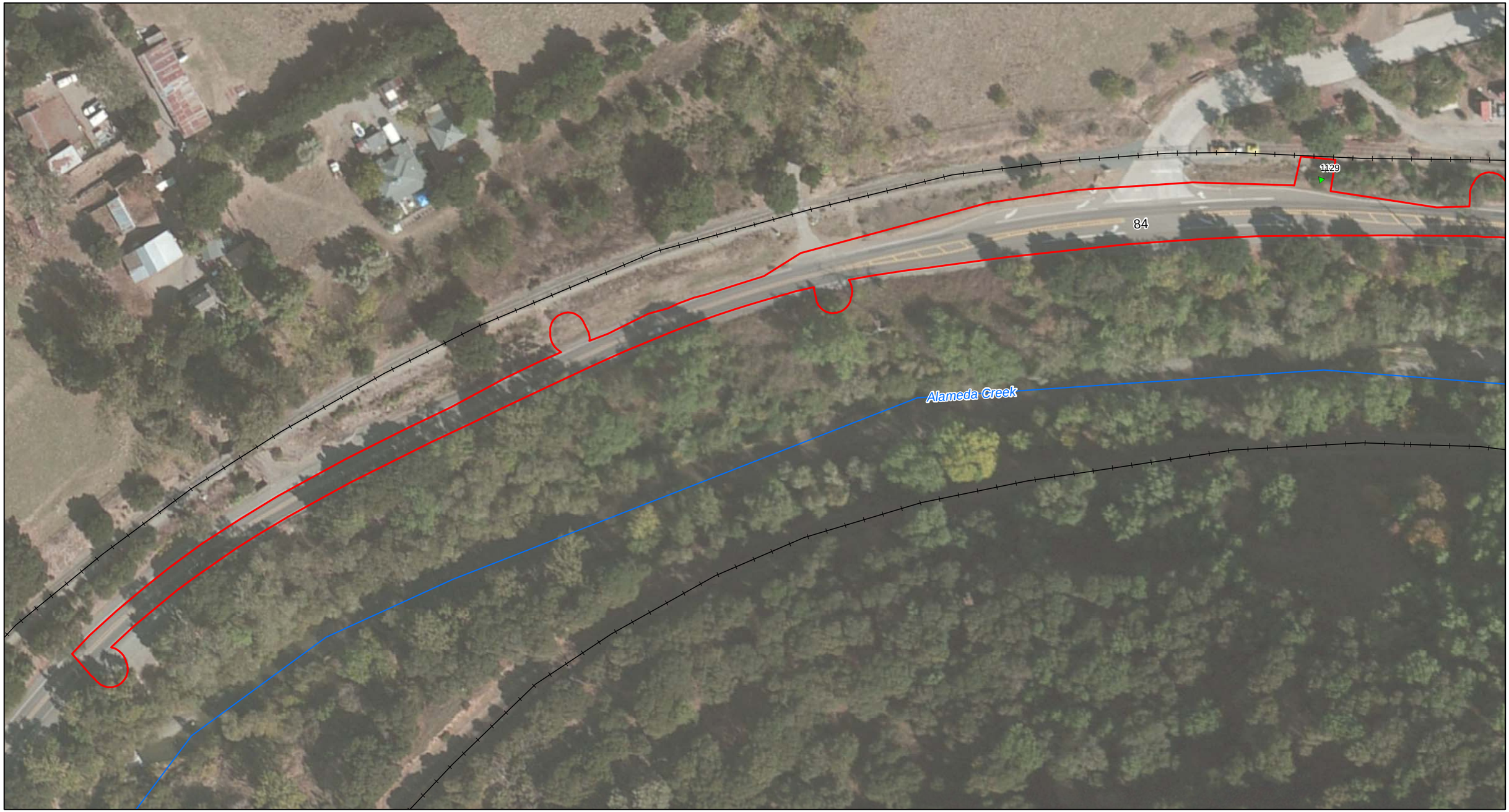


Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 11 of 22
0 100 200 Feet



Railroad
Creek
Biological Study Area
Tree

Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 12 of 22
0 100 200 Feet

Railroad
Creek
Biological Study Area
Tree

Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 13 of 22
0 100 200 Feet

Railroad
Creek
Biological Study Area
Tree

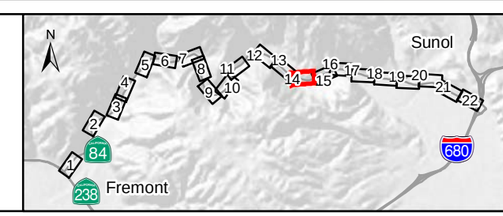


Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 14 of 22
0 100 200 Feet
N

Railroad
Creek
Biological Study Area
Tree

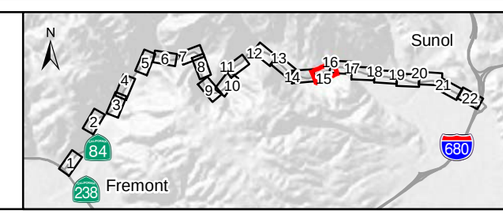
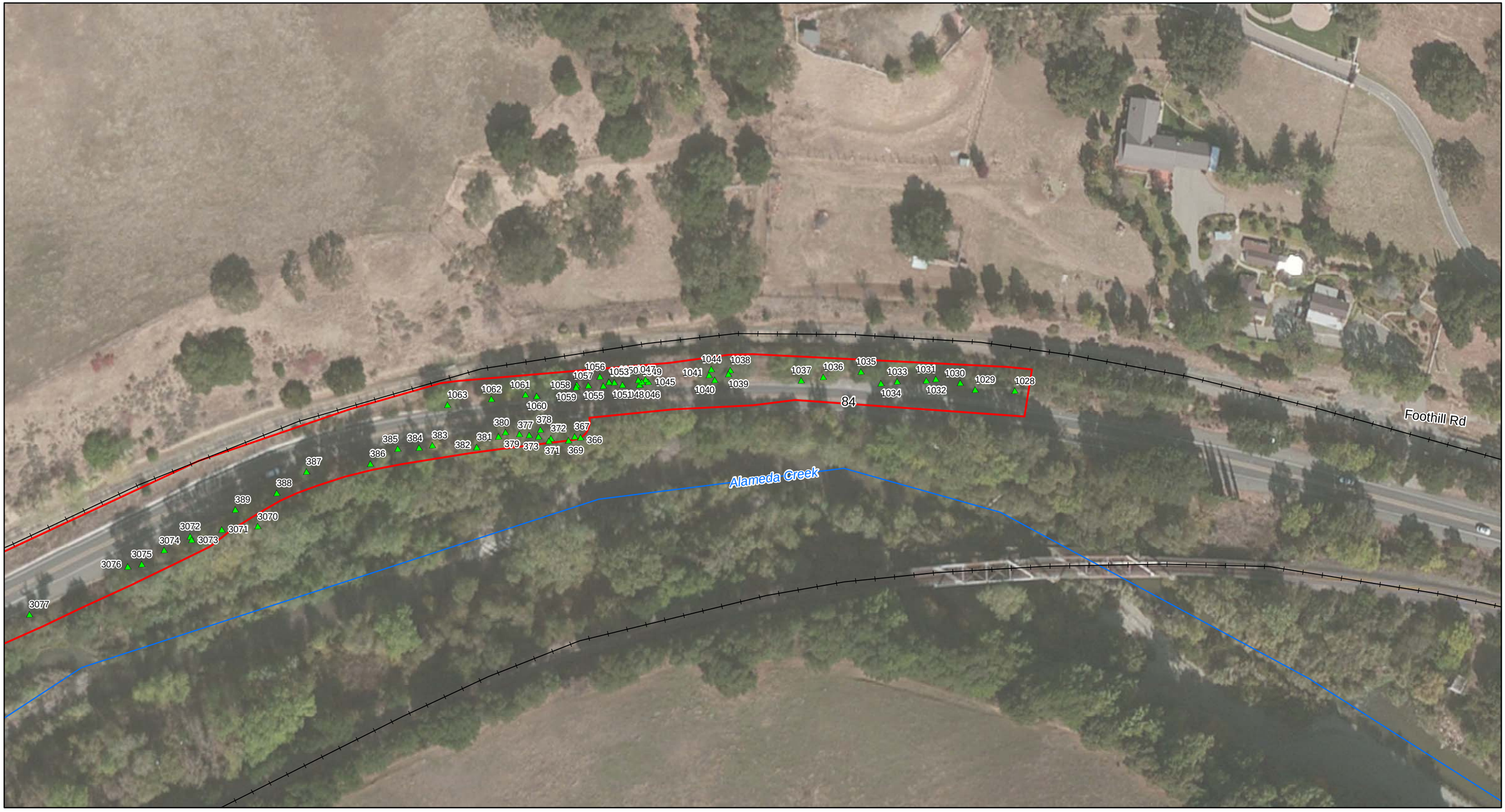


Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 15 of 22
0 100 200 Feet



Railroad
Creek
Biological Study Area
Tree

Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 16 of 22
0 100 200 Feet
N

Railroad
Creek
Biological Study Area
Tree

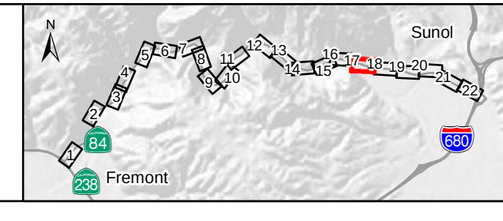


Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 17 of 22
0 100 200 Feet
N

Railroad
Creek
Biological Study Area
Tree

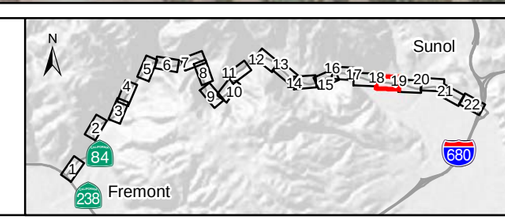
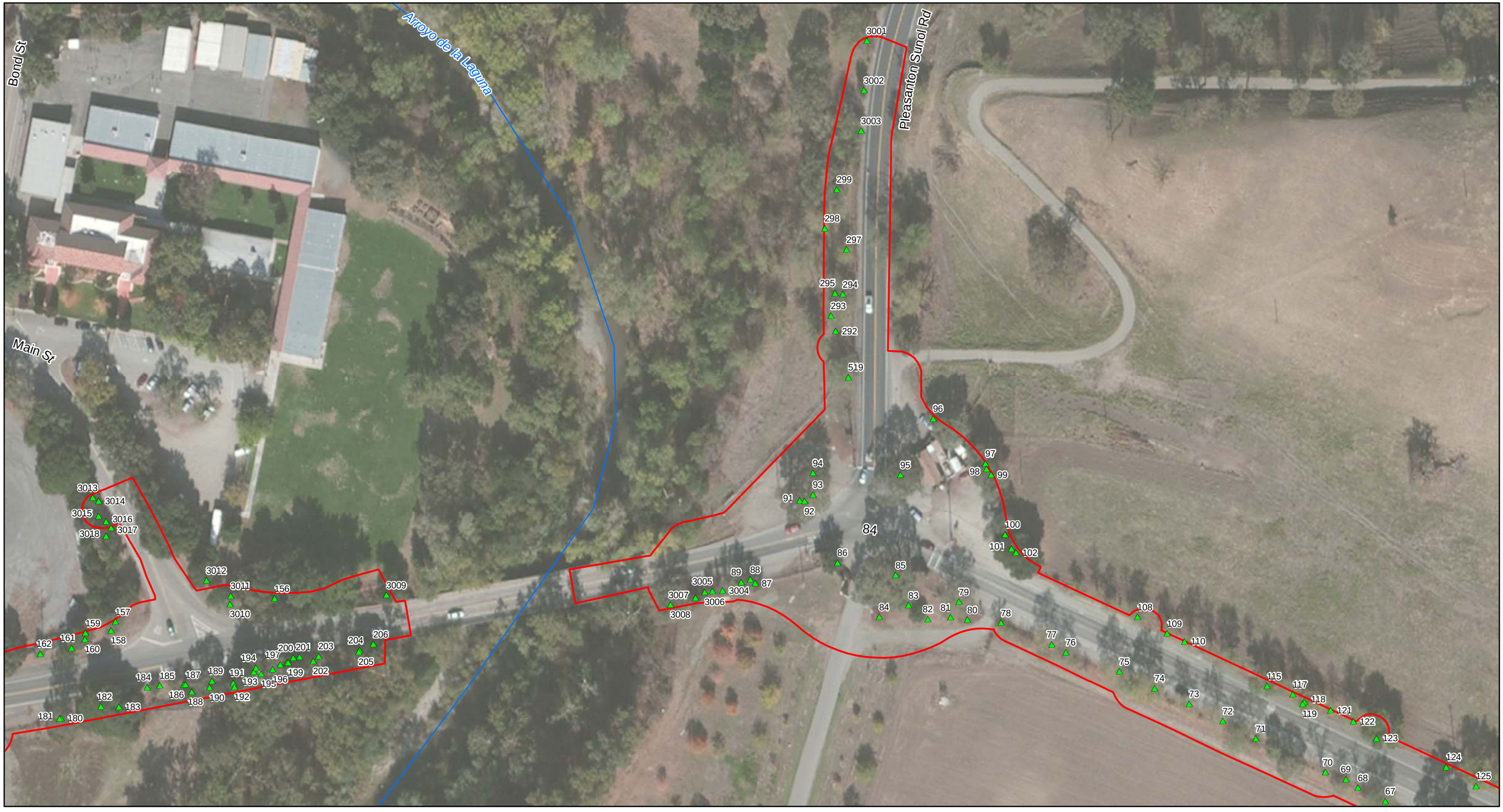


Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 18 of 22
0 100 200 Feet
N

Railroad
Creek
Biological Study Area
Tree

Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 19 of 22
0 100 200 Feet
N



Railroad
Creek
Biological Study Area
Tree

Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 20 of 22
0 100 200 Feet
N

Railroad
Creek
Biological Study Area
Tree

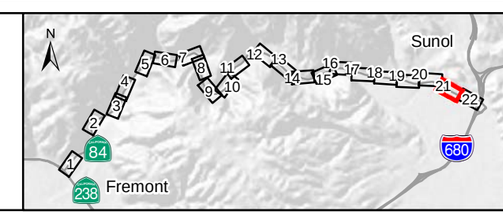


Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 21 of 22
0 100 200 Feet

Railroad
Creek
Biological Study Area
Tree

Figure 2: Trees in the Biological Study Area
Niles Canyon
Safety Improvement Project
Map 22 of 22
0 100 200 Feet

Table 3. Native Tree Species by DBH Class within the Biological Study Area

Species	DBH* in Inches																																															
	4	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**44**	**50**	**54**	**57**	**58**	**64**	**65**	**85**	**98**	**Total**
Arroyo willow	4	11	8	4	1				1																																								**29**
Big leaf maple	9	12	19	12	13	6	9	0	6	4	2	2	1	2	1	1			1					1	1	1	2	2			1		1						1	1	1								**112**
Bishop pine											1				1																																		**2**
Blue elderberry	2	3	1	4	1	1	2	1				2																																					**17**
Blue oak		1																																															**1**
California bay tree	8	9	11	10	12	8	7	5	5	4	2	3	1	2	4	1			1	1	2	2	1	1			1			2																1		**104**
California buckeye	6	8	13	5	2	1	4	2	1		1			1			1																																**45**
Canyon live oak		1	1																	1																													**3**
Coast live oak	24	33	19	33	24	16	25	19	37	20	17	5	9	12	7	8	6	7	9	5	6	5	3		1		2		1		2	1	1			1	2							1					**361**
Fremont cottonwood		2	5	5	5	2	5	5	5	3	3	3	1					1	1								1								3													**50**
Madrone			1			1	1												1																														**4**
Monterey pine									1								1																																**2**
N. CA black walnut	4	7	5	1	3		3	2	5	2	3	3	4	2	2	3	3	4								1	1	1	1		1	1	2							1			1		1				**67**
Oak species**		2		1																																												**3**
Ponderosa pine					1						1				1																																	**3**
Red willow	1	8	5	6	7	6	6	3	2	1	2	3			2		1				1	1	3				1																					**59**
Valley oak	3	4	2	3	6	2	5		6	3	1	2	2	4	1	2	1	4	1		1								2		1			1				1	1							1			**60**
Western sycamore	7	7	2	8	5	3	1		2	2	2	3		2	4	2	4	13	4	4	4	3	3	1	2	1	1	2	2								2					1							**97**
White alder	7	8	4	12	11	10	4	4	3	4	2	3	1	1	1								1																										**76**
Willow	2	1	2	2	1	3	4	1	4	1	2	1		1																																	1	**26**
Total	**77**	**117**	**98**	**106**	**92**	**59**	**76**	**42**	**78**	**44**	**39**	**30**	**19**	**27**	**24**	**17**	**17**	**29**	**18**	**11**	**14**	**11**	**11**	**3**	**4**	**3**	**9**	**5**	**6**	**2**	**5**	**2**	**4**	**1**	**3**	**1**	**4**	**1**	**2**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1,121**

*Columns with zeroes not included.

**Oak trees in this category are deciduous and had no identifying features (leaves, acorns) during the time of the survey.

Table 4. Non-native Tree Species by DBH Class within the Biological Study Area

Species	DBH* in Inches																												
	4	**5**	**6**	**7**	**8**	**9**	**11**	**14**	**15**	**17**	**18**	**19**	**20**	**22**	**23**	**27**	**28**	**34**	**37**	**38**	**39**	**40**	**41**	**42**	**44**	**45**	**48**	**59**	**68**	**Total**
Almond	1	1		3																										**5**
Black acacia	1		1	1																										**3**
Black locust						1	1	1	1	1	1	3		1	1	4		1												**16**
Canary Islands pine					1																									**1**
Casuarina		1																												**1**
Cork oak								1																						**1**
Eucalyptus	1												1	1			1	1	1	2	1	1	2	1	2		1	1	1	**18**
Glossy privet	1																													**1**
Italian alder	1																													**1**
Olive	1	2	2	4	2																									**11**
Other-unknown	1	2	1			1																								**5**
Peruvian pepper	1			1													1									1				**4**
Plum			1																											**1**
Red bud				1	1	1																								**3**
Tree of heaven	2	2	2		1	1	1																							**9**
Total	**10**	**8**	**7**	**10**	**5**	**4**	**2**	**2**	**1**	**1**	**1**	**3**	**1**	**2**	**1**	**4**	**2**	**2**	**1**	**2**	**1**	**1**	**2**	**1**	**2**	**1**	**1**	**1**	**1**	**80**

*Columns with zeroes not included.

Table 5. Complete list of trees in BSA and identification tag numbers (repeat tag numbers from recent survey shown with "x" prefix).

ID	Species	ID	Species	ID	Species	ID	Species	ID	Species
2	Coast live oak	81	Red bud	181	Coast live oak	327	Coast live oak	457	Coast live oak
3	Coast live oak	82	Coast live oak	182	Coast live oak	328	Coast live oak	458	Coast live oak
4	Coast live oak	83	Peruvian pepper tree	183	Coast live oak	366	Cottonwood	459	Coast live oak
6	Coast live oak	84	Red bud	184	Coast live oak	367	White alder	460	Coast live oak
7	Valley oak	85	Valley oak	185	Coast live oak	369	White alder	473	Coast live oak
8	Coast live oak	86	Cork oak	186	Almond species	371	White alder	474	Coast live oak
9	Coast live oak	87	Coast live oak	187	Coast live oak	372	Other-unknown	475	Valley oak
10	Valley oak	88	Valley oak	188	Coast live oak	373	White alder	476	California buckeye
11	Coast live oak	89	Valley oak	189	Valley oak	377	Cottonwood	477	Olive species
12	Coast live oak	91	Valley oak	190	Coast live oak	378	White alder	478	Olive species
13	Coast live oak	92	Valley oak	191	Coast live oak	379	Bishop pine	479	Olive species
14	Coast live oak	93	Valley oak	192	Coast live oak	380	Cottonwood	480	Olive species
15	Valley oak	94	Valley oak	193	Coast live oak	381	Cottonwood	481	Olive species
16	Valley oak	95	Valley oak	194	Coast live oak	382	White alder	482	Olive species
17	Valley oak	96	Valley oak	195	Coast live oak	383	N. CA black walnut	483	Olive species
18	Valley oak	97	Valley oak	196	Coast live oak	384	Willow species	485	Coast live oak
19	Valley oak	98	Valley oak	197	Olive species	385	Coast live oak	486	Coast live oak
20	Valley oak	99	Valley oak	198	Coast live oak	386	Coast live oak	487	Coast live oak
22	Valley oak	100	Valley oak	199	Coast live oak	387	Bishop pine	488	Coast live oak
23	Tree of heaven	101	Coast live oak	200	Tree of heaven	388	Coast live oak	489	Olive species
24	Tree of heaven	102	Coast live oak	201	Coast live oak	389	Coast live oak	490	Coast live oak
25	Coast live oak	108	Black locust	202	Coast live oak	390	Coast live oak	491	California bay tree
26	Coast live oak	109	Black locust	203	Tree of heaven	391	Willow species	492	California bay tree
27	Western sycamore	110	Black locust	204	Tree of heaven	392	Willow species	493	Coast live oak
28	Western sycamore	115	N. CA black walnut	205	Tree of heaven	393	Willow species	494	Coast live oak
29	N. CA black walnut	117	Black locust	206	Coast live oak	394	Willow species	495	Coast live oak
30	N. CA black walnut	118	Black locust	217	Coast live oak	395	Willow species	496	Coast live oak
31	N. CA black walnut	119	N. CA black walnut	225	Coast live oak	396	N. CA black walnut	497	Coast live oak
32	N. CA black walnut	121	Black locust	228	Coast live oak	397	N. CA black walnut	498	Coast live oak
33	Western sycamore	122	Black locust	231	Coast live oak	406	White alder	499	Coast live oak
34	Western sycamore	123	N. CA black walnut	233	Coast live oak	407	White alder	500	Coast live oak
35	Western sycamore	124	Valley oak	236	Coast live oak	408	White alder	519	Black locust
36	Western sycamore	125	N. CA black walnut	237	N. CA black walnut	409	Coast live oak	529	Coast live oak
37	Western sycamore	126	Coast live oak	240	Valley oak	410	Coast live oak	536	Valley oak
38	Western sycamore	128	Valley oak	241	Coast live oak	411	Coast live oak	537	California buckeye
39	Western sycamore	129	Coast live oak	243	Coast live oak	412	White alder	538	California buckeye
40	Valley oak	130	Coast live oak	244	Coast live oak	413	Coast live oak	542	California buckeye
41	Western sycamore	131	N. CA black walnut	247	Coast live oak	414	California buckeye	543	California bay tree
42	Western sycamore	132	N. CA black walnut	249	Coast live oak	415	Western sycamore	544	Valley oak
43	Western sycamore	133	N. CA black walnut	251	Coast live oak	416	N. CA black walnut	545	California buckeye
44	Western sycamore	134	Western sycamore	259	Coast live oak	417	Cottonwood	547	Western sycamore
45	Western sycamore	135	Tree of heaven	260	Coast live oak	418	Cottonwood	548	Coast live oak
46	Western sycamore	136	N. CA black walnut	261	Coast live oak	419	Cottonwood	549	N. CA black walnut
47	Western sycamore	137	N. CA black walnut	262	Coast live oak	420	California bay tree	550	Coast live oak
48	Western sycamore	138	N. CA black walnut	267	N. CA black walnut	421	Willow species	551	California buckeye
49	Western sycamore	139	Western sycamore	273	Coast live oak	422	Willow species	552	Western sycamore
50	Western sycamore	140	Coast live oak	289	Coast live oak	423	Coast live oak	553	Big-leaf maple
51	Western sycamore	141	Valley oak	290	Coast live oak	424	California bay tree	554	Big-leaf maple
52	Western sycamore	142	N. CA black walnut	292	Black locust	425	N. CA black walnut	555	California buckeye
53	Valley oak	143	N. CA black walnut	293	Black locust	426	N. CA black walnut	556	California buckeye
54	Western sycamore	144	N. CA black walnut	294	Black locust	427	Willow species	557	California buckeye
55	Western sycamore	145	N. CA black walnut	295	Black locust	429	Willow species	558	California buckeye
57	N. CA black walnut	146	N. CA black walnut	297	Black locust	431	Willow species	559	California bay tree
58	N. CA black walnut	147	N. CA black walnut	298	Black locust	432	Willow species	560	California buckeye
59	Western sycamore	148	N. CA black walnut	299	Valley oak	433	Willow species	561	California buckeye
60	Western sycamore	149	N. CA black walnut	306	Cottonwood	434	Willow species	562	Coast live oak
61	N. CA black walnut	150	N. CA black walnut	307	Canyon live oak	435	Willow species	563	California buckeye
62	Western sycamore	151	Valley oak	308	Canyon live oak	436	Willow species	564	California buckeye
63	Western sycamore	152	N. CA black walnut	309	Cottonwood	437	Willow species	568	California buckeye
64	Western sycamore	153	N. CA black walnut	310	Coast live oak	438	Willow species	569	California buckeye
65	Western sycamore	154	Almond species	311	Coast live oak	439	Willow species	570	N. CA black walnut
66	Valley oak	156	Valley oak	312	Cottonwood	440	Willow species	571	California buckeye
67	N. CA black walnut	157	Valley oak	313	Cottonwood	441	Willow species	572	California buckeye
68	Western sycamore	158	Valley oak	314	Coast live oak	442	Willow species	573	California buckeye
69	N. CA black walnut	159	Coast live oak	315	Coast live oak	443	Willow species	574	Cottonwood
70	Western sycamore	160	Coast live oak	316	Coast live oak	444	California bay tree	575	California buckeye
71	Western sycamore	161	Coast live oak	317	Cottonwood	445	White alder	576	California buckeye
72	Western sycamore	162	Olive species	318	Coast live oak	446	White alder	577	California buckeye
73	Western sycamore	163	Valley oak	319	Coast live oak	447	White alder	578	Western sycamore
74	Western sycamore	164	Coast live oak	320	Cottonwood	448	White alder	579	California buckeye
75	Western sycamore	165	Coast live oak	321	Coast live oak	449	White alder	580	California buckeye
76	N. CA black walnut	166	Valley oak	322	Coast live oak	450	Coast live oak	581	California buckeye
77	Western sycamore	167	Coast live oak	323	Coast live oak	452	Coast live oak	582	California buckeye
78	N. CA black walnut	168	Almond species	324	Cottonwood	453	Coast live oak	583	Cottonwood
79	Valley oak	169	Glossy privet	325	Coast live oak	454	Coast live oak	584	California bay tree
80	Red bud	180	Valley oak	326	Cottonwood	456	Coast live oak	586	Coast live oak

ID	Species	ID	Species	ID	Species	ID	Species	ID	Species
591	Coast live oak	1004	California bay tree	1219	Big-leaf maple	1407	Coast live oak	2761	Arroyo willow
593	California buckeye	1005	Canary Islands pine	1220	Big-leaf maple	1409	Coast live oak	2762	Coast live oak
594	California buckeye	1006	Ponderosa pine	1221	Coast live oak	1495	Black acacia	2763	California bay tree
595	California buckeye	1007	Ponderosa pine	1222	Big-leaf maple	1496	Black acacia	2764	Red willow
596	California bay tree	1028	N. CA black walnut	1223	Big-leaf maple	2164	Big-leaf maple	2765	Coast live oak
618	Valley oak	1029	Ponderosa pine	1224	Big-leaf maple	2181	California bay tree	2768	Arroyo willow
619	Valley oak	1030	Coast live oak	1226	Big-leaf maple	2183	Coast live oak	2770	Red willow
620	California buckeye	1031	N. CA black walnut	1227	Coast live oak	2285	Coast live oak	2771	California bay tree
621	California buckeye	1032	Coast live oak	1228	Big-leaf maple	2291	Coast live oak	2772	Coast live oak
622	California buckeye	1033	Coast live oak	1229	California buckeye	2292	Coast live oak	2773	Coast live oak
623	Coast live oak	1034	Coast live oak	1230	Big-leaf maple	2293	Coast live oak	2774	Blue elderberry
844	Coast live oak	1035	Monterey pine	1231	Big-leaf maple	2294	Coast live oak	2775	White alder
845	California bay tree	1036	N. CA black walnut	1232	Big-leaf maple	2296	Coast live oak	2776	Arroyo willow
846	Coast live oak	1037	N. CA black walnut	1233	Coast live oak	2297	Coast live oak	2777	Arroyo willow
847	Coast live oak	1038	Valley oak	1234	Big-leaf maple	2300	Coast live oak	2780	Arroyo willow
848	Coast live oak	1039	Valley oak	1240	Big-leaf maple	2301	Coast live oak	2781	Red willow
849	Coast live oak	1040	Willow species	1241	Coast live oak	2302	Coast live oak	2782	Red willow
850	Coast live oak	1041	Willow species	1244	Big-leaf maple	2311	Coast live oak	2785	Red willow
851	Coast live oak	1044	Willow species	1245	Big-leaf maple	2312	Coast live oak	2786	Red willow
852	Coast live oak	1045	Blue elderberry	1246	Western sycamore	2313	Coast live oak	2789	Red willow
853	Peruvian pepper tree	1046	N. CA black walnut	1247	California bay tree	2314	Coast live oak	2801	Arroyo willow
854	Coast live oak	1047	Blue elderberry	1248	Big-leaf maple	2321	Coast live oak	2822	White alder
855	Coast live oak	1048	Blue elderberry	1249	Big-leaf maple	2324	Coast live oak	2827	White alder
856	Coast live oak	1049	Blue elderberry	1265	Eucalyptus species	2325	Coast live oak	2828	Fremont cottonwood
857	Big-leaf maple	1050	California bay tree	1267	Eucalyptus species	2384	Big-leaf maple	2835	White alder
858	Coast live oak	1051	Blue elderberry	1269	Eucalyptus species	2388	Coast live oak	2838	Fremont cottonwood
859	Coast live oak	1052	Blue elderberry	1270	Eucalyptus species	2389	Western sycamore	2839	White alder
860	Coast live oak	1053	Coast live oak	1271	Eucalyptus species	2390	Coast live oak	2840	Fremont cottonwood
861	Coast live oak	1054	Coast live oak	1272	Eucalyptus species	2391	Coast live oak	2841	California bay tree
889	Coast live oak	1055	California bay tree	1273	Eucalyptus species	2449	White alder	2842	Big-leaf maple
890	Coast live oak	1056	N. CA black walnut	1274	Eucalyptus species	2456	Italian alder	2850	Blue elderberry
891	Coast live oak	1057	Blue elderberry	1275	Eucalyptus species	2476	Coast live oak	3001	Black locust
892	Coast live oak	1058	Blue elderberry	1276	Eucalyptus species	2510	Coast live oak	3002	Valley oak
893	California bay tree	1059	Coast live oak	1277	Eucalyptus species	2513	Big-leaf maple	3003	Black locust
894	Coast live oak	1060	Coast live oak	1278	Eucalyptus species	2514	California bay tree	3004	Valley oak
903	Coast live oak	1061	N. CA black walnut	1279	Eucalyptus species	2515	Other-unknown	3005	Valley oak
922	Big-leaf maple	1062	Blue elderberry	1280	Eucalyptus species	2516	Coast live oak	3006	Valley oak
963	Coast live oak	1063	N. CA black walnut	1281	Eucalyptus species	2517	Coast live oak	3007	Coast live oak
964	Coast live oak	1064	Valley oak	1282	Eucalyptus species	2520	Big-leaf maple	3008	Valley oak
965	Big-leaf maple	1065	Valley oak	1283	Eucalyptus species	2521	Big-leaf maple	3009	Coast live oak
966	Coast live oak	1066	Valley oak	1284	Valley oak	2522	Big-leaf maple	3010	Coast live oak
967	Madrone	1067	Coast live oak	1285	Coast live oak	2523	Big-leaf maple	3011	Coast live oak
968	Coast live oak	1068	Coast live oak	1286	Blue elderberry	2524	Coast live oak	3012	Coast live oak
969	Big-leaf maple	1069	Coast live oak	1287	Western sycamore	2525	Coast live oak	3013	Coast live oak
970	California bay tree	1070	Coast live oak	1288	Coast live oak	2663	White alder	3014	Coast live oak
971	California bay tree	1071	Valley oak	1289	Coast live oak	2683	Coast live oak	3015	Coast live oak
972	California bay tree	1072	N. CA black walnut	1290	Coast live oak	2684	California bay tree	3016	Coast live oak
973	Big-leaf maple	1073	Coast live oak	1291	California bay tree	2716	Casuarina species	3017	Coast live oak
974	Big-leaf maple	1074	N. CA black walnut	1292	California bay tree	2725	White alder	3018	Coast live oak
975	Big-leaf maple	1075	N. CA black walnut	1293	Coast live oak	2726	White alder	3019	Coast live oak
976	California bay tree	1076	Blue elderberry	1294	Big-leaf maple	2730	White alder	3020	Coast live oak
977	Madrone	1084	Coast live oak	1295	Coast live oak	2731	White alder	3021	Coast live oak
978	Big-leaf maple	1089	Almond species	1296	Coast live oak	2732	White alder	3022	Coast live oak
979	Big-leaf maple	1090	Coast live oak	1297	Coast live oak	2733	Fremont cottonwood	3023	Valley oak
980	Big-leaf maple	1091	Coast live oak	1298	California bay tree	2734	Red willow	3024	Coast live oak
981	Big-leaf maple	1107	N. CA black walnut	1299	Coast live oak	2735	N. CA black walnut	3026	Olive species
983	Madrone	1119	California bay tree	1330	California bay tree	2736	Arroyo willow	3027	Coast live oak
984	Madrone	1120	California bay tree	1331	California bay tree	2737	Arroyo willow	3028	Other-unknown
985	California bay tree	1125	Big-leaf maple	1332	Coast live oak	2738	White alder	3029	Coast live oak
986	Big-leaf maple	1127	California bay tree	1333	California bay tree	2739	Arroyo willow	3030	Coast live oak
987	Big-leaf maple	1129	Other-unknown	1334	California bay tree	2744	Western sycamore	3031	Blue oak
988	Big-leaf maple	1134	California bay tree	1335	Coast live oak	2745	White alder	3032	Oak species
989	Big-leaf maple	1203	Big-leaf maple	1336	California bay tree	2746	White alder	3033	Oak species
990	Big-leaf maple	1205	Big-leaf maple	1337	California bay tree	2747	Western sycamore	3034	Oak species
991	Big-leaf maple	1206	Coast live oak	1338	California bay tree	2748	White alder	3035	California buckeye
992	California bay tree	1207	Big-leaf maple	1339	California bay tree	2749	White alder	3036	N. CA black walnut
993	California bay tree	1208	Big-leaf maple	1340	California bay tree	2750	Red willow	3037	Coast live oak
994	California bay tree	1209	Big-leaf maple	1341	California bay tree	2751	Arroyo willow	3038	Coast live oak
995	California bay tree	1210	Coast live oak	1342	Coast live oak	2752	Arroyo willow	3039	Almond species
996	Coast live oak	1211	Coast live oak	1343	Coast live oak	2753	Western sycamore	3040	Coast live oak
997	California bay tree	1212	Coast live oak	1344	California bay tree	2754	White alder	3041	Coast live oak
998	Coast live oak	1213	Coast live oak	1345	Big-leaf maple	2755	White alder	3042	Coast live oak
999	California bay tree	1214	Big-leaf maple	1346	Big-leaf maple	2756	White alder	3043	Coast live oak
1000	California bay tree	1215	Big-leaf maple	1347	California bay tree	2757	Western sycamore	3044	Coast live oak
1001	Big-leaf maple	1216	Coast live oak	1348	California bay tree	2758	White alder	3045	Coast live oak
1002	Big-leaf maple	1217	California bay tree	1404	Coast live oak	2759	Western sycamore	3046	Coast live oak
1003	Big-leaf maple	1218	Big-leaf maple	1405	Coast live oak	2760	Western sycamore	3047	Coast live oak

ID	Species	ID	Species	ID	Species	ID	Species	ID	Species
3048	Coast live oak	3147	Coast live oak	3224	Blue elderberry	3553	California bay tree	3631	White alder
3049	Coast live oak	3148	California bay tree	3225	Coast live oak	3554	Coast live oak	3632	White alder
3050	Coast live oak	3149	Big-leaf maple	3226	Peruvian pepper tree	3555	Coast live oak	3633	White alder
3051	N. CA black walnut	3150	Coast live oak	3227	Coast live oak	3556	Coast live oak	3634	White alder
3052	N. CA black walnut	3151	Coast live oak	3228	California buckeye	3557	California bay tree	3635	White alder
3053	Fremont cottonwood	3152	Coast live oak	3229	Coast live oak	3558	Coast live oak	3636	White alder
3054	Fremont cottonwood	3153	Coast live oak	3230	Coast live oak	3559	Coast live oak	3637	White alder
3055	Fremont cottonwood	3154	Coast live oak	3231	Coast live oak	3560	California bay tree	3638	Red willow
3056	Fremont cottonwood	3155	Coast live oak	3232	Western sycamore	3561	Coast live oak	3639	White alder
3057	Fremont cottonwood	3156	Western sycamore	3233	California bay tree	3562	Coast live oak	3640	Red willow
3058	Fremont cottonwood	3157	California bay tree	3234	Coast live oak	3563	Coast live oak	3641	Western sycamore
3059	Fremont cottonwood	3158	Coast live oak	3235	Western sycamore	3564	California bay tree	3642	Western sycamore
3060	Fremont cottonwood	3159	Coast live oak	3236	Coast live oak	3565	Coast live oak	3643	California bay tree
3061	Fremont cottonwood	3160	California bay tree	3237	Coast live oak	3566	California bay tree	3644	Western sycamore
3062	Fremont cottonwood	3161	California bay tree	3238	Coast live oak	3567	California bay tree	3645	Red willow
3063	Fremont cottonwood	3162	Coast live oak	3301	Valley oak	3568	Western sycamore	3646	Red willow
3064	Coast live oak	3163	Big-leaf maple	3302	Coast live oak	3569	Coast live oak	3647	Western sycamore
3065	Coast live oak	3164	Coast live oak	3303	Coast live oak	3570	California bay tree	3648	Western sycamore
3066	Coast live oak	3165	California buckeye	3304	Coast live oak	3571	California bay tree	3649	Prunus species
3067	Coast live oak	3166	Coast live oak	3305	Coast live oak	3572	California bay tree	3650	Fremont cottonwood
3068	Coast live oak	3167	Coast live oak	3306	Coast live oak	3573	California bay tree	3651	Fremont cottonwood
3069	Fremont cottonwood	3168	California bay tree	3307	Coast live oak	3574	White alder	3652	Arroyo willow
3070	N. CA black walnut	3169	California bay tree	3308	Coast live oak	3575	White alder	3653	Red willow
3071	Red willow	3170	Coast live oak	3309	Coast live oak	3576	N. CA black walnut	3654	White alder
3072	Fremont cottonwood	3171	Coast live oak	3310	Coast live oak	3577	White alder	3655	Red willow
3073	Fremont cottonwood	3172	Coast live oak	3501	Western sycamore	3578	Red willow	3656	White alder
3074	Arroyo willow	3173	Coast live oak	3502	California bay tree	3579	White alder	3657	White alder
3075	Fremont cottonwood	3174	California buckeye	3503	California bay tree	3580	Red willow	3658	White alder
3076	N. CA black walnut	3175	California buckeye	3504	Western sycamore	3581	Arroyo willow	3659	White alder
3077	Valley oak	3176	California buckeye	3505	Coast live oak	3582	White alder	3660	Red willow
3078	Coast live oak	3177	Coast live oak	3506	California bay tree	3583	Arroyo willow	3661	White alder
3079	Red willow	3178	Coast live oak	3507	Coast live oak	3584	Big-leaf maple	3662	White alder
3080	Coast live oak	3179	Coast live oak	3508	California bay tree	3585	Arroyo willow	3663	Red willow
3081	Coast live oak	3180	California bay tree	3509	California bay tree	3586	Arroyo willow	3664	White alder
3082	Red willow	3181	California bay tree	3510	California bay tree	3587	California bay tree	3665	Arroyo willow
3083	N. CA black walnut	3182	Coast live oak	3511	California bay tree	3588	California bay tree	3666	White alder
3084	Red willow	3183	Coast live oak	3512	California bay tree	3589	Red willow	3667	Red willow
3085	Red willow	3184	California bay tree	3513	California bay tree	3590	Red willow	3668	Red willow
3086	Red willow	3185	Arroyo willow	3514	California bay tree	3591	Red willow	3669	White alder
3087	Red willow	3186	Arroyo willow	3515	Canyon live oak	3592	Western sycamore	3670	Red willow
3088	Red willow	3187	California bay tree	3516	Coast live oak	3593	California bay tree	3671	Red willow
3089	Red willow	3188	N. CA black walnut	3517	Big-leaf maple	3594	Arroyo willow	3672	White alder
3090	N. CA black walnut	3189	Coast live oak	3518	Big-leaf maple	3595	Big-leaf maple	3673	Fremont cottonwood
3112	N. CA black walnut	3190	Blue elderberry	3519	Big-leaf maple	3596	Western sycamore	3674	Fremont cottonwood
3113	Coast live oak	3191	Blue elderberry	3520	Big-leaf maple	3597	California bay tree	3675	Western sycamore
3114	Coast live oak	3192	Western sycamore	3521	Big-leaf maple	3598	Big-leaf maple	3676	Coast live oak
3115	Big-leaf maple	3193	California bay tree	3522	Big-leaf maple	3599	Big-leaf maple	3677	Fremont cottonwood
3116	Monterey pine	3194	California buckeye	3523	Big-leaf maple	3601	Big-leaf maple	3678	Fremont cottonwood
3118	Coast live oak	3195	California buckeye	3524	Big-leaf maple	3602	California bay tree	3679	Other-unknown
3119	Coast live oak	3196	California buckeye	3525	Big-leaf maple	3603	N. CA black walnut	3680	White alder
3120	Coast live oak	3197	Western sycamore	3526	Big-leaf maple	3604	Arroyo willow	3681	White alder
3121	Coast live oak	3198	Coast live oak	3527	Big-leaf maple	3605	Red willow	3682	Red willow
3122	Coast live oak	3199	Coast live oak	3528	Big-leaf maple	3606	White alder	3683	Western sycamore
3123	California bay tree	3200	Western sycamore	3529	Big-leaf maple	3607	Red willow	3684	California bay tree
3124	Coast live oak	3201	Tree of heaven	3530	Big-leaf maple	3608	White alder	3685	Black cottonwood
3125	Coast live oak	3202	Coast live oak	3531	Big-leaf maple	3609	Red willow	3686	Western sycamore
3126	Coast live oak	3203	Coast live oak	3532	Big-leaf maple	3610	White alder	3687	Western sycamore
3127	Coast live oak	3204	Coast live oak	3533	Big-leaf maple	3611	Red willow	3688	Red willow
3128	California bay tree	3205	Coast live oak	3534	Big-leaf maple	3612	Fremont cottonwood	3689	Western sycamore
3129	California bay tree	3206	Coast live oak	3535	Big-leaf maple	3613	Red willow	3690	Fremont cottonwood
3130	Coast live oak	3207	California buckeye	3536	Big-leaf maple	3614	Red willow	3691	Western sycamore
3131	Coast live oak	3208	Coast live oak	3537	Big-leaf maple	3615	Arroyo willow	3692	Western sycamore
3132	Coast live oak	3209	Valley oak	3538	Big-leaf maple	3616	California bay tree	3693	Western sycamore
3133	Coast live oak	3210	Coast live oak	3539	Big-leaf maple	3617	Arroyo willow	3694	Fremont cottonwood
3134	Coast live oak	3211	Coast live oak	3540	Big-leaf maple	3618	Arroyo willow	3695	Western sycamore
3135	Western sycamore	3212	Coast live oak	3541	Big-leaf maple	3619	Arroyo willow	3696	Western sycamore
3136	Western sycamore	3213	California bay tree	3542	Big-leaf maple	3620	Arroyo willow	3697	Red willow
3137	California bay tree	3214	California buckeye	3543	Big-leaf maple	3621	Arroyo willow	3698	Red willow
3138	California bay tree	3215	California bay tree	3544	Big-leaf maple	3622	Western sycamore	3699	Red willow
3139	Coast live oak	3216	Tree of heaven	3545	Big-leaf maple	3623	Big-leaf maple	3700	Western sycamore
3140	Coast live oak	3217	California buckeye	3546	Big-leaf maple	3624	Western sycamore	3701	Western sycamore
3141	Coast live oak	3218	Coast live oak	3547	Big-leaf maple	3625	Western sycamore	3702	Western sycamore
3142	Coast live oak	3219	Coast live oak	3548	Big-leaf maple	3626	Western sycamore	3703	Red willow
3143	Big-leaf maple	3220	Peruvian pepper tree	3549	Big-leaf maple	3627	Arroyo willow	3704	Western sycamore
3144	Big-leaf maple	3221	Big-leaf maple	3550	Big-leaf maple	3628	Red willow	3705	Western sycamore
3145	Big-leaf maple	3222	Coast live oak	3551	Big-leaf maple	3629	Red willow	3706	Red willow
3146	California bay tree	3223	Coast live oak	3552	Western sycamore	3630	Red willow	3707	Big-leaf maple

ID	Species
3708	Big-leaf maple
3709	Big-leaf maple
3710	Red willow
3711	White alder
3712	Red willow
3713	Red willow
3714	Fremont cottonwood
3715	Fremont cottonwood
3716	Fremont cottonwood
3717	Fremont cottonwood
3718	Western sycamore
3719	Western sycamore
3720	Western sycamore
3721	Western sycamore
3722	Western sycamore
3723	White alder
3724	Red willow
3725	Black acacia
3726	White alder
3727	Western sycamore
3728	White alder
3729	Red willow
3730	White alder
3731	White alder
3732	Red willow
3733	Red willow
3734	White alder
3735	N. CA black walnut
3736	Red willow
3737	White alder
3738	White alder
3739	White alder
3740	White alder
25526	Big-leaf maple
31117	Coast live oak
x1283-42	Eucalyptus species
X1284	Big-leaf maple
x1285	Coast live oak
x1286	Blue elderberry
x1287	Western sycamore
x1288	Coast live oak
x1289	Coast live oak
x1290	Coast live oak
x1291	California bay tree
x1293	Coast live oak
x1294	Big-leaf maple
x1295	Coast live oak
x1296	Coast live oak
x1297	Coast live oak
x1298	California bay tree
X1299	Coast live oak

Appendix G Wildlife Habitat Assessment

Wildlife Habitat Assessment

Niles Canyon Safety Improvement Project

Caltrans District 4

Alameda County
State Route 84
ALA 84 (PM 10.8/18.0)
EA 2A332

August 2016

CALIFORNIA DEPARTMENT OF TRANSPORTATION

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WILDLIFE HABITAT ASSESSMENT

NILES CANYON SAFETY IMPROVEMENT PROJECT

Caltrans District 4
State Route 84
ALA-84 PM (10.8/18.0)
EA 2A332

STATE OF CALIFORNIA
Department of Transportation

Prepared By: _____ FOR Date: 8/23/16

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Summary

The California Department of Transportation (Caltrans) proposes to construct safety improvements at several specific locations along the State Route (SR) 84 corridor from post mile (PM) 10.8 at SR 238 (Mission Boulevard) in Fremont and PM 18.0 at Interstate 680 (I-680) near the town of Sunol. Safety improvements will be constructed in twelve isolated locations along SR 84, and therefore the Biological Study Area (BSA) consists of twelve separate segments that were defined to encompass all project improvements as well as space needed for potential construction access and staging. The total area within the BSA is 61.13 acres. The proposed project involves several components including: installation of traffic signs and lighting, low speed curve improvements, installation of K-rail and Midwest guardrail system, installation of a rock drapery system, signalization, limited shoulder widening, and the replacement of one culvert with a single-span bridge.

A reconnaissance-level survey of the BSA was conducted on August 13, 2014, by Garcia and Associates (GANDA) biologists Meghan Bishop and Dana Terry. A supplemental survey was conducted on December 2, 2014, by Meghan Bishop and GANDA botanist Constance Ganong. Another supplemental survey was conducted on March 24, 2016, by GANDA biologists Alexander Pries and Dana Terry, and BioMaAS biologist Elizabeth Gruenstein. The purpose of the surveys was to document habitat within the BSA and assess the potential for the occurrence of special-status wildlife species. Representative areas of the site were surveyed on foot, and the remainder of the BSA was surveyed by vehicle. This document also draws on conclusions from other biological studies conducted both for the current project and for other Caltrans projects that overlap the current BSA.

Based on the literature and database review, 67 special-status wildlife species were taken into consideration for this habitat assessment. After the reconnaissance survey, 30 species were dropped from consideration due primarily to a lack of suitable habitat. The remaining 37 species are considered to have at least some potential to occur within the BSA. Species listed as threatened or endangered under the federal and/or California Endangered Species Acts with potential to occur include central California coast steelhead (*Oncorhynchus mykiss irideus*), California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), and Alameda whipsnake (*Masticophis lateralis euryxanthus*). Other notable wildlife resources identified within the BSA include:

- Critical habitat for Alameda whipsnake
- San Francisco dusky-footed woodrat nests throughout the BSA

- Cliff swallows nesting on the Alameda Creek Bridge
- A maternity colony of Yuma myotis inside the Alameda Creek Bridge, and night roosts used by pallid bats and other bat species
- A day roost used by unidentified bat species in the Alameda Creek Bridge Overhead

List of Abbreviated Terms

Abbreviation	Definition
ACWD	Alameda County Water District
BART	Bay Area Rapid Transit
BioMaAS	Biological Monitoring and Assessment Specialists
BSA	Biological Study Area
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CNDDB	California Natural Diversity Database
DPS	Distinct Population Segment
GANDA	Garcia and Associates
MBTA	Migratory Bird Treaty Act
NMFS	National Marine Fisheries Service
PM	post mile
PCE	Primary Constituent Element
quad	quadrangle
SFPUC	San Francisco Public Utilities Commission
SR	State Route
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

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1.0 INTRODUCTION

This report details the results of a wildlife habitat assessment conducted for the Niles Canyon Safety Improvement Project, located on State Route (SR) 84 in Niles Canyon, Alameda County.

1.1 Project Location

The California Department of Transportation (Caltrans) proposes to construct safety improvements at several specific locations along the SR 84 corridor from post mile (PM) 10.8 at SR 238 (Mission Boulevard) in Fremont and PM 18.0 at Interstate 680 (I-680) near the town of Sunol (Figure 1). Safety improvements will be constructed in twelve isolated locations along SR 84, and therefore the Biological Study Area (BSA) consists of twelve separate segments that were defined to encompass all project improvements as well as space needed for potential construction access and staging (Figure 2). The total area within the BSA is 61.13 acres. No project activity is anticipated to occur in the areas between the isolated segments of the BSA. The project is located in the Niles U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (quad). Photographs of the BSA are provided in Appendix A.

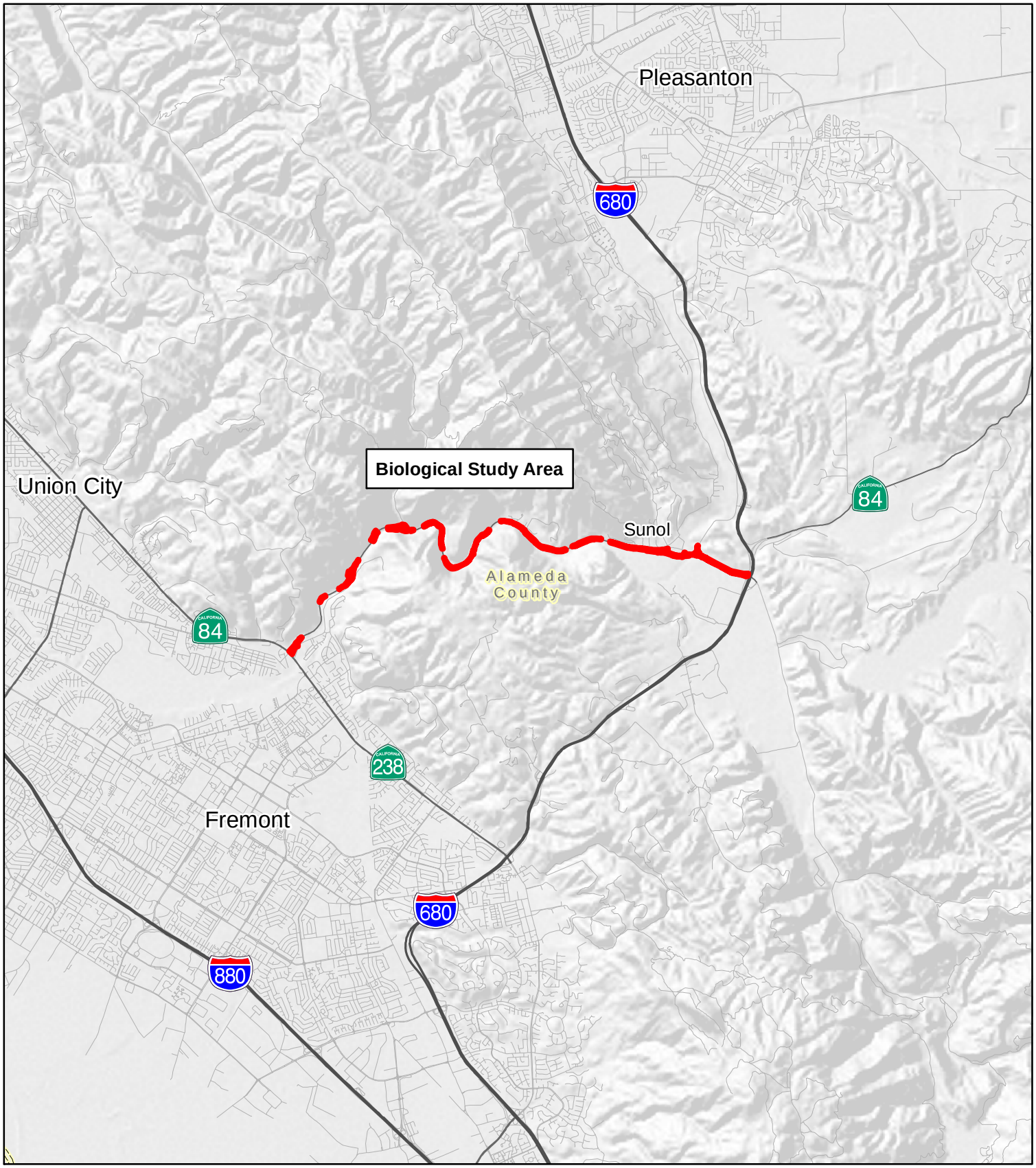
The majority of the project is located in Niles Canyon, a steep-walled canyon in Alameda County that runs roughly east-west between Fremont and Sunol, with Alameda Creek flowing westward through the bottom. The Union Pacific Railroad tracks and SR 84 both run through the canyon, alternating along the north and the south sides via several road and rail bridges spanning Alameda Creek. This stretch of SR 84 is named Niles Canyon Road, and is a two-lane highway used as an alternative commute corridor to the highly utilized I-680. The bottom of Niles Canyon is densely forested with riparian and oak woodland vegetation that is occasionally broken with scattered patches of scrub and grassland. Larger patches of scrub and grassland are present at higher elevations on the north wall of the canyon, while the south wall remains largely wooded up to the south ridgeline. There are several rural residences located along Niles Canyon Road. At the east end of Niles Canyon, the roadway runs along the south edge of the Town of Sunol. The BSA crosses Alameda Creek at two locations: the Alameda Creek Bridge (Bridge #33-0036) and the Alameda Creek Bridge Overhead (Bridge #33-0039). Alameda Creek drains a large watershed east of Niles Canyon, including the Sunol Regional Wilderness area to the southeast and Livermore Valley to the northeast (via a tributary named Arroyo de la Laguna). Flows in Alameda Creek are controlled by water agencies such as the San Francisco Public Utilities Commission (SFPUC) through releases from reservoirs upstream of the BSA. The BSA also crosses Stonybrook Creek, a tributary to Alameda Creek that flows southward along Palomares Road, and flows under SR 84

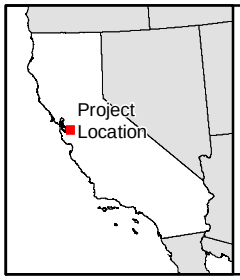
via a large concrete culvert located approximately 300 feet west of the intersection of Niles Canyon Road and Palomares Road.

The project also extends east of Niles Canyon to I-680, along a stretch of SR 84 named Paloma Way. An area of low, rolling hills covered in open grassland is located immediately north of Paloma Way. To the south, there is a large field that contains an active open-pit gravel mine. The edges of this field, including the areas immediately adjacent to Paloma Way, are subject to periodic disking. Paloma Way is lined on both sides by a row of planted trees, the majority of which are oaks and sycamores. I-680 is located just outside of the BSA, immediately east of the eastern end.

1.2 Project Description

The proposed project involves several components including: installation of traffic signs and lighting, low speed curve improvements, installation of K-rail and Midwest guardrail system, installation of a rock drapery system, signalization, limited shoulder widening, and the replacement of the Stonybrook Creek culvert with a single-span bridge.





Biological Study Area

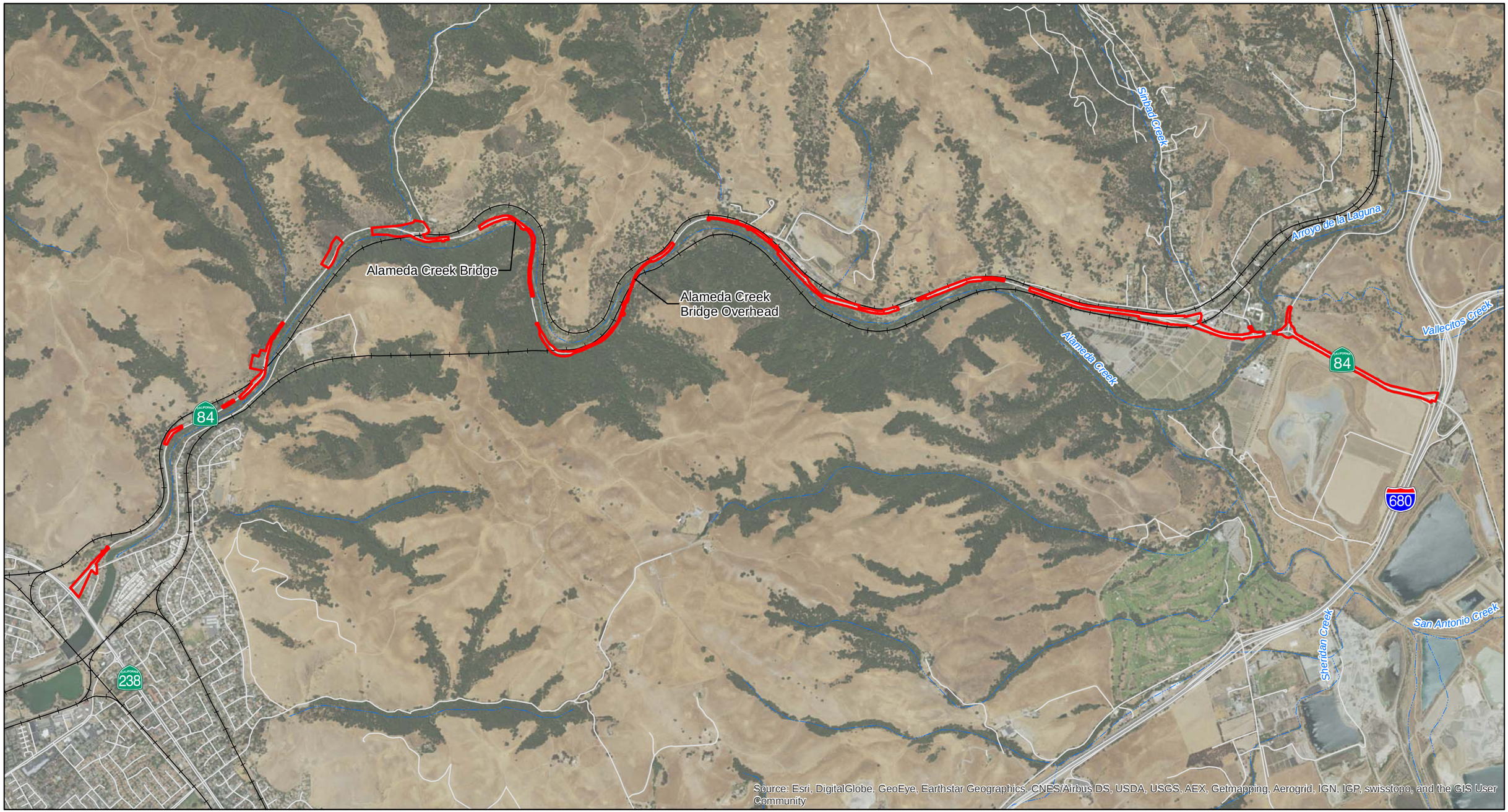
Scale: 1:100,000
1 inch = 8,333 feet

N

0 1 2 Miles

Figure 1:
Project Vicinity Map
Niles Canyon
Safety Improvement Project

Alameda County,
California



Biological Study Area
Road
Railroad
Creek

Scale: 1:24,000
1 inch = 2,000 feet

N

0 1,000 2,000 Feet

Figure 2:
Biological Study Area
Niles Canyon
Safety Improvement Project

2.0 METHODS

A reconnaissance-level survey of the BSA was conducted on August 13, 2014, by Garcia and Associates (GANDA) biologists Meghan Bishop and Dana Terry. The purpose of the survey was to document habitat within the BSA and assess the potential for the occurrence of special-status wildlife species. Representative areas of the site were surveyed on foot, and the remainder of the BSA was surveyed by vehicle.

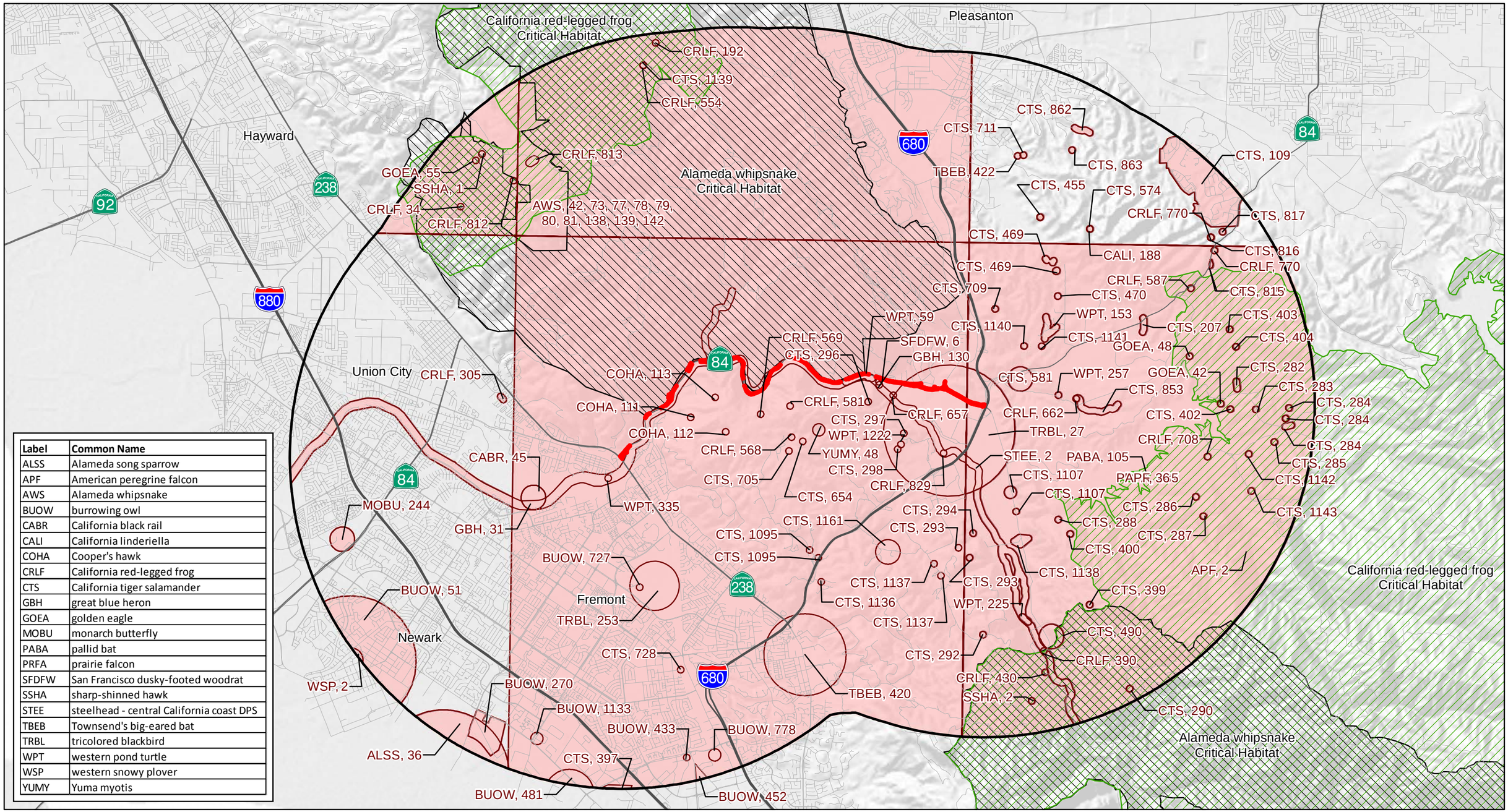
A list of special-status wildlife with potential to occur was compiled from a query of the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) for a five-mile radius around the BSA (CDFW 2016a; Figure 3), the U.S. Fish and Wildlife Service (USFWS) species list for the Niles quad and eight surrounding quads: Hayward, Dublin, Livermore, Newark, La Costa Valley, Mountain View, Milpitas, and Calaveras Reservoir (Appendix B), and the biologists' familiarity with the region and its habitats.

Vegetation types were mapped by GANDA botanist Constance Ganong in August 2014. Vegetation types were classified based on *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988).

The locations of San Francisco dusky-footed woodrat (*Neotoma fuscipes annectans*) nests were recorded during tree surveys for this project conducted in August 2014, as well as during tree surveys in May 2014 and January 2012 for other projects that overlap the current BSA.

Additional areas were added to the BSA after the initial site visits were completed. Meghan Bishop and Constance Ganong conducted a supplemental site visit to these additional areas on December 2, 2014, in order to complete the vegetation mapping and habitat assessment.

The replacement of the Stonybrook Creek culvert was added to the project following the completion of all of the biological studies. GANDA biologists Alexander Pries and Dana Terry, and BioMaAS biologist Elizabeth Gruenstein conducted a supplemental site visit to assess the newly added areas related to the Stonybrook Creek culvert replacement on March 24, 2016.



Label	Common Name
ALSS	Alameda song sparrow
APF	American peregrine falcon
AWS	Alameda whipsnake
BUOW	burrowing owl
CABR	California black rail
CALI	California linderiella
COHA	Cooper's hawk
CRLF	California red-legged frog
CTS	California tiger salamander
GBH	great blue heron
GOEA	golden eagle
MOBU	monarch butterfly
PABA	pallid bat
PRFA	prairie falcon
SFDFW	San Francisco dusky-footed woodrat
SSHA	sharp-shinned hawk
STEE	steelhead - central California coast DPS
TBEB	Townsend's big-eared bat
TRBL	tricolored blackbird
WPT	western pond turtle
WSP	western snowy plover
YUMY	Yuma myotis

Biological Study Area
5 Mile Buffer of Biological Study Area
CNDDB Wildlife Occurrence (Species, Occurrence number)

USFWS Critical Habitat
Alameda whipsnake
California red-legged frog

Scale: 1:90,000
1 inch = 7,500 feet

N

0 1 2 Miles

Figure 3:
CNDDB Occurrences Within 5 Miles of the Biological Study Area
Niles Canyon
Safety Improvement Project

3.0 SURVEY RESULTS

3.1 Land Cover Categories

Ten land cover categories were identified within the BSA, as shown in Table 1 and Figure 4. Descriptions of each land cover type and how it may be used by various wildlife species are provided below.

Table 1. Land Cover Types and Acreage within the BSA

Land Cover Type	Acreage
Annual Grassland	1.56
Barren	0.24
California Bay/Coast Live Oak	5.42
Coastal Scrub	4.37
Creek	0.43
Fresh Emergent Wetland	0.03
Road	28.30
Urban-Landscaped	12.85
Urban-Railroad	0.17
Valley Foothill Riparian	7.76
Total	**61.13**

Biological Study Area
Railroad
Creek

Woodrat Nest
- 2012 Survey
- 2014 Survey

Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

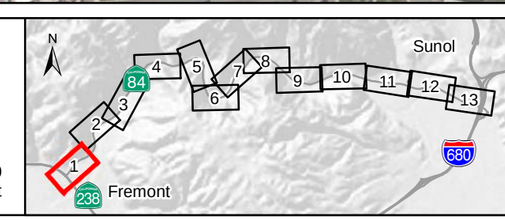


Figure 4:
Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 1 of 13
0 100 200 Feet

Biological Study Area
Railroad
Creek

Woodrat Nest
- 2012 Survey
- 2014 Survey

Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

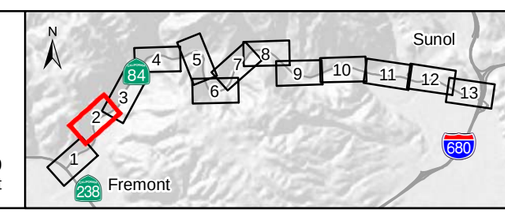
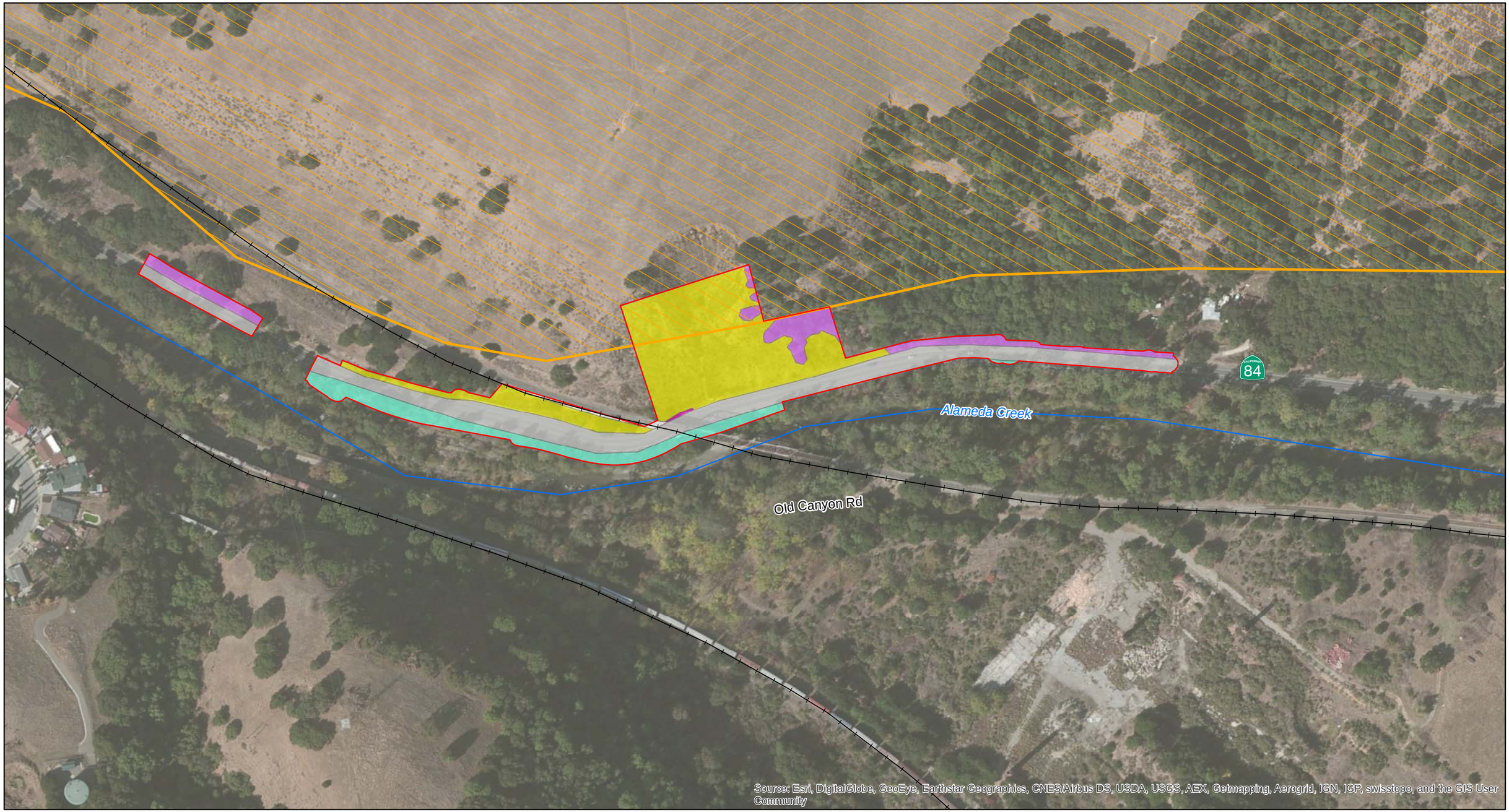


Figure 4:
Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 2 of 13
0 100 200 Feet



Biological Study Area
Railroad
Creek

Woodrat Nest
- 2012 Survey
- 2014 Survey

Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

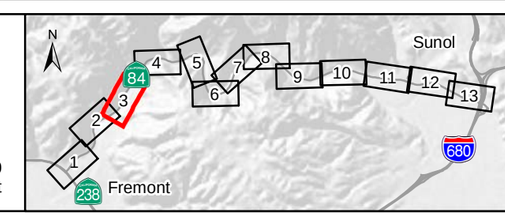
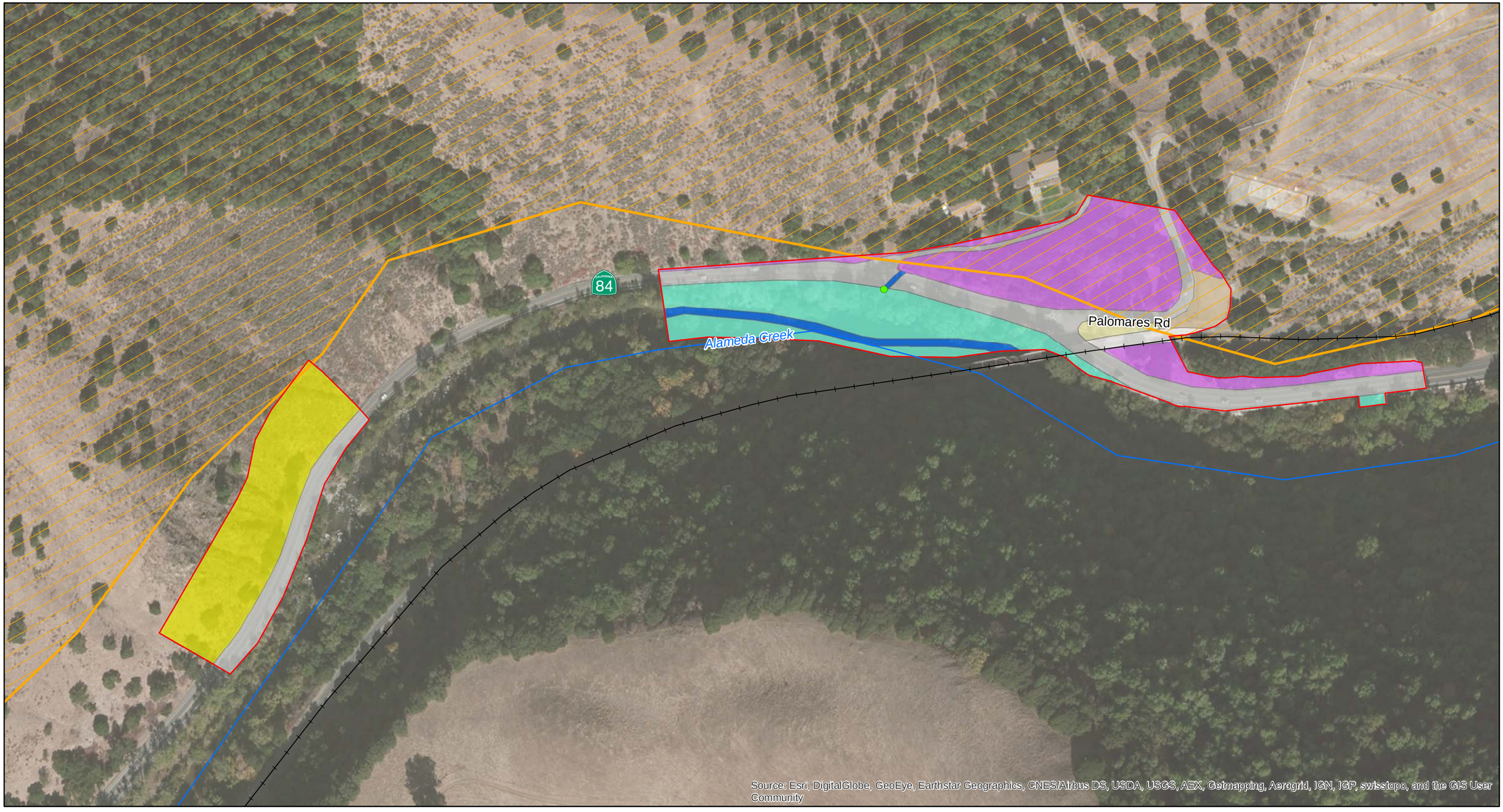


Figure 4:
Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 3 of 13
0 100 200 Feet



Biological Study Area
Railroad
Creek

Woodrat Nest
- 2012 Survey
- 2014 Survey

Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

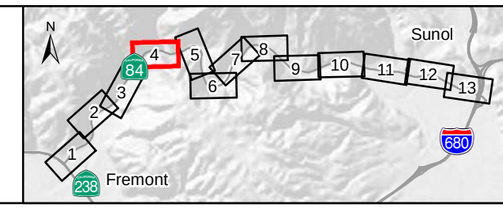
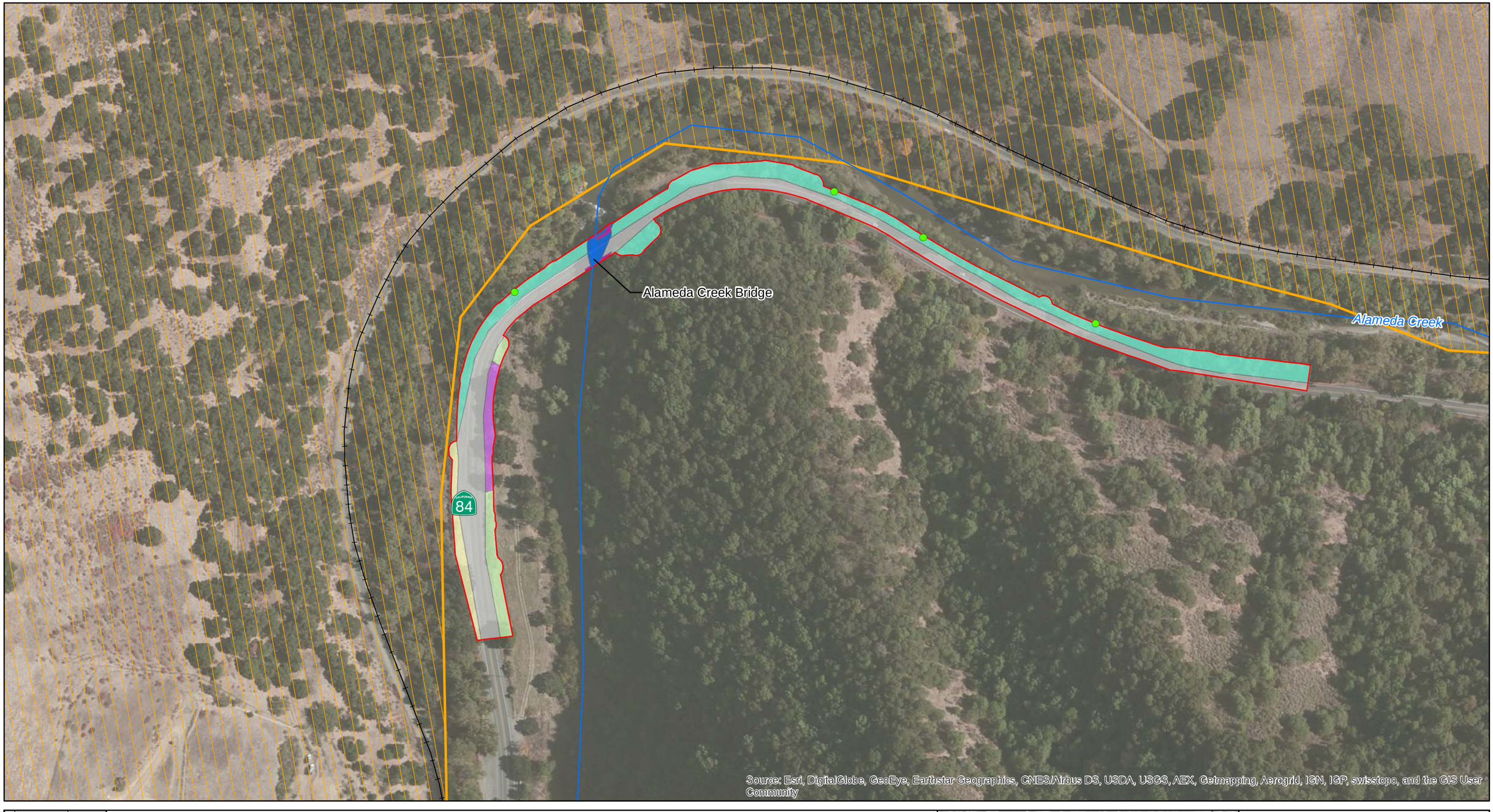


Figure 4:
Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 4 of 13
0 100 200 Feet
N



Biological Study Area
Railroad
Creek

Woodrat Nest
- 2012 Survey
- 2014 Survey

Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

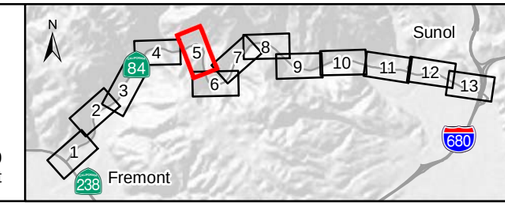


Figure 4:
Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 5 of 13
0 100 200 Feet

Biological Study Area
Railroad
Creek

Woodrat Nest
- 2012 Survey
- 2014 Survey

Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

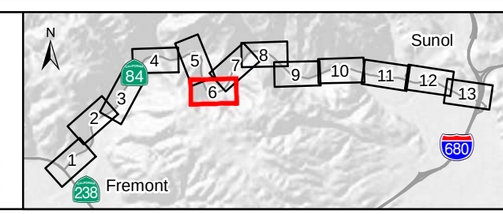
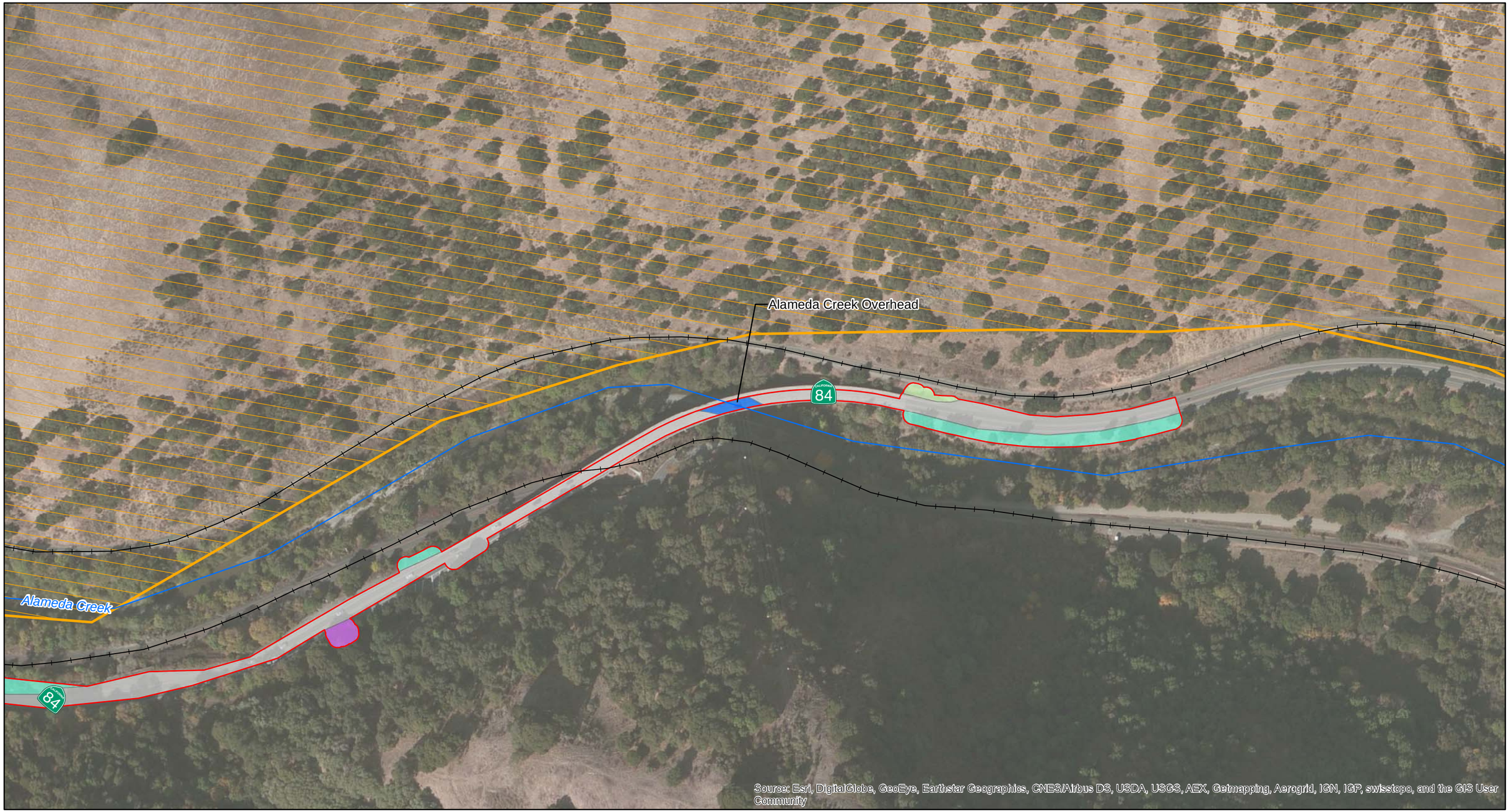


Figure 4:
Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 6 of 13
0 100 200 Feet
N



Biological Study Area
Railroad
Creek

Woodrat Nest

- 2012 Survey
- 2014 Survey

Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types

Annual Grassland
California Bay/Coast Live Oak
Coastal Scrub
Valley Foothill Riparian
Fresh Emergent Wetland
Creek
Road
Barren
Urban-Landscaped
Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

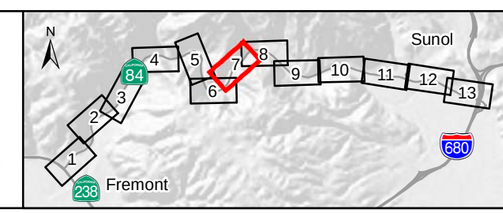


Figure 4:
Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 7 of 13

0 100 200 Feet

Biological Study Area
Railroad
Creek

Woodrat Nest
- 2012 Survey
- 2014 Survey

Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

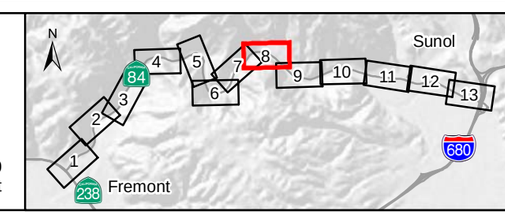


Figure 4:
Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 8 of 13
0 100 200 Feet
N

Biological Study Area
Railroad
Creek

Woodrat Nest
- 2012 Survey
- 2014 Survey

Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

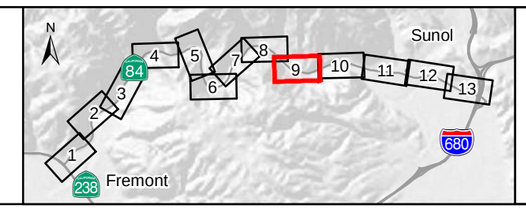
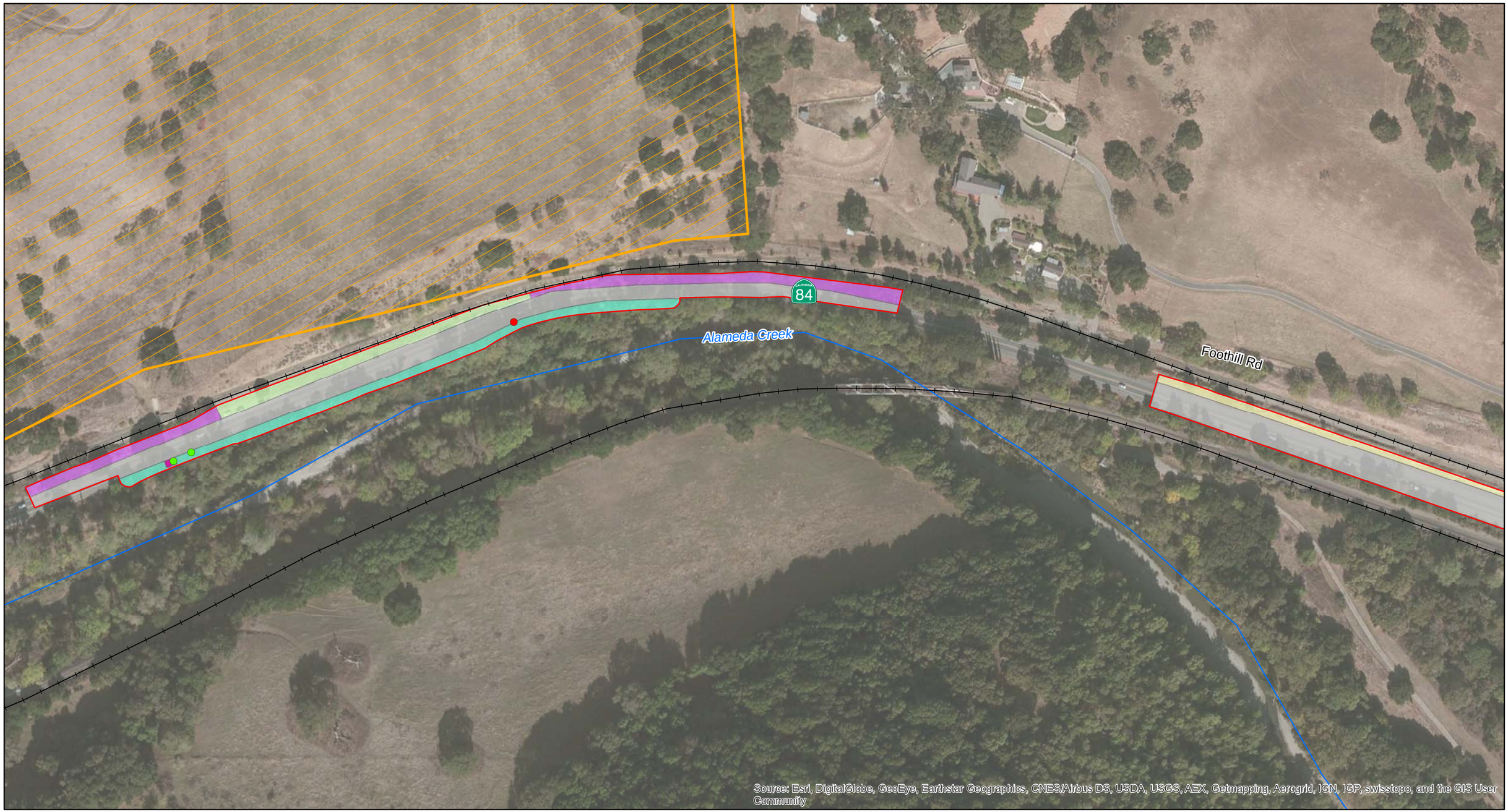


Figure 4:
Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 9 of 13
0 100 200 Feet
N



Biological Study Area
Railroad
Creek

Woodrat Nest
- 2012 Survey
- 2014 Survey

Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

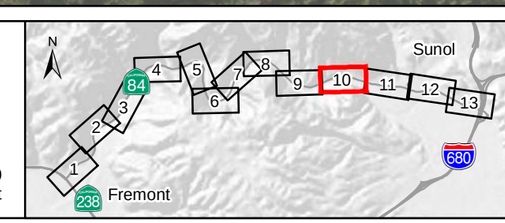


Figure 4:
Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 10 of 13
0 100 200 Feet
N

Biological Study Area
Railroad
Creek

Woodrat Nest
- 2012 Survey
- 2014 Survey

Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

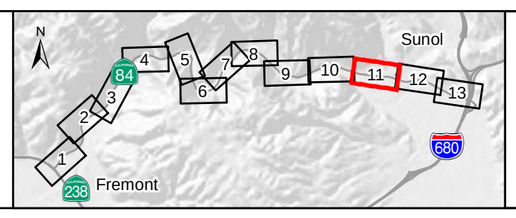


Figure 4:
Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 11 of 13
0 100 200 Feet
N

Biological Study Area
Railroad
Creek

Woodrat Nest
- 2012 Survey
- 2014 Survey

Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

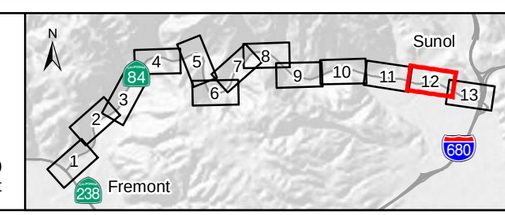


Figure 4:
Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 12 of 13
0 100 200 Feet
N

Biological Study Area
Railroad
Creek

Woodrat Nest
- 2012 Survey
- 2014 Survey

Alameda Whipsnake Critical Habitat

Landcover and Vegetation Types
- Annual Grassland
- California Bay/Coast Live Oak
- Coastal Scrub
- Valley Foothill Riparian
- Fresh Emergent Wetland
- Creek
- Road
- Barren
- Urban-Landscaped
- Urban-Railroad

Scale: 1:2,400
1 inch = 200 feet

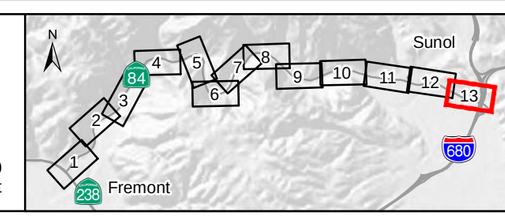


Figure 4:
Landcover and Vegetation Types
Niles Canyon
Safety Improvement Project
Map 13 of 13
0 100 200 Feet
N

3.1.1 California Annual Grassland

California Department of Fish and Wildlife's *Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988) describes annual grasslands as a compilation of exotic grass species derived from Europe and introduced during the North American settlement of the late 1800s. Common annual grass species include various brome species (*Bromus* spp.), wild oats (*Avena fatua*), and foxtail barley (*Hordeum murinum*). Common forbs include broadleaf filaree (*Erodium botrys*), redstem filaree (*Erodium cicutarium*), bur clover (*Medicago polymorpha*), and popcorn flower (*Plagiobothrys* spp.). It sometimes includes remnants of native perennial grasses, and often includes a diverse assemblage of native annual forbs (wildflowers).

California annual grasslands are found in small sections throughout the BSA in isolated, disturbed sites along SR 84, in patches between coast live oak woodland, and on steep hillsides. Common non-native grass species in these patches include various brome species, wild oats, Italian ryegrass (*Festuca perennis*), and Smilograss (*Piptatherum miliaceum*). Annual grassland comprises 1.56 acres of the BSA.

Many wildlife species use grasslands for foraging, but some require special habitat features such as cliffs, caves, ponds, or habitats with woody plants within or nearby the grassland for breeding, resting, and cover. Other species may avoid small patches of grassland, preferring larger areas of unbroken grassland. Characteristic reptiles that breed in grassland habitats include the western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), and western rattlesnake (*Crotalus oregonus*). Mammals typically found in this habitat include the black-tailed jackrabbit, California ground squirrel (*Otospermophilus beechyi*), Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), and coyote (*Canis latrans*). In sufficiently large swathes, this habitat also provides important foraging habitat for raptors (Mayer and Laudenslayer 1988).

3.1.2 California Bay/Coast Live Oak Forest

California bay/coast live oak forest is an uncommon hardwood habitat comprised of a pronounced hardwood layer dominated by California bay (*Umbellularia californica*) and coast live oak (*Quercus agrifolia*). This upland hardwood community is typically found on north- and west-facing slopes with soils derived from sandstone. Understory vegetation is mostly scattered woody shrubs such as poison oak (*Toxicodendron diversilobum*), mountain mahogany (*Cercocarpus montanus*), manzanita (*Arctostaphylos* spp.), and ceanothus (*Ceanothus* spp.). In California, most large stands of this habitat have been cut and cleared for urban uses such as agriculture and housing over the past century.

California bay/coast live oak forest habitat occurs throughout the western and central portions of the BSA dominating the north- and west-facing slopes. Buckeye (*Aesculus californica*) is a common tree associate in this habitat. Poison oak, ocean spray (*Holodiscus discolor*), honeysuckle (*Lonicera hispidula*), and snowberry (*Symphoricarpos* spp.) were common understory associates. Approximately 5.42 acres of this habitat occurs within the limits of the BSA.

The dense understory and thick layer of leaf litter common to oak woodlands provide habitat for many common species of amphibian, reptile, and small mammal. At least 60 species of mammals may use oaks in some way, and as many as 110 species of birds have been observed during the breeding season in California habitats where oaks form a significant part of the canopy or subcanopy. Quail, turkeys, squirrels, and deer may be so dependent on acorns in fall and early winter that a poor acorn year can result in significant declines in their populations (Mayer and Laudenslayer 1988).

3.1.3 Coastal Scrub

Coastal scrub is the dominant vegetation community on the south-facing hills within the BSA. Two dominant species of coastal scrub within the BSA are coyote brush (*Baccharis pilularis*) and California buckwheat (*Eriogonum fasciculatum*). Coyote brush, common in more recently disturbed sites, is found in the ecotones between California bay/coast live oak forest and annual grasslands. Associate species include non-native grasses and small forbs. California buckwheat is found on rocky, steep slopes. Patches of the California buckwheat scrub are found in the western boundary of the BSA, above SR 84. Common species in this area include sticky monkey flower (*Mimulus aurantiacus*) and poison oak. Coastal scrub comprises approximately 4.37 acres of the BSA.

Numerous bird, mammal, and reptile species utilize coastal scrub habitats. Wildlife found in coastal scrub habitat includes species such as white-crowned sparrow (*Zonotrichia leucophrys*), western fence lizard, whipsnakes (*Masticophis* spp.), gopher snake (*Pituophis catenifer*), and deer mouse (*Peromyscus maniculatus*) (Mayer and Laudenslayer 1988).

3.1.4 Valley Foothill Riparian

The valley foothill riparian community within the BSA is characterized by mature riparian forest with 40 to 80 percent canopy cover, often dominated by winter deciduous trees. The majority of the community occurs along the edges of Alameda Creek. Dominant over-story species include California sycamore (*Platanus racemosa*), Fremont's cottonwood (*Populus fremontii*), big leaf maple (*Acer macrophyllum*), and white alder (*Alnus rhombifolia*). Sub-canopy species include

arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), and narrowleaf willow (*Salix exigua*). Understory species include poison oak, Himalayan blackberry (*Rubus armeniacus*), and wild grape (*Vitis californica*). Valley foothill riparian comprises approximately 7.76 acres of the BSA.

Riparian habitats provide food, water, migration and dispersal corridors, and escape, nesting, and thermal cover for an abundance of wildlife. At least 50 amphibians and reptiles occur in lowland riparian systems throughout California. Many are permanent residents, while others are transient or temporary visitors. Hundreds of bird and mammal species may also use riparian communities, which are particularly attractive due to the presence of nearby water (Mayer and Laudenslayer 1988).

3.1.5 Fresh Emergent Wetland

The fresh emergent wetland vegetation community is typically characterized by colonial hydrophytic vegetation in areas that are perennially wet, or inundated to the point of creating anaerobic soils. The fresh emergent wetlands within the BSA are restricted to areas where the riparian and riverine habitats converge. Dominant species within the fresh emergent wetland in the BSA include monocots such as common tule (*Schoenoplectus acutus* var. *occidentalis*), torrent rush (*Carex nudata*), and bur reed (*Sparganium eurycarpum* ssp. *eurycarpum*). Fresh emergent wetland comprises approximately 0.03 acre of the current BSA.

Common wildlife that could be expected to occur in freshwater marsh habitat includes wading birds such as great blue heron (*Ardea herodias*) and great egret (*Ardea alba*), as well as passerines such as sparrows and towhees. Fresh emergent wetland can provide breeding habitat for many amphibian species, including Sierran tree frog (*Pseudacris sierrae*) and western toad (*Bufo boreas*). Reptiles such as aquatic garter snakes (*Thamnophis atratus*) spend the majority of their life cycles in and around freshwater marsh habitats (Mayer and Laudenslayer 1988).

3.1.6 Creek

Creek channel habitat is typically characterized by intermittent or continually running water. The creek channel within the BSA is restricted to the active channel of Alameda Creek at the two bridge crossings. Creek habitat may contain vegetation such as torrent sedge shadowed by over-story trees, including white alder (*Alnus rhombifolia*), Northern California black walnut (*Juglans hindsii*), Fremont cottonwood (*Populus fremontii*), and California sycamore. Tules, sedges (*Carex* spp.), rushes (*Juncus* spp.), and a variety of strictly hydrophytic vegetation may also occur within this habitat. Creek channel comprises approximately 0.43 acre of the BSA.

Open waters provide foraging habitat for many species of birds, including wading birds such as herons and egrets, belted kingfisher (*Ceryle alcyon*), and American dipper (*Cinclus mexicanus*). Many bird species will also capture small insects over water, including swallows, swifts, and flycatchers. Mammals found in creek habitats include river otter (*Lutra canadensis*), mink (*Mustela vison*), muskrat (*Ondatra zibethicus*), and beaver (*Castor canadensis*) (Mayer and Laudenslayer 1988). Bats are also highly associated with open creek areas, where they hunt nocturnal insects that congregate over water.

3.1.7 Urban

Within the BSA, urban areas include unpaved road shoulders that are maintained by Caltrans. These areas may include limited landscaping vegetation or may be relatively barren. The railroad tracks pass through the BSA near the intersection of Niles Canyon Road and Palomares Road, and are also considered an urban habitat type. A barren lot adjacent to Palomares Road is also considered an urban habitat type. Urban areas total 13.02 acres of the current BSA.

As it exists within the BSA, urban habitat is not likely to be used by wildlife species due to the lack of vegetation and the continual disturbance from traffic on the immediately adjacent Niles Canyon Road.

3.1.8 Road

Paved road surfaces comprise 28.30 acres of the BSA. The majority of the paved road surface within the BSA is SR 84, though some short sections of adjacent roads are also included where they intersect with SR 84.

Wildlife species are not expected to use paved road surfaces due to the constant presence of traffic. Wildlife may be forced to cross the road during dispersal, and it is likely that traffic causes mortality during these movements.

3.2 Potential for Occurrence of Special-Status Wildlife Species

Based on the literature and database review, 67 special-status wildlife species were taken into consideration for this habitat assessment (Table 2). The potential for occurrence (not expected, low, moderate, or high) of species in the BSA was determined through a combination of habitat suitability, records of occurrences within the region, relative abundance of the species within the region, and the biologists' professional judgment. Based on the initial assessment of wildlife habitats conducted during the reconnaissance survey, 30 species are considered to have no potential to occur within the BSA. Fourteen species have a low potential to occur, and 23 species

were determined to have moderate or high potential to occur. Those species with moderate or high potential are discussed below. The California tiger salamander, which has a low potential to occur, is also discussed below because of its prominence in the current regulatory environment.

Table 2. Potential for Special-Status Wildlife Species to Occur within the BSA

Federal Status Designations:

FE	Listed as Endangered under the federal Endangered Species Act
FT	Listed as Threatened under the federal Endangered Species Act
FC	Candidate for listing under the federal Endangered Species Act
FD	Delisted; was formerly listed as Threatened or Endangered
BGEPA	Protected under the Bald and Golden Eagle Protection Act
--	No federal status

State of California Status Designations:

SE	Listed as Endangered under the California Endangered Species Act
ST	Listed as Threatened under the California Endangered Species Act
SC	Candidate for listing under the California Endangered Species Act
SD	Delisted; was formerly listed as Threatened or Endangered
FP	Fully Protected Species under California Fish and Game Code
SSC	California Species of Special Concern
SA	Included on the California Department of Fish and Wildlife's Special Animals List

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
Invertebrates				
Conservancy fairy shrimp	*Branchinecta conservatio*	FE / SA	Vernal pools in a variety of soil types, including clays and playas. Often found in pools that are relatively large and turbid.	Not Expected - No vernal pool habitat in BSA.
Longhorn fairy shrimp	*Branchinecta longiantenna*	FE / SA	Clear to turbid vernal pools in varying habitat types, including grasslands, sandstone outcrops, and playas.	Not Expected - No vernal pool habitat in BSA.
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT / SA	Wide variety of vernal pool habitats, most commonly in grass or mud bottomed swales, or basalt flow depression pools in unplowed grasslands.	Not Expected - No vernal pool habitat in BSA.
San Bruno Elfin butterful	*Callophyrys mossii bayensis*	FE / --	Inhabits rocky outcrops and cliffs within coastal scrub of the San Francisco peninsula. Eggs are liad on the host plant, stonecrop (Sedum spathulifolium). Adult flight period is late February to mid-April, with the peak occurring in March to early April.	Not Expected – Outside species' range, no suitable habitat in BSA.

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
Monarch butterfly (winter roosting)	*Danaus plexippus*	-- / SA	Winter roosting sites extend along the coast from northern Mendocino County south to San Diego County. Roosts are typically located in wind-protected tree groves within a half mile of the coast. Commonly found in eucalyptus, Monterey pine and/or cypress groves, with nectar and water sources in the vicinity. Larvae develop on milkweed (*Asclepias* sp.) throughout California.	Low – Marginal wintering habitat, no historic presence recorded in this area.
Bay checkerspot butterfly	*Euphydryas editha bayensis*	FT / SA	Serpentine areas in Santa Clara and San Mateo Counties where its hostplant, dwarf plantain (*Plantago erecta*) is present.	Not Expected - No serpentine habitat in BSA.
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE / SA	Vernal pools and swales containing clear to highly turbid water. Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	Not Expected - No vernal pool habitat in BSA.
California linderiella	*Linderiella occidentalis*	-- / SA	Wide variety of vernal pool and other seasonal wetland habitats, often in deeper pools.	Not Expected - No vernal pool habitat in BSA.
Lum's micro-blind harvestman	*Microcina lumi*	-- / SA	Found under rocks in serpentine grasslands. Known only from serpentine hillsides near San Leandro, Alameda County.	Not Expected - No serpentine habitat in BSA.
Mimic tryonia (=California brackishwater snail)	*Tryonia imitator*	-- / SA	Inhabits coastal lagoons, estuaries and salt marshes, from Sonoma County south to San Diego County.	Not Expected - No lagoon, estuary, or salt marsh in BSA.
Fish				
Green sturgeon - southern DPS	*Acipenser medirostris*	FT / SSC	This Distinct Population Segment (DPS) includes all coastal and Central Valley populations south of the Eel River. They spawn in deep pools or "holes" in large, turbulent, freshwater river main-stems. Adults live in oceanic waters, bays, and estuaries when not spawning.	Not Expected - No suitable habitat in BSA.

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
Pacific lamprey	*Entosphenus tridentatus*	-- / SA	Anadromous. Adults spawn in gravel substrates within low gradient stream reaches, generally near pools or riffles. Larvae float downstream to silty areas where they filter feed for 4-7 years, before metamorphosing into adults and leaving streams for oceanic waters.	Moderate. Suitable habitat present, lamprey species have been observed within the watershed.
Delta smelt	*Hypomesus transpacificus*	FT/ SE	Found in the Sacramento-San Joaquin delta, seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Seldom found at salinities > 10 ppt. Most often occurs at salinities < 2ppt.	Not Expected - Outside species' range, no suitable habitat in BSA.
River lamprey	*Lampetra ayresii*	-- / SSC	Anadromous. Oceanic adults enter river systems to spawn in clean, gravelly riffles. Filter-feeding larvae bury themselves in sandy backwaters or stream edges.	Moderate. Suitable habitat present, lamprey species have been observed within the watershed.
Coho salmon - central California coast ESU	*Oncorhynchus kisutch*	FE / SE	Spawning habitat is small streams with stable gravel substrates. The remainder of the life cycle is spent foraging in estuarine and marine waters of the Pacific Ocean.	Not Expected – Outside of species' current range, marginally suitable habitat in BSA.
Steelhead - central California coast DPS	*Oncorhynchus mykiss irideus*	FT / SA	Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development. Natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks. This DPS includes spawning populations from the Russian River to Aptos Creek, including San Francisco Bay.	High - Suitable habitat in Alameda Creek, and resident rainbow trout form is present in watershed. Currently, anadromous form is excluded by downstream passage barriers; but is likely to occur if passage is restored as planned in 2016.
Steelhead - Central Valley DPS	*Oncorhynchus mykiss irideus*	FT / SA	Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development. Natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks. This DPS includes spawning populations from the Sacramento and San Joaquin River systems.	Not Expected - Outside species' range.

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
Chinook salmon - Central Valley spring-run ESU	*Oncorhynchus tshawytscha*	FT / ST	Prefer streams that are deeper and larger than those used by other Pacific salmon species.	Not Expected - Outside species' range.
Chinook salmon - Sacramento River winter-run ESU	*Oncorhynchus tshawytscha*	FE / SE	Prefer streams that are deeper and larger than those used by other Pacific salmon species.	Not Expected - Outside species' range.
Longfin smelt	*Spirinchus thaleichthys*	FC / ST	Occurs in bays and estuaries from Monterey Bay to the Smith River. Enters lower tidal portions of larger streams to spawn, not typically found in non-tidal sections of small streams.	Not Expected – No suitable habitat within BSA.
Amphibians				
California tiger salamander (Central DPS)	*Ambystoma californiense*	FT / ST	Vernal pools and/or seasonal water sources; requires underground refuges in adjacent upland areas, especially ground squirrel burrows.	Low – No suitable breeding habitat, marginally suitable upland habitat along Paloma Way in the eastern section of the BSA only. No habitat west of Pleasanton-Sunol Road because the steep, densely shaded walls of Niles Canyon are not suitable dispersal habitat for the species and likely represent a dispersal barrier.
Foothill yellow-legged frog	*Rana boylii*	-- / SSC	Breeds and forages in rocky or cobble-bottomed streams. Found in a variety of forest, woodland, scrub, riparian, and meadow habitats where suitable streams are present.	Low – Marginally suitable habitat present in Alameda Creek within the BSA.
California red-legged frog	*Rana draytonii*	FT / SSC	Breeds in ponds and pools in slow-moving streams with emergent vegetation; adjacent upland habitats are often used for temporary refuges or dispersal movements.	Moderate – Marginally suitable aquatic habitat within Alameda Creek, suitable upland habitat throughout BSA.

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
Reptiles				
Western pond turtle	*Emys marmorata*	-- / SSC	Occurs in both permanent and seasonal waters, including marshes, streams, rivers, ponds, and lakes. Also found in agricultural irrigation and drainage canals. They favor habitats with large amounts of emergent logs or boulders, where several individuals may congregate to bask.	Moderate – Suitable aquatic habitat in sun-exposed portions of Alameda Creek, and suitable breeding habitat in south-facing upland areas with short vegetation within BSA.
Alameda whipsnake	*Masticophis lateralis euryxanthus*	FT / ST	Typically found in chaparral and scrub habitats, but will also use adjacent grassland, oak savanna, and woodland habitats. Often found on south-facing slopes and ravines with rock outcrops, deep crevices, or abundant rodent burrows.	High – BSA is partially located within designated critical habitat, suitable foraging and dispersal habitat present.
Birds				
Cooper's hawk	*Accipiter cooperii*	-- / SA	Found in woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	Moderate - Suitable nesting and foraging habitat within BSA.
Sharp-shinned hawk	*Accipiter striatus*	-- / SA	Found in ponderosa pine, black oak, riparian deciduous, mixed conifer and Jeffrey pine habitats. Prefers riparian areas. Nest sites with plucking perches on north-facing slopes are critical requirements. Nests usually within 275 feet of water.	Low - Suitable nesting and foraging habitat within BSA, but it is uncommon for this species to nest in the Bay Area.
Tricolored blackbird	*Agelaius tricolor*	-- / SC	Highly colonial species that typically nests in freshwater marshes containing emergent vegetation such as cattail and bulrush, but will also use blackberry thickets and dense patches of ruderal vegetation such as thistles and mustard adjacent to marshes or wetlands.	Low – Marginal nesting habitat within the BSA, may forage or migrate through.
Golden eagle	*Aquila chrysaetos*	BGEPA / FP	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas provide good nesting sites.	Low – Unlikely to use trees in the canyon bottom for nesting. May occasionally forage in the BSA.

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
Great egret (nesting colony)	*Ardea alba*	-- / SA	Nests colonially in trees and tall vegetation in a wide variety of habitats near open water foraging habitats.	Moderate - Suitable rookery habitat in large trees within the BSA. Individuals likely to forage within the BSA.
Great blue heron (nesting colony)	*Ardea herodias*	-- / SA	Variety of habitats close to bodies of water including fresh and saltwater marshes, wet meadows, lake edges and shorelines. Nests colonially in tall trees, cliffsides, and sequestered spots on marshes.	Moderate - Suitable rookery habitat in large trees within the BSA. Individuals likely to forage within the BSA.
Western burrowing owl	*Athene cunicularia hypugaea*	-- / SSC	Nests in burrows (often constructed by ground squirrels) and forages in low-growing grasslands and other open, semi-arid habitats.	Not Expected – No suitable short, open grassland habitat within the BSA.
Ferruginous hawk	*Buteo regalis*	-- / SA	Forages over open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon-juniper habitats. Does not nest in California.	Low - Does not nest in California, but may occasionally occur within BSA while foraging or during migration.
Western snowy plover	*Charadrius alexandrinus nivosus*	FT / SSC	Found on sandy beaches, salt pond levees and shores of large alkali lakes. Requires sandy, gravelly or friable soils for nesting.	Not Expected - No suitable sandy beach or shoreline habitat in the BSA.
Northern harrier	*Circus cyaneus*	-- / SSC	Wet and dry open country such as marshes and grasslands with good ground cover. Nests on the ground among tall vegetation.	Low – Marginal nesting habitat within the BSA, may forage or migrate through.
Snowy egret (nesting colony)	*Egretta thula*	-- / SA	Nests colonially, with nest sites situated in trees and protected beds of dense bulrush. Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.	Moderate - Suitable rookery habitat in large trees within the BSA. Individuals likely to forage within the BSA.
White-tailed kite	*Elanus leucurus*	-- / FP	Nests in oak, willow or other trees and forages over open grasslands.	Moderate - Suitable nesting habitat in trees within and adjacent to BSA. Suitable foraging habitat in open grassland adjacent to the BSA.
California horned lark	*Eremophila alpestris actia*	-- / SA	Grasslands and other open habitats that lack trees or brushy areas. Nests on the ground, usually near grass clumps or earth clods.	Not expected – No suitable nesting or foraging habitat within the BSA.

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
Prairie falcon	*Falco mexicanus*	-- / SA	Found in dry, open terrain, either level or hilly. Breeding sites are located on cliffs. Forages far afield, even to marshlands and ocean shores.	Low - No suitable nesting habitat present, but individuals may occasionally forage or occur as a migrant within the BSA.
American peregrine falcon	*Falco peregrinus anatum*	FD / SD, FP	Nests on cliffs, banks, dunes, mounds, large bridges, and tall buildings, typically near wetlands, lakes, rivers, or other water bodies. Nest consists of a scrape or a depression or ledge in an open site.	Low - No suitable nesting habitat present, but individuals may occasionally forage or occur as a migrant within the BSA.
Saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	-- / SSC	Resident of fresh and salt water marshes fringing the San Francisco Bay region. Requires thick, continuous cover down to water's surface for foraging, and tall grasses, bulrush patches, or willows for nesting.	Not Expected - No salt or freshwater marshes with thick, continuous cover in the BSA.
California black rail	*Laterallus jamaicensis coturniculus*	-- / ST, FP	Found in freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Requires water depths of about one inch that does not fluctuate during the year and dense vegetation for nesting habitat.	Not Expected - No suitable marsh or tidal slough habitats in BSA.
Alameda song sparrow	*Melospiza melodia pusillula*	-- / SSC	Resident of salt marshes bordering south arm of San Francisco Bay. Inhabits pickleweed (*Salicornia* spp.) marshes; nests low in pickleweed and gumweed (*Grindelia* spp.) bushes, but high enough to escape high tides.	Not Expected - No suitable salt marsh habitat in the BSA.
Black-crowned night heron (nesting colony)	*Nycticorax nycticorax*	-- / SA	Nests in trees and vegetation near a wide variety of open water habitats, including streams, canals, lakes, shorelines, and marshes.	Moderate - Suitable rookery habitat in large trees within the BSA. Individuals likely to forage within the BSA.
California brown pelican	*Pelecanus occidentalis californicus*	FD / SD, FP	Nest on the Channel Islands in southern California and islands off the coast of Baja California. Roost during the winter on near-shore rocks and undisturbed human-made structures such as breakwaters and abandoned piers.	Not Expected - No shoreline habitat in BSA.
California clapper rail	*Rallus longirostris obsoletus*	FE / SE, FP	Salt-water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay.	Not Expected - No suitable marsh or tidal slough habitats in BSA.

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
Bank swallow	*Riparia riparia*	-- / ST	Nests colonially in vertical banks of sand or dirt along rivers, lake shores, road cuts, or similar sites. Nests primarily in riparian and other lowland habitats in central and northern California.	Not Expected - No suitable habitat for nesting colonies within the BSA. Has not been confirmed breeding in Alameda County since 1929.
Yellow warbler	*Setophaga petechia*	-- / SSC	Nest and forage in riparian woodlands, often associated with willows, though specific vegetation varies by locality.	Moderate - Suitable nesting habitat in riparian areas; may also forage or occur as a migrant within the BSA.
California least tern	*Sternula antillarum browni*	FE / SE, FP	Nest colonially on the ground in sandy or gravelly beaches. Forage over open water in coastal regions, including within San Francisco Bay.	Not Expected - No sandy or gravelly beach habitat in the BSA.
Mammals				
Pallid bat	*Antrozous pallidus*	-- / SSC	Occurs throughout California and most abundant in grasslands, shrublands, and woodlands. Roosts in crevices and cavities of buildings, bridges, tunnels, rocks, cliffs, and trees.	High – Confirmed to be using Alameda Creek Bridge as a night roost
Ringtail	*Bassariscus astutus*	-- / FP	Found throughout much of California in riparian areas, rocky slopes, and woodlands near water. Builds dens in tree hollows and crevices among rocks.	Not Expected – Rare in the region, no documented observations and limited suitable habitat in Niles Canyon.
Townsend's big-eared bat	*Corynorhinus townsendii*	-- / SSC	Found throughout California in a wide variety of habitats; most commonly associated with mesic sites. Usually roosts in caves, mines, bridges, trees, and structures in or near woodlands and forests, often near water. Extremely sensitive to human disturbance.	High – Species is known to occur within the region and the Niles Canyon corridor provides suitable foraging habitat. Suitable roosting habitat in large trees, marginal roosting habitat on bridge.
Berkeley kangaroo rat	*Dipodomys heermanni berkeleyensis*	-- / SA	Species was considered extinct for several decades until recent rediscovery. Habitat requirements not fully understood, but likely to be found in open grassy hilltops and open spaces in chaparral and blue oak/California foothill pine woodlands. Requires fine, deep, well-drained soil for burrowing.	Low - Marginal habitat present based on the information available.

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
Western mastiff bat	*Eumops perotis californicus*	-- / SSC	Found in open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, and chaparral. Roosts in crevices in cliff faces, high buildings, trees, and/or tunnels.	Moderate - May forage in riparian and woodland habitat within the BSA, but low potential to roost in trees or on bridge.
Silver-haired bat	*Lasionycteris noctivagans*	-- / SA	Occurs in coastal and montane coniferous forests, valley and foothill woodlands, and riparian habitats. Roosts in crevices and cavities in trees.	Low – Prefers conifer forests, but may roost in trees within the BSA. Does not roost in bridges.
Western red bat	*Lasiurus blossevillii*	-- / SSC	Occurs throughout California primarily in riparian and woodland areas. Roosts singly or in small groups in shrub and tree foliage.	Moderate - Suitable riparian and woodland roosting habitat within BSA. Does not roost in bridges.
Hoary bat	*Lasiurus cinereus*	-- / SA	Occurs throughout California, primarily in habitat mosaics with cover and open areas or habitat edges for feeding. Roosts singly or in small groups in shrub and tree foliage of riparian, woodland, and forest habitats.	Moderate - Suitable riparian and woodland roosting habitat within BSA. Does not roost in bridges.
Small-footed myotis	*Myotis ciliolabrum*	-- / SA	Uncommon species found in coastal areas, Sierra Nevada and transverse ranges, Great Basin and desert habitats. Roosts in crevices in caves, buildings, mines, bridges and trees.	Moderate - Suitable riparian and woodland habitats within the BSA; may roost in bridges.
Long-eared myotis	*Myotis evotis*	-- / SA	Occurs throughout California in suitable habitat such as conifer and deciduous woodlands, coastal scrub, and chaparral. Roosts in crevices and cavities in buildings, bridges, trees, snags and stumps.	Moderate - Known to occur in the region. Suitable riparian and woodland habitats within the BSA; may roost in bridges.
Fringed myotis	*Myotis thysanodes*	-- / SA	Occurs throughout California in suitable habitat such as conifer and deciduous woodlands, coastal scrub, and chaparral. Roosts in crevices and cavities in buildings, bridges, trees, snags and stumps.	Moderate - Known to occur in the region. Suitable riparian and woodland habitats within the BSA; may roost in bridges.
Long-legged myotis	*Myotis volans*	-- / SA	Occurs throughout coastal ranges and Cascade/Sierra Nevada ranges to southern California. Most common in woodland and forest habitats above 4,000 feet. Roosts in crevices in trees, rocks, buildings, mines, and caves.	Low – Prefers conifer forests, but may roost in the bridge or in trees within the BSA.

Common Name	Scientific Name	Status (Federal/State)	Habitat Requirements	Potential to Occur in the BSA
Yuma myotis	*Myotis yumanensis*	-- / SA	Commonly throughout California especially near water features. Roosts in crevices and cavities of buildings, bridges, caves, tunnels, mines, and trees. Forages primarily over open water such as reservoirs, lakes, streams, creeks, canals, and ponds.	High – Confirmed maternity colony present within Alameda Creek Bridge
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	-- / SSC	Found in forest habitats of moderate canopy and moderate to dense understory. May prefer chaparral and redwood habitats. Constructs nests of shredded grass, leaves, and other material. May be limited by availability of nest-building materials.	High - Woodrat nests observed throughout the BSA.
Salt-marsh harvest mouse	*Reithrodontomys raviventris*	FE / SE, FP	Only in the saline emergent wetlands of San Francisco bay and its tributaries. Pickleweed (*Salicornia* sp.) is primary habitat. Builds loosely organized nests and requires higher areas to escape high tides.	Not Expected - No suitable salt marsh or pickleweed habitat in BSA.
Salt-marsh wandering shrew	*Sorex vagrans halicoetes*	-- / SSC	Found in salt marshes of the south arm of San Francisco Bay. Medium high marsh 6-8 feet above sea level where abundant driftwood is scattered among pickleweed.	Not Expected - No salt marsh or driftwood habitat in BSA.
American badger	*Taxidea taxus*	-- / SSC	Prefers dry open stages of most shrub, forest, and herbaceous habitats. Requires sufficient prey base (mostly burrowing rodents), friable soils, and open, uncultivated ground.	Low - Marginally suitable habitat present, may occasionally forage or disperse through the BSA.
San Joaquin kit fox	*Vulpes macrotis mutica*	FE / ST	Annual grassland or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing and suitable prey base.	Not expected – No suitable habitat within the BSA. Rare and sparsely distributed in the region.

3.3 Federally or State Listed Species

3.3.1 Central California Coast DPS Steelhead

The Central California Coast DPS (Distinct Population Segment) steelhead (*Oncorhynchus mykiss irideus*) is federally listed as a threatened species. Their range is defined by the National Marine Fisheries Service (NMFS) as all naturally spawned populations from the Russian River south to Aptos Creek in Santa Cruz County, including drainages of San Francisco, San Pablo, and Suisun Bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin Rivers. Steelhead employ a variety of life history strategies that take advantage of the diversity of river systems and regional conditions to which they are adapted. Central California Coast DPS steelhead have a typical "winter" immigration pattern and an "ocean-type" gamete development, which means that adults arrive at their spawning grounds with their eggs close to maturity, and are therefore ready to spawn within a short period of arriving (Moyle 2002). Steelhead typically choose steeper-gradient stream reaches and can spawn in either the mainstems of rivers or far upstream in tributaries. Steelhead typically begin returning to San Francisco Bay in late fall, with most immigration occurring from December through February. Spawning takes place from January through April. Adults spawn in clean gravels and cobbles, typically at tail crests or riffles where surface waters are forced into the gravel, thereby keeping the gravels clean and the eggs well oxygenated. Juvenile steelhead are found in all habitat types, and habitat preferences change with seasonal changes to stream conditions. Steelhead require cool water temperatures, and are excluded from streams where summer water temperatures exceed 23-27° Celsius (73.4-80.6° Fahrenheit) for extended periods of time. In California, most juvenile steelhead remain in their natal streams for two years before emigrating to the ocean during the late spring or early summer, although strategies from one to four years of freshwater residence are known to occur in California. Estuaries are often an important rearing area for juvenile steelhead on their way to the ocean.

Currently, fish passage between Alameda Creek and San Francisco Bay is blocked within the City of Fremont by a concrete grade control structure operated by the Alameda County Water District (ACWD). This structure, located approximately 1.2 miles downstream from the western extent of the BSA, is commonly referred to as "the BART weir" because of its proximity to the Bay Area Rapid Transit (BART) system tracks. *O. mykiss* are known to occur within the Alameda Creek watershed (Leidy et al. 2005, CDFW 2016a). Because these fish are prevented from leaving the watershed by the BART weir, they are not currently considered to be anadromous Central California Coast DPS steelhead and do not receive protection under the federal Endangered Species Act. Instead, they are considered to be landlocked rainbow trout. ACWD is scheduled to install a fish ladder that will circumvent this structure, although the anticipated start of construction

has been delayed and it is unknown when this project will be complete.(ACWD 2014). However, if the fish ladder is installed as planned, fish passage between San Francisco Bay and the Alameda Creek watershed would be restored, and *O. mykiss* within Alameda Creek may be included by NMFS as part of the federally threatened Central California Coast steelhead DPS.

Stonybrook Creek is a tributary that runs generally southward and parallel to Palomares Road, and flows into Alameda Creek within the BSA just west of the Farwell Underpass railroad bridge. Stonybrook Creek is a steep-gradient stream containing suitable spawning and rearing habitat for steelhead (Gunther et al 2000). It flows under SR 84 via a large concrete culvert with a steep dropoff on its downstream side, which is located approximately 100 feet upstream of the confluence with Alameda Creek. This dropoff represents a barrier to fish passage, though apparently not a complete one, as evidenced by the radio tracking in 1999 of a female *O. mykiss* that moved from Alameda Creek into a pool in Stonybrook Creek one mile upstream from the culvert (Alameda Creek Alliance 1999).

In a genetic study by Nielsen (2003), rainbow trout within Alameda Creek were found to be most closely related to naturally-occurring steelhead spawning in Lagunitas Creek, Marin County, which is part of the federally threatened Central California Coast steelhead DPS. Rainbow trout in Arroyo Mocho, a stream which runs through urbanized areas of the Livermore Valley in the northern part of the Alameda Creek watershed, were found to be genetically distinct from other trout in the watershed. These fish are more closely related to stock from the Mount Whitney Hatchery in Inyo County, though it is unknown if this genetic association is due to historic undocumented stocking activities in Arroyo Mocho, or if the fish in Arroyo Mocho are a natural resident population from which the Mount Whitney Hatchery stock was originally derived (Nielsen 2003). Both the Alameda Creek population and the Arroyo Mocho population would require movement through the BSA to access San Francisco Bay and further oceanic waters in the event that passage is restored at the BART weir.

Suitable habitat for steelhead is present at the Stonybrook Creek culvert replacement location. Immediately south of SR 84, there is a pool into which the culvert empties that provides suitable rearing habitat for steelhead. Low-gradient riffles suitable for spawning are present immediately upstream of the culvert, and also downstream of the pool, just before the confluence of Stonybrook Creek and Alameda Creek. However, due to warm temperature conditions and the availability of more suitable habitat further upstream in Stonybrook Creek, the quality of the spawning and rearing habitat within the BSA is marginal at best. The bed of Stonybrook Creek immediately upstream and downstream of the culvert will be recontoured with a natural bottom in order to

eliminate the tall, vertical step on the south side of the culvert, thereby improving fish passage under SR 84 at this location.

Suitable habitat for steelhead is also present in the channel of Alameda Creek underneath the Alameda Creek Bridge and the Alameda Creek Bridge Overhead. Project activity at these locations is restricted to work on the railings, which will all occur on the bridge deck and will not include any in-water work. Although they may be present in the creek channel below, no impacts to steelhead or their habitat are expected as a result of work at these locations.

3.3.2 California Tiger Salamander

The Central DPS of California tiger salamander (*Ambystoma californiense*) is federally and state listed as a threatened species. They breed in vernal pools and other seasonal or permanent ponds, and spend almost all of their lives underground in upland habitats. California tiger salamanders typically occur in grassland and oak savanna habitats where rodent burrows or deep soil crevices are used as long-term refuge sites. Adults migrate from upland habitats to breeding ponds on rainy nights during late fall and early winter. The aquatic larvae hatch and develop in pools during winter and spring, and typically take four to five months to complete their development and metamorphosis. The juveniles leave the pools to disperse into upland habitats during late spring to early summer (Bolster 2010). Individuals have been found in upland refuge sites as far as 2.2 kilometers (1.36 miles) from breeding ponds, though most individuals are found within 800 meters (0.5 miles) (Orloff 2011).

There are a total of 56 CNDDB occurrences of California tiger salamander recorded within five miles of the BSA (CDFW 2016a, Figure 3). The majority of these occurrences are located in the hills south of Niles Canyon Road or in the hills east of I-680. The closest occurrence was recorded in 1994, approximately 0.4 mile south of the BSA. Despite an abundance of occurrences in the region, California tiger salamanders are not expected to occur within the BSA due to the heavy shading and steep walls of Niles Canyon. The steep, densely wooded canyon walls likely represent a passage barrier for this species, which is typically found in flat areas or rolling hills dominated by grasslands. Alameda Creek is not suitable breeding habitat for California tiger salamander as this species requires still, ponded water for larval development. During a June 4, 2014 technical assistance meeting with Caltrans for the Alameda Creek Bridge Project, representatives from USFWS and CDFW concurred with this assessment of the Niles Canyon area. California tiger salamanders could occur in the grassland areas adjacent to Paloma Way, just outside the east end of the BSA. However this area is isolated from known occurrences to the south by the large gravel mining operation and to the north by I-680. The Paloma Way section of the BSA encompasses

only the gravel road shoulder and urban landcover types, which could be used by California tiger salamanders dispersing between other areas of more suitable habitat. Based on the lack of breeding habitat, isolation from known occurrences, and the presence of only marginally suitable dispersal habitat, California tiger salamanders are considered to have a low potential to occur within the Paloma Way segment of the BSA.

3.3.3 California Red-Legged Frog

The California red-legged frog (*Rana draytonii*) is federally listed as a threatened species, and is a California Species of Special Concern. Optimal habitat includes ponds, stream courses, permanent pools (Storer 1925), and intermittent streams between sea level and 1,500 meters (approximately 5,000 feet) in elevation (Bulger et al. 2003). During periods of wet weather, some individuals may travel through upland habitats. Most of these overland movements occur at night. During dry weather, however, California red-legged frogs may disperse overland in response to receding water levels (USFWS 2002). They typically remain within five meters (16.5 feet) of aquatic habitat during the dry season, but will move into upland habitat as far as 130 meters (426 feet) during summer rains (Bulger et al. 2003). Marked and radio-tagged California red-legged frogs have been documented traveling over one mile from aquatic habitat over the course of a rainy season, and have been found within streams almost two miles from breeding habitat. Frogs have been observed moving long distances between habitats along straight lines without regard to topography or vegetation type, rather than using more circuitous corridors that follow aquatic habitat (Bulger et al. 2003).

There are 18 California red-legged frog occurrences located within five miles of the BSA. The closest occurrence was recorded in 2002 approximately 0.1 mile to the south. The nearest designated critical habitat for California red-legged frog is located approximately 1.7 miles southeast of the BSA (CDFW 2016a, Figure 3). Within the BSA, Alameda Creek is generally too swift-flowing to provide suitable breeding habitat for California red-legged frogs, though slower-moving eddies and pools at the margins may provide places for egg attachment. However, egg masses placed in these areas are still susceptible to being washed away during high flows, and breeding habitat for California red-legged frogs is generally marginal in the main channel of Alameda Creek. The pool on the south side of SR 84 at the Stonybrook Creek culvert is relatively still compared to the flow rate of the main Alameda Creek channel, and could represent suitable breeding habitat for California red-legged frog. However, this pool has limited connectivity to more suitable habitat on the north side of SR 84 due to the presence of the road itself, which would likely cause substantial mortality of any frogs attempting to cross. The vertical drop at the culvert is a barrier to frogs attempting to move upstream, forcing them up the adjacent embankment and

onto the road should they attempt to disperse northward. Additionally, any frogs using the adjacent riparian corridor for cover would be relegated to a narrow band between SR 84 and Alameda Creek, much of which is subject to winter flooding. For these reasons, if any California red-legged frogs use the pool for breeding, they likely do so in low numbers and with limited success compared to those using stock ponds in nearby upland areas. Several non-native fish species are present in Alameda Creek including common carp (*Cyprinus carpio*), green sunfish (*Lepomis cyanellis*), and largemouth bass (*Micropterus salmoides*) (Leidy 2007), along with red swamp crayfish (*Procambarus clarkii*), all of which may prey upon California red-legged frogs at various life stages. Although California red-legged frogs have been documented within Alameda Creek upstream of the BSA (CNDDB Occurrence #829, recorded in 1999), the majority of occurrences are located in stock ponds in upland areas. California red-legged frogs originating from more suitable breeding habitat in nearby areas could potentially enter the BSA during overland movements. For this reason, the California red-legged frog has a moderate potential to occur within the BSA.

3.3.4 Alameda Whipsnake

The Alameda whipsnake (*Masticophis lateralis euryxanthus*) is federally and state-listed threatened. They occur in coastal scrub and chaparral, and almost always on south-facing slopes (Stebbins and McGinnis 2012). Historically, the range for this species likely included Alameda, Contra Costa, western San Joaquin and northern Santa Clara Counties. Currently, its distribution is described by five separate populations found in the inner coastal ranges of Alameda and Contra Costa Counties (USFWS 2011). Alameda whipsnakes are diurnal and prey largely on western fence lizards, although they will take a variety of other species (frogs, snakes, birds, small mammals, and large insects) (Stebbins and McGinnis 2012).

Due to the sensitivity of the species, the specific locations of Alameda whipsnake occurrences are suppressed in the CNDDB, and only the quad in which each occurrence is located is given. There are 37 occurrences of Alameda whipsnake within the nine-quad search area centered on the Niles quad (CDFW 2016a). During trapping surveys for the Caltrans Tyler Ranch Project, 12 individual Alameda whipsnakes were captured and released between May 8 and May 29, 2012. This trapping was conducted approximately one mile north of the BSA, in the hills northwest of Sunol. Caltrans reported these Alameda whipsnake occurrences to the CNDDB, but this data has not yet been entered into the public database.

Parts of the BSA along the north side of SR 84 are located within designated critical habitat Unit 3 for Alameda whipsnake (USFWS 2006). A total of 3.12 acres of the BSA are within critical

habitat (Figure 4). These areas are located in the western portion of the BSA, primarily on very steep scrub-covered slopes where the project proposes to install either rock fall drapery systems or rock fall fences. The Primary Constituent Elements (PCEs) of critical habitat for Alameda whipsnake are defined as follows by the USFWS:

- PCE 1: Scrub/shrub communities with a mosaic of open and closed canopy
- PCE 2: Woodland or annual grassland plant communities contiguous to lands containing PCE 1
- PCE 3: Lands containing rock outcrops, talus, and small mammal burrows

Critical habitat within the BSA contains all three PCEs. The steep slopes in the western portion of the BSA are dominated by scrub habitat and also have large rock outcrops. A small amount of oak woodland inside of critical habitat is present within the BSA near the intersection of SR 84 and Palomares Road.

The remainder of the BSA that is outside of critical habitat contains abundant coastal scrub habitat that is suitable for Alameda whipsnakes. Grassland, oak woodland, and riparian woodland habitats throughout the BSA may be used for foraging and dispersal. Based on the presence of suitable habitat and designated critical habitat, Alameda whipsnakes are considered to have a high potential to occur within the BSA.

3.4 Other Special-Status Species

3.4.1 River Lamprey and Pacific Lamprey

The river lamprey (*Lampetra ayersi*) is a California Species of Special Concern, and the Pacific lamprey (*Entosphenus tridentatus*) is on CDFW's Special Animals List. Both of these species are anadromous fish. Adults are predatory, attaching to and feeding on other fish (most commonly herring and salmon) while inhabiting marine coastal and estuarine waters (Moyle 2002). Spawning takes place in gravelly riffles during the spring, with adults dying after spawning. Ammocetes (lamprey larvae) partially bury themselves in silty backwaters and eddies to feed on algae and microorganisms (Leidy 2007). Although they are generally anadromous, river lampreys and Pacific lampreys are thought to be capable of completing their life cycle in fresh water in cases where they are landlocked (Moyle 2002).

The most recent confirmed observation of a river lamprey in Alameda Creek occurred in 1966. However, anadromous Pacific lampreys have been regularly documented in the Alameda Creek watershed both upstream and downstream of the BART weir (Leidy 2007). Pacific and river

lamprey are difficult to differentiate from one another morphologically, and therefore it is possible that some of the sightings of Pacific lamprey in Alameda Creek may have been river lamprey. Based on the presence of suitable spawning and rearing habitat within Alameda Creek, both species are considered to have a moderate potential to occur within the BSA. The planned restoration of fish passage at the BART weir, as discussed in Section 3.3.1, would allow these species greater access to Alameda Creek.

The culvert carrying Stonybrook Creek beneath Niles Canyon Road is likely a complete barrier to the upstream migration of lamprey. Stonybrook Creek provides suitable habitat for these fish if they can regain access to the stream.

3.4.2 Western Pond Turtle

The western pond turtle (*Emys marmorata*) is a California Species of Special Concern. Western pond turtles range throughout California, from southern coastal California and the Central Valley, east to the Cascade and Sierra Nevada mountain ranges. Western pond turtles occur in a variety of permanent and intermittent aquatic habitats, such as ponds, marshes, rivers, streams, and ephemeral pools. They require slack or slow water habitat for feeding as well as suitable dry habitat such as rocks or fallen logs for basking and hauling out. In addition to appropriate aquatic habitat, these turtles require an upland nesting site in the vicinity of the aquatic habitat, often within 200 meters (656 feet). Nests are typically dug in grassy, open fields with soils that are high in clay or silt. Egg-laying usually takes place between March and August (Jennings and Hayes 1994).

There are six occurrences of western pond turtle within five miles of the BSA (CDFW 2016a). The nearest of these was recorded in a section of Alameda Creek immediately adjacent to the BSA near the Town of Sunol. This record includes two occurrences in the exact same area; one was a museum specimen collected in 1961, and the other was an adult male found near Alameda Creek in 2006. There is another occurrence that was recorded in Alameda Creek in 2007 approximately 0.3 miles southwest of the BSA. Within the BSA, foraging and basking habitat is restricted to the stream crossings. Heavily shaded areas under the tree canopy are generally not suitable for this species, though they may cross through during upland movements while seeking more suitable habitat. Suitable nesting habitat is also present in the BSA in south-facing areas with low-growing vegetation and hard-packed soils. Therefore, the western pond turtle is considered to have a moderate potential to occur within the BSA.

3.4.3 San Francisco Dusky-Footed Woodrat

The San Francisco dusky-footed woodrat is a California Species of Special Concern and is locally common in undisturbed portions of habitat throughout its range. However, this subspecies occurs only in the southern half of the Bay Area (south of Golden Gate through the Santa Cruz Mountains to the Pajaro River and in the East Bay, south of the Suisun Bay along the western slope of the Diablo Range). As a unique subspecies, this designation was confirmed by genetic studies based on mitochondrial DNA (Matocq 2002), although the range may extend slightly farther south along the inner coast range. Woodrats feed mostly on woody plants such as coast live oak, other oaks, big-leaved maple, coffeeberry (*Rhamnus crocea*), alder (*Alnus* spp.), elderberry (*Sambucus* spp.), toyon (*Heteromeles arbutifolia*), and poison oak (Johnston and Cezniak 2004). They build large stick nests referred to as "houses" that are typically made of twigs and leaves at the base of a tree, within a set of large logs or tree branches, or in a shrub such as poison oak or toyon. Some houses are constructed off the ground in the lower branches of large trees, typically live or blue oak (*Quercus douglasii*). Houses are usually built under the canopy of trees and the abundance of houses may be limited by the availability of house-building materials (Bryiski et al. 1990).

Active woodrat houses are well-distributed throughout the BSA. Location data for woodrat houses was collected during three separate tree surveys: 1) A survey conducted for this project in August 2014; 2) A tree survey conducted for the Alameda Creek Bridge Project in June 2014; 3) A tree survey conducted in January 2012 for a previous project on SR 84 in Niles Canyon that did not go to construction. An additional tree survey was conducted for the Stonybrook culvert replacement portion of the project in March and May 2016, but no additional woodrat nests were located in the expanded BSA. A total of 20 houses were located within the BSA (Figure 4). These houses were constructed primarily at the bases of large trees. In addition, there is a CNDDB occurrence immediately south of the BSA at the eastern end of Niles Canyon, where many houses and individuals were recorded along Alameda Creek in 2006 (CDFW 2016a). Based on the presence of numerous woodrat houses, this species is considered to have a high potential to occur within the BSA.

3.4.4 Roosting Bats

Bats are widespread within California, and may be found in any habitat. They are nocturnal aerial predators of insects and other arthropods, and often forage over open water, marshes, and other moist, open areas where flying insects tend to congregate. Different bat species have different roosting requirements, and as such roosts can be found in a variety of habitats and locations. During the day, bats may use three types of roosts: crevices, cavities, and foliage. Crevice and cavity roosts

may be found in natural and human-made features such as caves, cliffs, rock outcrops, trees, mines, buildings, bridges, and tunnels. During the breeding season (April through September), crevice and cavity roosting species typically gather in groups of mothers and young (maternity colonies) that may number in the thousands or even tens of thousands. In contrast, foliage-roosting bats may be solitary or occur in small groups while breeding. Roosts used during the day and as maternity roosts tend to be well-hidden and require precise temperature and humidity conditions that favor the growth of the young. Bats often use separate roosts at night as temporary resting locations in between foraging bouts. Night roosts are often located in more open but protected areas such as overhangs on buildings and recessed areas on the undersides of bridges where warm air is trapped.

Eleven special-status bat species have potential to occur within the BSA based on range, habitat, and recorded occurrences in the region. CNDDB occurrences are reported in the individual species descriptions below. Bats in general are likely to be under-reported to the CNDDB relative to their actual abundance in the environment because they are nocturnal, difficult to detect, and difficult to positively identify even when detected. They may be present or even abundant despite a lack of reported occurrences in the region.

In July of 2014 Caltrans conducted a roosting bat survey for the Alameda Creek Bridge Replacement Project, a separate project with a BSA that partially overlaps with the current BSA for the Niles Canyon Safety Improvement Project. Several bat species were detected using the Alameda Creek Bridge as either a maternity roost or a night roost, and other species were recorded acoustically nearby. This report is referenced where appropriate in the individual species sections below. Bat surveys were not conducted at the Alameda Creek Bridge Overhead.

3.4.4.1 Pallid Bat

The pallid bat (*Antrozous pallidus*) is a California Species of Special Concern. It is a medium-sized bat that occurs throughout much of the state. They may occur in a wide variety of grasslands, shrublands, and woodlands, though they are generally found in dry, open areas at lower elevations. They typically fly low while foraging for prey, which are caught on the ground or gleaned off of foliage. Prey species include beetles, orthopterans, homopterans, moths, spiders, scorpions, and solpugids (CDFW 2008). The species is capable of taking heavy-bodied insects such as June beetles and Jerusalem crickets as well (Jameson and Peeters 2004). Pallid bats make day roosts within crevices and cavities in caves, rock outcrops, crevasses, mines, tree hollows, bridges, and buildings. Night roosts are typically in more open areas such as under porches and open buildings. Pallid bats are particularly sensitive to disturbance from humans at roost sites (CDFW 2008). There is one occurrence of pallid bat recorded within five miles of the BSA. It was recorded in 2001, but

this occurrence is considered sensitive, and its specific locality is suppressed by the CNDDB. It is located somewhere within the La Costa Valley quad, which includes the San Antonio Reservoir and Sunol Regional Park areas (Figure 3, CDFW 2016a).

At least 13 pallid bats were observed using the Alameda Creek Bridge for night roosting during Caltrans' bat survey (Caltrans 2014), and the riparian corridor within the BSA is suitable foraging habitat for this species. Suitable roosting habitat may also occur in trees within the BSA. Based on their confirmed presence in the BSA and the presence of suitable foraging habitat, pallid bats are considered to have a high potential to occur.

3.4.4.2 Townsend's Big-eared Bat

Townsend's big-eared bat (*Corynorhinus townsendii*) currently is a California Species of Special Concern after a period of consideration as a candidate for listing as Threatened or Endangered under the California Endangered Species Act (California Fish and Game Commission 2013; CDFW 2016b). Townsend's big-eared bat is found throughout California except at high elevations. This species is dependent on cave-like roosting habitat and prefers to forage in native vegetation. Maternity colonies have been found in caves, mines, and buildings (Jameson and Peeters 2004), and they will hibernate during the winter in roosts which are cold, but not below freezing. This species feeds primarily on small moths, though beetles and other insects may be taken as well. They capture prey both in flight and by gleaning insects from foliage. This species is highly sensitive to disturbance at roost sites (CDFW 2008). The closest occurrence of Townsend's big-eared bat was recorded in 1943 approximately 3.5 miles south of the BSA, in the vicinity of Mission San Jose. There is one additional occurrence recorded in 2012 approximately 3.5 miles north of the BSA, where a solitary male was found roosting in a barn structure (Figure 3, CDFW 2016a).

Both of the abutments of the Alameda Creek Bridge contain semi-enclosed spaces with low ceilings that could be used by Townsend's big-eared bats for roosting. However, there is significant evidence of human activity in this space, including graffiti and trash, which greatly reduces the probability that this space would be used for roosting due to the species' sensitivity to disturbance. For this reason, roosting habitat on the bridge is marginal for Townsend's big-eared bat. No suitable semi-enclosed spaces for Townsend's big-eared bat were observed on the Alameda Creek Bridge Overhead, and they are not expected to roost on this bridge. However, trees within the BSA may have more suitable habitat for this species, and suitable foraging habitat is present throughout the BSA and the rest of Niles Canyon. Based on their known presence in the

region and the presence of suitable foraging and roosting habitat, Townsend's big-eared bat is considered to have a high potential to occur within the BSA.

3.4.4.3 Western Mastiff Bat

The western mastiff bat (*Eumops perotis californicus*) is a California Species of Special Concern. It is found primarily within southern California, with scattered populations present within the Coast Ranges south of San Francisco and the Sierra Nevada Mountains north to Butte County. They may occur in a variety of grassland, scrub, and woodland habitats if there are suitable roost features in the vicinity. Roosts are made in crevasses in cliffs, boulders, caves, and buildings. Their main food source is moths which are caught in flight, although beetles, orthopterans, and hymenopterans may also be taken (Bolster 1998). There are no recorded occurrences of western mastiff bat in the CNDDB within five miles of the BSA (CDFW 2016a).

Western mastiff bats may forage throughout the BSA, but this species' preferred roosting habitat of crevices in cliff faces is not present. The rocky outcrops on the north wall of Niles Canyon are not high enough or vertical enough to support western mastiff bat roosts. Marginally suitable roosting habitat is present in the bridges and in trees. Based on the presence of suitable foraging habitat and marginal roosting habitat, western mastiff bats are considered to have a moderate potential to occur within the BSA.

3.4.4.4 Western Red Bat

The western red bat (*Lasiurus blossevillii*) is a California Species of Special Concern. It is widely distributed throughout California and known to occur in a variety of habitats, including forested canyons, riparian zones and arid areas where they primarily roost in trees and sometimes shrubs (Reid 2006). This non-colonial species roosts in foliage, under overhanging leaves. Western red bats are commonly associated with cottonwood/sycamore and willow riparian habitats (Pierson et al. 2006; Pierson and Rainey 2002). There are no recorded occurrences of western red bat in the CNDDB within five miles of the BSA (CDFW 2016a).

Western red bats may forage throughout the BSA, and they may roost in trees within any of the vegetated habitats. Because this species roosts in foliage, they are not expected to roost on the bridge itself. Based on the presence of suitable foraging and tree roosting habitat, western red bats are considered to have a moderate potential to occur within the BSA.

3.4.4.5 Yuma Myotis

The Yuma myotis (*Myotis yumanensis*) is included on CDFW's Special Animals List. It is a common species occurring throughout California except in the arid Mojave and Colorado Desert regions. They feed on a variety of small insects, and generally forage over water sources such as rivers, lakes, ponds, and stock tanks, most often in open woodland or forest areas. Roosting habitat includes crevices in caves, large trees, mines, buildings, tunnels, and bridges. During the April through September breeding season the females gather into maternity colonies that number in the hundreds to thousands of individuals. Night roosts may be located in more open areas (CDFW 2008). There is one occurrence of Yuma myotis recorded within five miles of the BSA. It was recorded in 2006 approximately 0.6 miles southeast of the BSA, in a drainage in the hills just south of Niles Canyon (Figure 3, CDFW 2016a).

Three roost locations were found in expansion joints of the Alameda Creek Bridge, which are used by a maternity colony of Yuma myotis. They may also be present in the expansion joints of the Alameda Creek Bridge Overhead (see Section 3.4.5.10 below). In addition to these bridge roosts, Yuma myotis may also roost in trees within the BSA. This species typically feeds over water, but they may also forage in any of the vegetated habitats within the BSA. Based on their confirmed presence, the Yuma myotis is considered to have a high potential to occur.

3.4.4.6 Hoary Bat

The hoary bat (*Lasiurus cinereus*) is included on CDFW's California State Special Animals List. It is a widespread species found in a variety of habitats throughout California. This solitary bat is most commonly found in association with forested habitats near water (CDFW 2016a). Roosting sites are generally in dense foliage of both coniferous and deciduous trees, at the ends of branches 10-40 feet above the ground, and with open flying space below (Bolster 1998). Moths are the primary food source for hoary bats (Black 1974). Females give birth to young in mid-May through early July. There are no recorded occurrences of hoary bat in the CNDDB within five miles of the BSA (CDFW 2016a).

Hoary bats may forage throughout the BSA, and they may roost in trees within any of the vegetated habitats. Because this species roosts exclusively in foliage, they are not expected to roost on the bridge itself. Based on the presence of suitable foraging and roosting habitat, hoary bats are considered to have a moderate potential to occur within the BSA.

3.4.4.7 Long-eared Myotis

The long-eared myotis (*Myotis evotis*) is included on CDFW's California State Special Animals List. It can be found throughout California except in the Central Valley and southern deserts. They may occur in all brush, woodland, and forest habitats, though coniferous woodlands and forests seem to be preferred. Roosts are made in buildings, crevices, under tree bark, and in snags. This species roosts singly or in small groups, with nursery colonies ranging from 12-30 individuals. Long-eared myotis prey on a variety of insects and other small arthropods, which are captured in the air, gleaned from foliage, or occasionally taken from the ground (CDFW 2008). There are no recorded occurrences of long-eared myotis in the CNDDB within five miles of the BSA (CDFW 2016a).

Long-eared myotis may roost in crevices within either of the two bridges, or in tree crevices or cavities throughout the BSA. This species may also forage throughout the BSA. Two acoustic detections that are attributed to either long-eared myotis or fringed myotis were recorded within the BSA (see Section 3.4.5.10). Based on the presence of suitable roosting and foraging habitat, and the possible acoustic detection of this species, long-eared myotis is considered to have a moderate potential to occur within the BSA.

3.4.4.8 Fringed Myotis

The fringed myotis (*Myotis thysanodes*) is included on CDFW's Special Animals List. They range throughout California except for the Central Valley and southern deserts. They may occur in a wide variety of habitats, although pinyon-juniper, valley foothill hardwood, and hardwood-conifer habitats are preferred. Caves, mines, buildings, and crevices are all used for roosting, and maternity colonies can contain up to 200 individuals. Fringed myotis feed mostly on beetles, but other insects and arthropods are also taken. They feed over water, over open areas, and by gleaning from foliage (CDFW 2008). There are no recorded occurrences of fringed myotis in the CNDDB within five miles of the BSA (CDFW 2016a).

Fringed myotis may roost in crevices within either of the two bridges, or in tree crevices or cavities throughout the BSA. This species may also forage throughout the BSA. Two acoustic detections that are attributed to either long-eared myotis or fringed myotis were recorded within the BSA (see Section 3.4.5.10). Based on the presence of suitable roosting and foraging habitat, and the possible acoustic detection of this species, fringed myotis is considered to have a moderate potential to occur within the BSA.

3.4.4.9 Small-footed Myotis

The small-footed myotis (*Myotis ciliolabrum*) is included on CDFW's Special Animals List. Along the coast they range from Contra Costa County south to Mexico, and inland they range throughout the Sierra Nevada Mountains and desert regions of southern California. They occur primarily in arid woodlands and brushy areas near water. They prey on a variety of flying insects, including moths, flies, beetles, and bugs. They roost in caves, buildings, mines, crevices, and sometimes under bridges and under tree bark. Maternity colonies typically contain 12-20 individuals roosting together (CDFW 2008). There are no recorded occurrences of small-footed myotis in the CNDDB within five miles of the BSA (CDFW 2016a).

Small-footed myotis may forage throughout the BSA, and could roost in either of the two bridges or in tree crevices. Based on the presence of suitable roosting and foraging habitat, small-footed myotis is considered to have a moderate potential to occur within the BSA.

3.4.4.10 Known Bat Roosts in Niles Canyon

As part of a separate Caltrans project (the Alameda Creek Bridge Replacement Project), GANDA and Caltrans biologists conducted a formal bat roost survey of the Alameda Creek Bridge on July 1, 2014 (Caltrans 2014). The results of this survey are relevant to the Niles Canyon Safety Improvement Project because the Alameda Creek Bridge is included within this project's BSA. A Yuma myotis maternity colony, consisting of at least several hundred bats, was documented utilizing three expansion joints on the underside of the Alameda Creek Bridge. At the time of the survey, the majority of the bats were located in one expansion joint, with the other two used by smaller numbers. Night roosts on the bridge were found to be used by pallid bats, as well as two common bat species that do not have special status, the big brown bat (*Eptesicus fuscus*) and the Mexican free-tailed bat (*Tadarida brasiliensis*). Guano evidence indicated that myotis bats also use the underside of the bridge for night roosting. The canyon bat (*Parastrellus hesperus*), a common bat species that does not have special status, was detected using acoustical monitors but was not observed roosting on the bridge. Calls that could be attributed either to long-eared myotis or fringed myotis were also detected, though neither of these species were observed roosting on the bridge.

During the wildlife habitat assessment site visit for the Niles Canyon Safety Improvement Project, bats were detected utilizing expansion joints in the Alameda Creek Bridge Overhead as day roosts. Guano was observed in accumulations on the ground below some of the joints, and bats were calling audibly from inside. Guano deposits did not indicate as heavy use by bats as was observed at the Alameda Creek Bridge. The species of bats using these roosts is not known, though the

guano was consistent with that of pallid bat or big brown bat. Project activity on the Alameda Creek Bridge Overhead will be restricted to the replacement of the railing on the deck of the bridge, and no work on the underside is proposed. Therefore no impacts to these bat roosts are expected as part of this project. Due to the lack of anticipated impacts, no formal bat roost survey was conducted at the Alameda Creek Bridge Overhead.

No bats or evidence of bat roosting (i.e. guano or urine staining) were observed in the Stonybrook Creek culvert during the wildlife habitat assessment. The ceiling of the culvert is sealed concrete and does not have any cracks or crevices that could accommodate a day roost.

3.4.5 Migratory Birds

Under the federal Migratory Bird Treaty Act (MBTA) and California Fish and Game Code Sections 3503-3505, 3513, and 3800, migratory birds, their nests, and eggs are protected from disturbance or destruction. Removal or disturbance of active nests would be in violation of these regulations. All birds are protected under the MBTA and/or California Fish and Game Code except for two non-native species, the European starling (*Sturnus vulgaris*) and the house sparrow (*Passer domesticus*).

Migratory bird species may nest in any of the habitat types within the BSA except for paved road surfaces and riverine aquatic areas. Riparian woodlands are particularly attractive for nesting birds, and numerous species could also nest within oak woodlands, coastal scrub, and grassland areas. Even barren areas may be used by ground-nesting birds such as killdeer.

During a previous survey in June 2014 for the Alameda Creek Bridge Replacement Project, several mud nests constructed by cliff swallows (*Petrochelidon pyrrhonota*) were observed on the northeast side of the Alameda Creek Bridge. Cliff swallows were observed flying into and out of some of these nests, indicating that they were active and likely contained eggs or chicks at the time. Cliff swallows nest colonially, and return to the same nesting areas year after year. Other common bird species that may nest on bridges include but are not limited to black phoebe (*Sayornis nigricans*), northern rough-winged swallow (*Stelgidopteryx serripennis*), and house finch (*Carpodacus mexicanus*), all of which nest variously on ledges, in crevices, or on sheltered vertical surfaces.

In addition to common bird species, several special-status birds have at least some potential to nest and/or forage within the BSA, including those described below.

3.4.5.1 Cooper's Hawk

The Cooper's hawk (*Accipiter cooperii*) is included on CDFW's Special Animals List, and its nesting sites are tracked by the CNDDB. They breed in live-oak woodlands, coniferous forests, and riparian groves. Nest stands typically have dense canopy cover and a relatively open understory (Kaufman 1996). In California, they frequently nest in stands of live oaks and typically use among the most mature trees in a stand. This species is also increasingly found in suburbs and even cities where tall trees can provide suitable nesting sites.

There are three CNDDB occurrences of nesting Cooper's hawks recorded within five miles of the BSA. All three were recorded in 2006 in the hills just south of Niles Canyon, and the closest occurrence is approximately 0.35 mile southeast of the BSA (CDFW 2016a, Figure 3). Cooper's hawks may nest in any of the tall trees in the oak woodland and riparian habitats within the BSA, and may forage throughout the area. Based on the presence of suitable nesting and foraging habitat, Cooper's hawks are considered to have a moderate potential to occur within the BSA.

3.4.5.2 White-Tailed Kite

The white-tailed kite (*Elanus leucurus*) is California Fully Protected species. It inhabits open lowland valleys and low, rolling foothills, and forages in grasslands, marshes, riparian edges, and cultivated fields where prey species (mainly ground squirrels and jackrabbits) are relatively abundant (Kaufman 1996). Kites typically nest on the tops of trees in close proximity to good foraging locations. There are no CNDDB records of this species nesting within five miles of the BSA (CDFW 2016a). However, white-tailed kites are common nesting and winter resident birds in the Bay Area.

White-tailed kites may nest in trees throughout the BSA. Although grasslands are present within the BSA, they are of marginal quality for foraging due to their small size. White-tailed kites typically forage in more open areas, so the relatively small patches of open grassland within the BSA are of marginal quality for foraging. Based on the presence of suitable nesting habitat and marginally suitable foraging habitat, white-tailed kites have a moderate potential to occur within the BSA.

3.4.5.3 Yellow Warbler

The yellow warbler (*Setophaga petechia*) is a California Species of Special Concern. A migratory passerine species that breeds across much of North America, the yellow warbler's winter range occurs throughout Central America south to Peru and Brazil. The yellow warbler was once a

common to locally abundant summer resident in riparian areas throughout California, but today, populations are much reduced and even extirpated in some areas. Yellow warblers arrive in California in April and are mostly gone by October. Small numbers regularly overwinter in Southern California lowlands (CDFW 2008). The species is usually found breeding in riparian deciduous habitats in the summer: cottonwoods, willows, and alders in open-canopy riparian woodlands. During migration, the yellow warbler visits woodland, forest, and shrub habitats. Yellow warblers breed from mid-April into early August with peak activity in June. Pairs breed solitarily, laying three to six eggs that are incubated by the female for 11 days. Both parents tend the young until they fledge at 9 to 12 days. Young breed the following year (CDFW 2008).

There are no occurrences of yellow warbler recorded in the CNDDB within five miles of the BSA (CDFW 2016a). However, riparian woodland along Alameda Creek constitutes suitable nesting habitat for this species, and they may forage in trees and shrubs anywhere within the BSA. Based on the presence of suitable nesting and foraging habitat, yellow warbler is considered to have a moderate potential to occur within the BSA.

3.4.5.4 Heron and Egret Rookeries

There are several heron and egret species whose nesting colonies are included on CDFW's Special Animals List and are tracked by the CNDDB. These include:

- Great blue heron (*Ardea herodias*)
- Great egret (*Ardea alba*)
- Snowy egret (*Egretta thula*)
- Black-crowned night heron (*Nycticorax nycticorax*)

These are relatively common wading bird species that nest in tall trees near water sources. Their colonial nesting sites, referred to as rookeries, may have multiple species with dozens or even hundreds of nesting pairs in the same clump of trees. They will occasionally nest as single pairs as well. Rookery sites are used year after year and may be located anywhere near suitable open water foraging habitat such streams, rivers, canals, ponds, lakes, saltwater or freshwater marshes, and mudflats. They may even nest in highly urbanized areas as long as suitable foraging habitat is nearby (Kelly et al. 2006).

There are two occurrences of great blue heron rookeries recorded in the CNDDB within five miles of the BSA (Figure 3). The first is located approximately 0.1 mile to the south near the east end of Niles Canyon, where two active nests were observed along Alameda Creek in 2002. The other is

a record of nine nests observed in 1990 in the Quarry Lakes Regional Recreation Area in Fremont, approximately 1.2 miles southwest of the BSA (CDFW 2016a). Another great blue heron rookery with an unknown number of nests has been documented near the Sunol Water Temple, 0.5 mile south of the BSA (Audubon Canyon Ranch 2014), and a large rookery used by over a hundred nesting pairs of black-crowned night herons, great egrets, and snowy egrets is located at Lake Elizabeth, approximately 1.8 miles to the south (Kelly et al. 2006).

Suitable nesting habitat for these species is present in tall trees throughout the BSA and the rest of Niles Canyon, and suitable foraging habitat is present along the banks of Alameda Creek. No heron or egret rookeries were observed during the site reconnaissance, and there are no indications that any colonies have traditionally nested within the BSA. However, based on these species' ubiquity in the region and the presence of suitable nesting and foraging habitat, heron and egret rookeries are considered to have a moderate potential to occur within the BSA.

4.0 CONCLUSIONS

The Niles Canyon Safety Improvement Project is located within an ecologically rich area, and there is potential for numerous special-status wildlife species to occur. Four federally listed species may occur within the BSA: California tiger salamander, California red-legged frog, Alameda whipsnake, and Central California Coast steelhead (if fish passage is restored to the watershed as planned). Other notable wildlife resources identified within the BSA include:

- Critical habitat for Alameda whipsnake;
- San Francisco dusky-footed woodrat nests throughout the BSA;
- Cliff swallows nesting on the Alameda Creek Bridge;
- A maternity colony of Yuma myotis inside the Alameda Creek Bridge, and night roosts used by pallid bats and other bat species;
- A day roost used by unidentified bat species in the Alameda Creek Bridge Overhead.

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APPENDIX A
SITE PHOTOGRAPHS

Photo 1 – Intersection of SR 84 and Sycamore Street at west end of BSA, viewing northeast.

Photo 2 – Railroad crossing in western section of BSA. Freshwater marsh visible behind K-rail on right.

Photo 3 – Slope adjacent to railroad crossing where a rock-cut drapery system is proposed, viewing north.

Photo 4 – Slope west of Palomares Road where rock fall fence is proposed, viewing northeast.

Photo 5. SR 84 crossing over Stonybrook Creek culvert, viewing east.

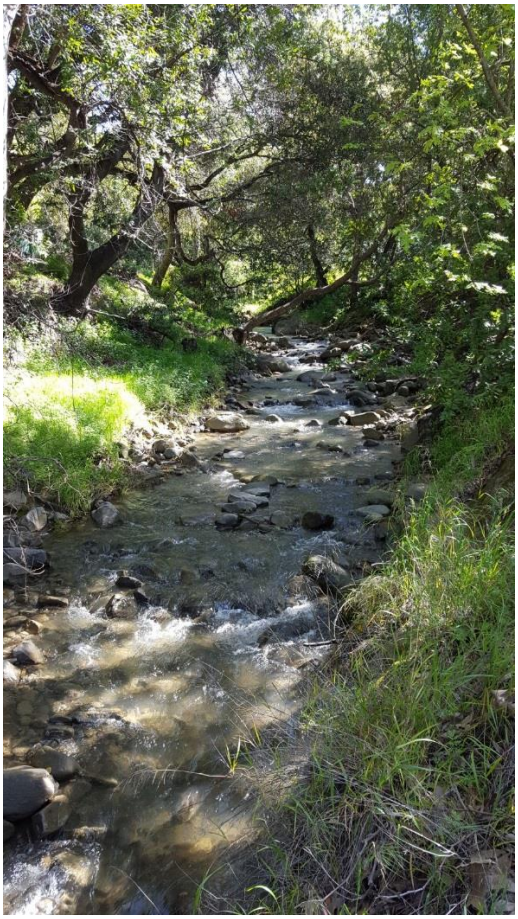


Photo 6. Stonybrook Creek immediately upstream from culvert, viewing east (upstream).

Photo 7. North end of Stonybrook Creek culvert, viewing south (downstream).

Photo 8. Interior of Stonybrook Culvert, viewing south (downstream).

Photo 9. Pool at south end of Stonybrook Creek culvert showing vertical step, viewing north (upstream).

Photo 10 – Intersection of SR 84 and Palomares Road, viewing west.

Photo 11 – Roadside pullout west of Alameda Creek Bridge, viewing east.

Photo 12 – Deck of Alameda Creek Bridge, viewing northwest (toward Fremont).

Photo 13 – Alameda Creek Bridge crossing over Alameda Creek, viewing east (upstream).

Photo 14 – Oak woodland and riparian woodland along SR 84, viewing west.

Photo 15 – Deck of Alameda Creek Bridge Overhead, viewing southwest (toward Fremont).

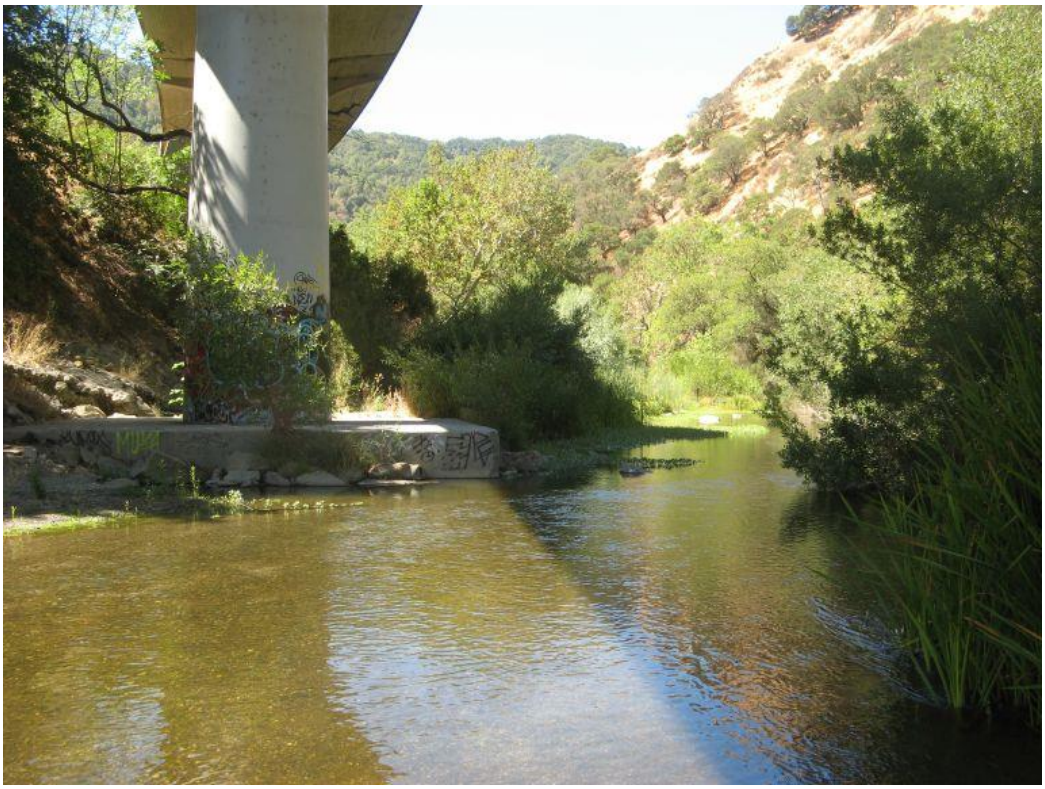


Photo 16 – Alameda Creek directly below Alameda Creek Bridge Overhead, viewing southwest.

Photo 17 – Expansion joint in Alameda Creek Bridge Overhead where bats were heard calling audibly.

Photo 18 – Bat guano on ground beneath expansion joint in Alameda Creek Bridge Overhead.

Photo 19 – Riparian woodland habitat along SR 84 adjacent to railroad yard, viewing northwest.

Photo 20 – Riparian woodland habitat along SR 84 west of Sunol, viewing east.

Photo 21 – Retaining wall supporting SR 84 west of Sunol, viewing east.

Photo 22 – Silver Springs Railroad crossing over SR 84 in Sunol, viewing east.

Photo 23 – Urbanized area between Main Street and SR 84 in Sunol, viewing east.

Photo 24 – Intersection of Main Street and SR 84 in Sunol, viewing west.

Photo 25 – Paloma Way segment of SR 84, viewing southeast.

Photo 26 – Disked field south of Paloma Way where open-pit gravel mine is located, viewing south.

Photo 27 – Open grasslands adjacent to BSA, north of Paloma Way, viewing northwest.

APPENDIX B
U.S. FISH AND WILDLIFE SERVICE AND NATIONAL MARINE FISHERIES SERVICE SPECIES LISTS

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
FEDERAL BUILDING, 2800 COTTAGE WAY, ROOM W-2605
SACRAMENTO, CA 95825
PHONE: (916)414-6600 FAX: (916)414-6713

Consultation Code: 08ESMF00-2016-SLI-1864 July 19, 2016
Event Code: 08ESMF00-2016-E-04079
Project Name: Niles Canyon Safety Improvement Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2)

of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

Official Species List

Provided by:

Sacramento Fish and Wildlife Office
FEDERAL BUILDING
2800 COTTAGE WAY, ROOM W-2605
SACRAMENTO, CA 95825
(916) 414-6600

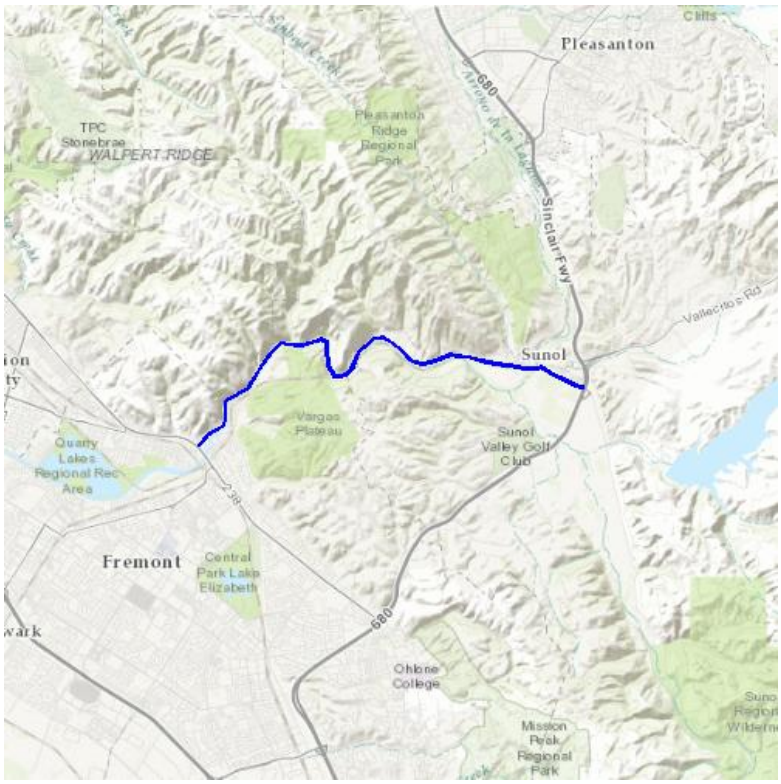
Consultation Code: 08ESMF00-2016-SLI-1864
Event Code: 08ESMF00-2016-E-04079

Project Type: TRANSPORTATION

Project Name: Niles Canyon Safety Improvement Project

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Alameda, CA

Endangered Species Act Species List

There are a total of 14 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Amphibians	**Status**	**Has Critical Habitat**	**Condition(s)**
California red-legged frog *(Rana draytonii)* Population: Entire	Threatened	Final designated	
California tiger Salamander *(Ambystoma californiense)* Population: U.S.A. (Central CA DPS)	Threatened	Final designated	
Birds			
California Least tern *(Sterna antillarum browni)*	Endangered		
Crustaceans			
Conservancy fairy shrimp *(Branchinecta conservatio)* Population: Entire	Endangered	Final designated	
Vernal Pool fairy shrimp *(Branchinecta lynchi)* Population: Entire	Threatened	Final designated	
Vernal Pool tadpole shrimp *(Lepidurus packardi)*	Endangered	Final designated	

Population: Entire			
Fishes			
Delta smelt *(Hypomesus transpacificus)* Population: Entire	Threatened	Final designated	
steelhead *(Oncorhynchus (=salmo) mykiss)* Population: Northern California DPS	Threatened	Final designated	
Flowering Plants			
Contra Costa goldfields *(Lasthenia conjugens)*	Endangered	Final designated	
Insects			
Bay Checkerspot butterfly *(Euphydryas editha bayensis)* Population: Entire	Threatened	Final designated	
San Bruno Elfin butterfly *(Callophrys mossii bayensis)* Population: Entire	Endangered		
Mammals			
Salt Marsh Harvest mouse *(Reithrodontomys raviventris)* Population: wherever found	Endangered		
San Joaquin Kit fox *(Vulpes macrotis mutica)* Population: wherever found	Endangered		
Reptiles			
Alameda whipsnake *(Masticophis*	Threatened	Final designated	

lateralis euryxanthus) Population: Entire			

Critical habitats that lie within your project area

The following critical habitats lie fully or partially within your project area.

Reptiles	Critical Habitat Type
Alameda whipsnake *(Masticophis lateralis euryxanthus)* Population: Entire	Final designated

Quad Name **Niles**
Quad Number **37121-E8**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) - **X**
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) -
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat -
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -

Essential Fish Habitat

Coho EFH - **X**
Chinook Salmon EFH - **X**
Groundfish EFH -
Coastal Pelagics EFH -
Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult Monica DeAngelis
monica.deangelis@noaa.gov
562-980-3232

MMPA Cetaceans -
MMPA Pinnipeds -

Appendix H Stonybrook Culvert Replacement Bat Survey Memo

GANDA

Garcia and Associates
Natural and Cultural Resources Consultants
1512 Franklin Street
Oakland, CA 94612
Phone: (510) 891-0024; Fax: (510) 891-0027

To: Tiffany Ngo, Caltrans District 4 8/26/16

From: Dana Terry
Date: August 15, 2016

RE: Bat Survey for the Stonybrook Creek Culvert, Niles Canyon

---

Garcia and Associates (GANDA) biologist Dana Terry and BioMAaS biologist Elizabeth Gruenstein conducted a bat survey at the Stonybrook Creek culvert section of the Niles Canyon Medium Term project (EA 2A3320) on the evening of July 30, 2016. The culvert is planned for removal and replacement with a free-spanning bridge to accommodate fish passage along Stonybrook Creek under Niles Canyon Road.

The purpose of the survey was to detect the emergence of any bats roosting in trees immediately adjacent to the culvert, as it is expected that this area will be heavily disturbed during construction. Dense trees and foliage grow to the edge of the Stonybrook Creek banks, leaving a relatively open space over the creekbed itself that could be used as a flyway for bats. Stonybrook Creek was entirely dry at the time of the survey, though Alameda Creek (roughly 100 feet downstream from the culvert) was flowing.

During a wildlife habitat assessment on March 24, 2016, several large oaks with suitable cavities for roosting bats were identified in a sparsely forested field approximately 500 feet east of the culvert. This field is within the Biological Study Area (BSA), and is proposed as a construction staging area. The cavities identified in the trees were also monitored for bat emergence during the survey.

Visual surveys for emergence were performed thirty minutes before sunset to one hour after sunset. Surveyors identified potentially suitable cavities and looked for the presence of bat sign (i.e. guano or urine staining). Surveyors then positioned themselves along likely flight paths near potential roost cavities in order to observe bats in flight using the unaided eye in ambient light, preferably with the bats silhouetted against the sunset sky. Night vision equipment was used to make observations after dark.

Bat echolocation calls were recorded using a broadband ultrasonic detector (Anabat II detectors linked with Zero-crossings Analysis Interface Module [Z-CAIM] recorders [Titley Electronics, Ballina, New South Wales, Australia]). Call data was extracted with CF Read 4.4.21 and processed using AnalookW 4.1t software (Titley Electronics). Recorded echolocation calls were categorized using an Anabat call key (Keinath 2004) and compared with a library of echolocation calls of known species provided by Dave Johnston, PhD. One Anabat detector was placed downstream of the culvert and directed to capture calls of bats using the Stonybrook Creek corridor as a flyway. The other was placed near the center of the field and directed toward trees with visible cavities potentially suitable for roosting.

No bats were observed exiting cavities in the trees either at the culvert or in the field during the survey. No bats were observed at all during the survey, not even in flight over Stonybrook Creek or over the field. There was no visual evidence of bat sign at any of the identified tree cavities, or in the interior of the Stonybrook Creek culvert.

Bat echolocation calls were recorded at both locations. Only three bat calls were recorded at the Stonybrook Creek culvert during the survey. These calls were faint and distorted in a manner consistent with sound travelling through foliage before reaching the detector. This suggests that the bats producing the calls were not using the creek flyway, but were instead flying either above the canopy or through the adjacent riparian woodland. Though the calls were distorted, they were identifiable as calls at the 50 kHz range, which could be attributed either to Yuma myotis (*Myotis yumanensis*) or California myotis (*Myotis californicus*). It is likely that the calls were Yuma myotis, as this species is relatively common in the region and occupies a known maternity roost in the Alameda Creek Bridge, approximately half a mile upstream (Caltrans 2014). A large emergence event from trees near the culvert would likely have been marked by a greater number of calls that were clearer in nature. Based on the small number of calls and their distorted nature, and the lack of visual observation of any bats flying in the creek corridor, it is unlikely that any day roosts were present in the vicinity of the culvert at the time of the survey.

Calls recorded in the field location were clearer than those at the culvert, which is to be expected due to the more open nature of the habitat. Mexican free-tailed bats (*Tadarida brasiliensis*) and Yuma myotis were positively identified via acoustic detection. Three calls were recorded at the 30 kHz range that were attributable either to long-eared myotis (*Myotis evotis*) or fringed myotis (*Myotis thysanodes*). A total of 23 clear calls were recorded at the field location, though they were spread out in time over the course of the survey such that they did not indicate a large emergence event by one species. Based on the lack of visual observation of any bats emerging from the trees or in flight over the field, and the sparse temporal distribution of recorded calls, it is unlikely that there were any day roosts in the field at the time of the survey.

This survey only focused on trees at the Stonybrook Creek culvert and the nearby proposed staging area in late July. There is a high degree of variation in bat activity on a nightly and seasonal basis, and therefore additional numbers of bats, or additional species may be present at other times. For instance, species which were not detected during this survey such as the western red bat (*Lasiurus blossevillii*) and hoary bat (*Lasiurus cinereus*) may be present during the fall migration period.

Furthermore, the overall Niles Canyon Medium Term Project BSA contains many other trees that were not surveyed because it is impractical to do so on such a large scale, and there may therefore be bat roosts at other locations in the BSA. However, this survey does at least give an indication of species that are present in the BSA during the mid-summer season.

References

Keinath, D.A. 2004. Anabat Call Key for the Greater Yellowstone Ecosystem. Wyoming Natural Diversity Database, University of Wyoming, Laramie, Wyoming .

Caltrans. 2014. Bat Roosting Habitat Survey, Alameda Creek Bridge Replacement Project. August 2014.

Figures

Figure 1. View downstream from the Stonybrook Creek culvert toward Alameda Creek confluence, showing open flyway.

Figure 2. Oak trees in field east of Stonybrook Creek culvert.

Figure 3. Potentially suitable roost cavity in a broken oak branch at the field location monitored for bat emergence.

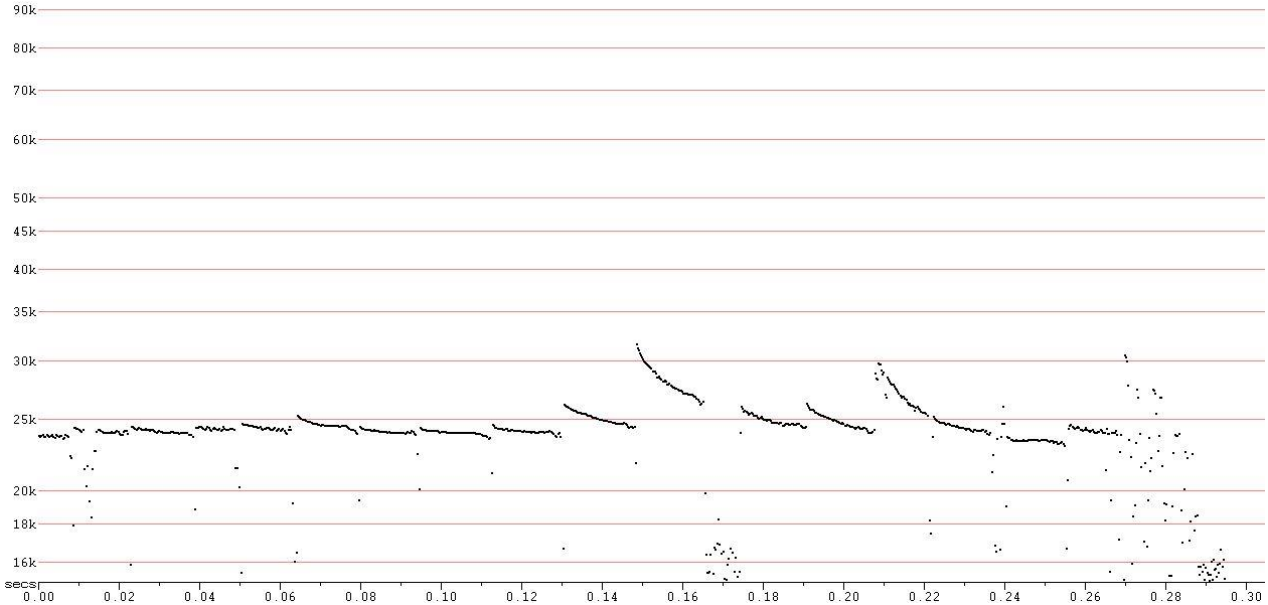


Figure 4. Echolocation call of a Mexican free-tailed bat recorded at the field location. (Div 16, F7)

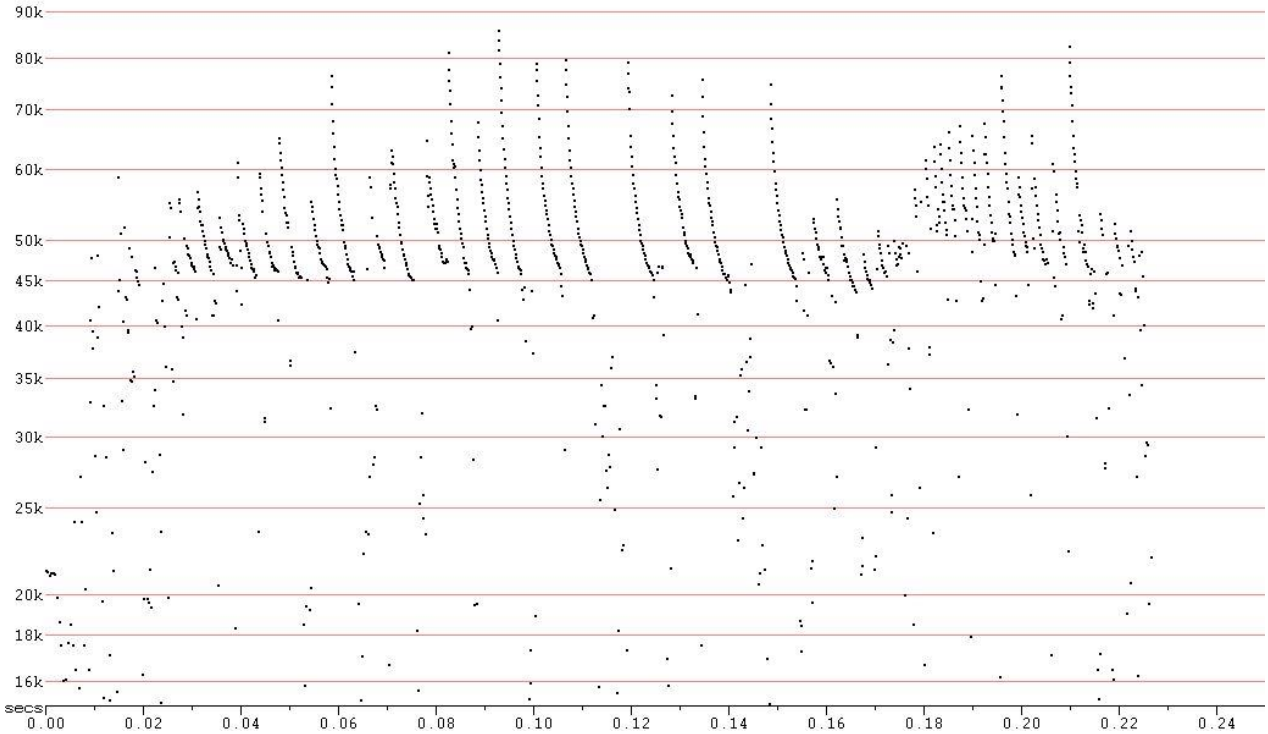


Figure 5. Echolocation call of a Yuma myotis recorded at the field location. (Div 16, F7)

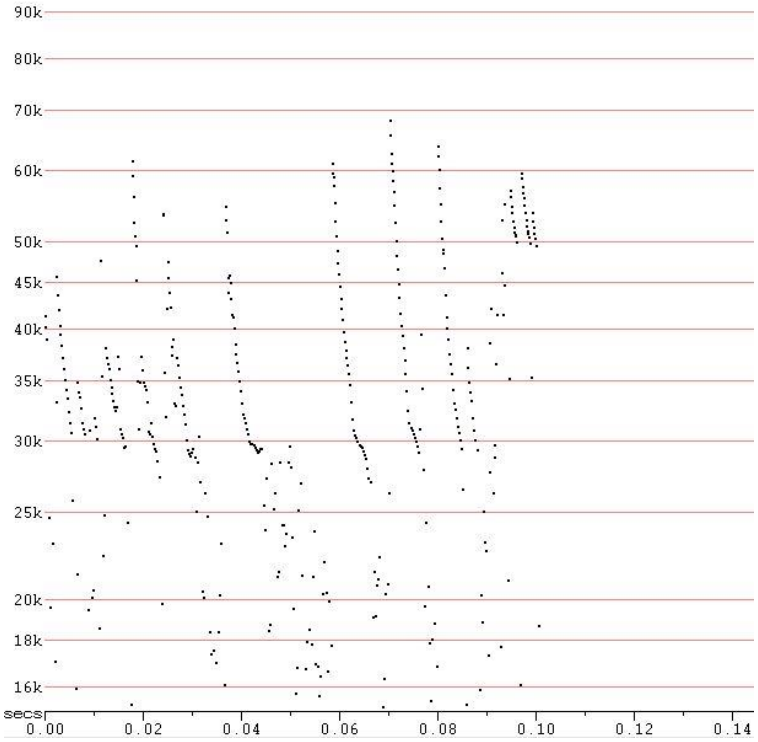


Figure 6. Echolocation call attributable either to long-eared myotis or fringed myotis recorded at the field location. (Div 16, F7).

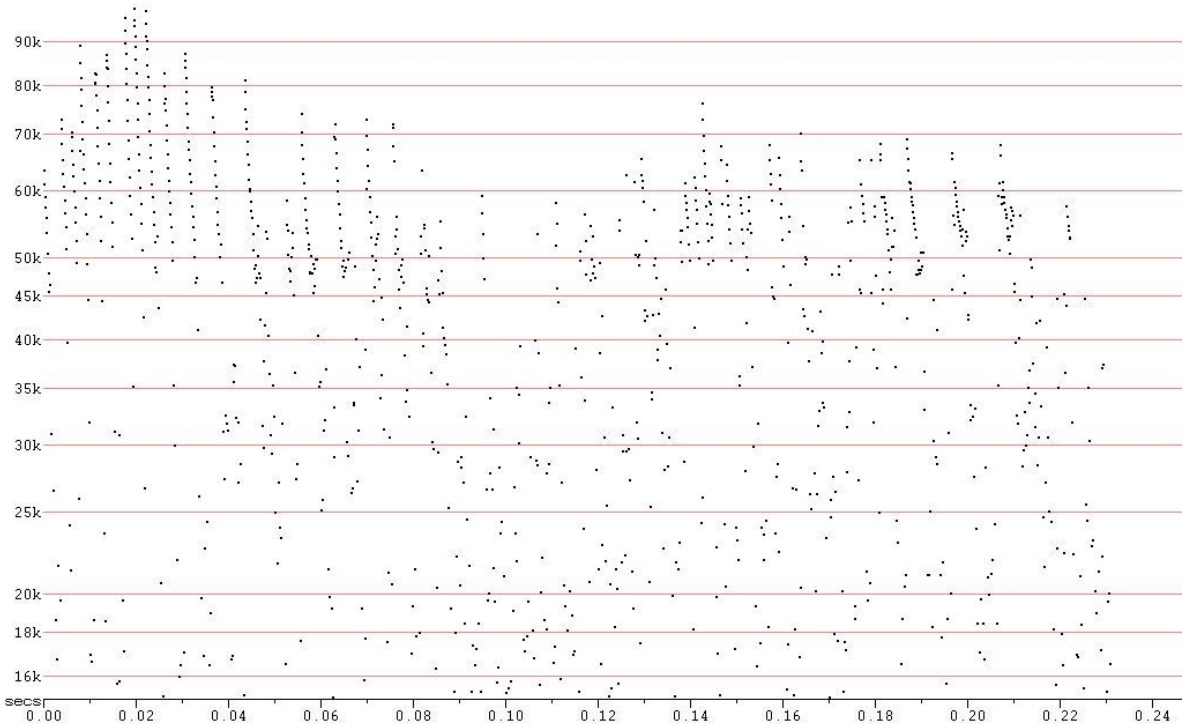


Figure 7. Distorted echolocation call of a 50 kHz myotis, attributable either to Yuma myotis or California myotis recorded at the Stonybrook Creek culvert.

Appendix I Fisheries Assessment for Stonybrook Creek

GANDA

Garcia and Associates
1512 Franklin Street
Oakland, CA 94612
Phone: (415) 891-0024 Fax: (415) 891-0027

To: **Tiffany Ngo**

From: **Rob Aramayo**

Date: **July 15, 2016**

9/1/16

RE: **Fisheries assessment for Stonybrook Creek, Alameda County**

INTRODUCTION

Garcia and Associates (GANDA) evaluated the instream habitat in Stonybrook Creek and Alameda Creek, both near their confluence and along State Route 84 (SR 84) (Niles Canyon Road) at postmile (PM) 12.91. Caltrans is proposing to provide increased capacity to meet stormflow requirements, and to facilitate passage of steelhead from Alameda Creek to Stonybrook Creek, by replacing the existing 57-foot long reinforced box culvert that drains Stonybrook Creek into Alameda Creek. This project would provide a single span bridge over Stonybrook Creek, which would accommodate fish passage and reduce channel maintenance requirements, as well as provide the following:

- The bridge design will pass the 100-year design discharge with one foot of freeboard under the bridge,
- The proposed bridge abutments will be skewed to be more inline with the approaching creek (given site constraints),
- The channel profile and substrate will be restored to conditions similar to upstream and downstream conditions,
- The vertical bridge abutments will be spaced wider than the active channel width to allow unimpeded bed-load transport under the bridge,
- The re-graded channel bottom section will be shaped to match upstream channel sections and the creek bed will be overlaid with native materials. A slight centerline depression in the channel section will be provided to initiate the formation of a low flow channel, and
- The creek bed will be allowed to aggrade or degrade naturally over time while the creek's side slopes will be hardened as necessary to protect adjacent structures and embankments.

This report is intended to describe the instream habitat available to fish in Stonybrook and Alameda Creeks within the vicinity of the Stonybrook Culvert replacement (Figure 1).

Alameda Creek is the largest drainage flowing into southern San Francisco Bay (Gunther et al. 2000), and has a watershed area of approximately 700 square miles (1,813 square kilometers). Water flows in Alameda Creek are regulated for flood protection and water management by the San Francisco Public Utilities Commission (SFPUC) at San Antonio Reservoir, Calaveras Reservoir, and the Upper Alameda Creek Diversion Dam, all of which are upstream of the survey area. Once an important stream for steelhead and other anadromous fishes, the dams within the system have impaired fish passage and the distribution of fish throughout the watershed.

METHODS

GANDA biologists Rob Aramayo, Katrina Belanger-Smith, and Tiffany Ngo conducted a site visit to describe the instream habitat conditions present in Stonybrook and Alameda Creeks on March 24th, 2016. We evaluated an area approximately 750 feet of Alameda Creek, and 563 feet of Stonybrook Creek upstream of the confluence with Alameda Creek.

RESULTS

Alameda Creek was flowing at approximately 500 cubic feet per second (cfs) during our survey (USGS gauge 11179000, located at the west end of Niles Canyon). This is well above base flow, but below flood stage. The active channel was approximately 30 feet wide during our visit, and the right bank of the wetted channel was approximately 30 feet from the road. Bank full stream elevation appears to be approximately five feet from the road (river right), and the water appears to reach the retaining wall during flood events. At the flow stage during our survey, the instream habitat consisted of one, large low-gradient riffle that covered the length of the BSA. Alameda Creek supports a moderately dense riparian corridor, and vegetation consists of thick riparian forest with a dense understory and intermittent areas of bare ground, shrubs, and non-native annual grasses.

The lower reach of Stonybrook Creek within the project area appears to have been re-routed and channelized in the past, probably to facilitate the construction of Niles Canyon Road and the railroad through the canyon. As a result, there was no well-developed floodplain or riparian tree community along Stonybrook creek upstream of the culvert. The wetted width was approximately 12 feet during our visit, with a mean depth of approximately 6 inches. Stonybrook Creek was essentially one large low gradient riffle within the project area, interrupted by a scour pool below the culvert.

The culvert carrying Stonybrook Creek beneath Niles Canyon Road is at least a partial barrier, and may be a complete barrier to the upstream movement of steelhead. This drop is also likely to be a complete barrier to the upstream migration of lamprey. This structure does not create an impediment to the downstream passage of fish.

The stream substrate in both Alameda and Stonybrook creeks appears to be primarily composed of boulder and gravel, with smaller areas of small cobble, sand, and bedrock. The cobble embeddedness in the plunge pool below the culvert in Stonybrook Creek was approximately 35 percent. Most of the protective cover for fish is provided by bank features: terrestrial vegetation, root wads, and aquatic vegetation lining the shore. Instream cover is primarily provided by boulders.

DISCUSSION

Alameda Creek within the study area is a regulated stream, which provides habitat for fish and other aquatic species. The channel has been encroached upon in several areas, which, in combination with the water regulation, impairs the natural function of the river ecosystem. Nonetheless, both Alameda and Stonybrook creeks appear to be moderately healthy systems.

Stonybrook Creek within the project area is primarily a long, low gradient riffle and is relatively shallow. The main pool within this reach is the plunge pool below the culvert. This plunge pool is relatively deep, and has object cover in the form of boulders and overhanging vegetation that provides shade and cover. This pool currently provides year-round rearing habitat for fish, and a small area suitable for spawning at the tailout. This pool will likely be eliminated after construction, and the fish will distribute themselves further up Stonybrook Creek.

Currently, the impediments to fish passage include both vertical drop of approximately one foot, and the long, slightly uphill culvert that is without resting places for fish to hold during the ascent. The drop may be passable in some flows. However, the long stretch of uninterrupted flow through the culvert exceeds the distance that most fish can swim in a single burst, and therefore, without resting areas, this becomes a barrier to fish passage. Lamprey rely on the suction of their mouths to hold their position as they inch their way over and through obstacles. Therefore, obstacles with 90 degree edges or drops frequently completely block their passage.

Spawning habitat for steelhead is relatively limited and of moderate quality within the study reach, despite gravel being a primary component of the substrate composition. Salmonids prefer spawning in the tailouts of pools, where the streambed morphology encourages the penetration of oxygen rich water into the gravel to aerate the eggs. Riffle habitats, similar to those observed in the study area, are typically rich in suitable gravel and oxygen rich water, but often lack the preferred within gravel hydrology that fish prefer. Salmonids may therefore have only limited spawning success within the study reach. Rearing habitat for fish is abundant throughout the

study area, but refuge areas during high flows may be limiting. Objects providing instream cover for fish are sparse, both in terms of number (i.e., amount of large woody debris) and complexity. It is unclear whether the water temperatures in this portion of Alameda and Stonybrook creeks are cool enough to provide quality rearing habitat for salmonids during the warm summer months.

Lamprey similarly spawn in riffles, and their ammocetes live in the soft sediments and detritus along the stream margins and pools for several years, before metamorphosing into adults. Stonybrook creek provides suitable habitat for these fish if they can regain access to the stream.

This assessment is limited to the conditions present during the site visits, and does not reflect the habitats available at other flows, especially summer low flows, which are dependent on the flows released from upstream reservoirs.

REFERENCES

Gunther, Andrew J., Hagar, Jeffrey, and Salop, Paul. 2000. An Assessment of the Potential for Restoring a Viable Steelhead Trout Population in the Alameda Creek Watershed. Prepared for the Alameda Creek Fisheries Restoration Workgroup.

Figure 1. Map of Fish Habitat Survey Area

culvert

Stonybrook Creek

84

Palomares Rd

Alameda Creek

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Project Location

Biological Study Area
Railroad
Intermittent Creek (Stonybrook Creek)
Perennial Creek (Alameda Creek)
Culvert
OHWM Delineation

Scale: 1:1,200
1 inch = 100 feet

N

0 50 100 Feet

Figure 1:
Stonybrook Creek Map of Fish Habitat Survey Area
Niles Canyon
Safety Improvement Project