APPENDIX C

NATURAL ENVIRONMENT STUDY

Natural Environment Study

Nacimiento Lake Drive Bridge Replacement Project
Near Town of Bradley, Monterey County, California
(Bridge No. 44C-0009)
Federal Project Number STPLZ 5944(040)

State of California, Department of Transportation

Revised May 2012

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Caltrans District 05

May 2012

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Summary

Project Description

The Nacimiento Lake Drive Bridge crosses the San Antonio River along Nacimiento Lake Drive, just over 5 miles (mi) south of Jolon Road. It is located approximately 5 mi southwest of the town of Bradley and approximately 2 mi northwest of the Camp Roberts Army National Guard Training Facility, in unincorporated southern Monterey County, California. The biological study area (BSA) covers approximately 12.24 acres (ac) and includes the existing bridge, the alignment of the proposed replacement bridge, surrounding habitat that could potentially be affected by project activities, and upstream and downstream reaches adjacent to the existing and proposed bridges that are not expected to be affected by project activities. The Nacimiento Lake Drive Bridge Replacement Project ("Project") is a Federal Highway Administration (FHWA)-funded Project. The FHWA has delegated its National Environmental Policy Act (NEPA) authority to the California Department of Transportation (Caltrans). The project sponsor is the Monterey County Department of Public Works.

The basic elements of the Project include replacing the existing one-lane bridge (44C-0009) with a new bridge that can accommodate two lanes of traffic with shoulders, removal of the existing bridge, rerouting the street approaches to the new bridge, and installation of rock slope protection (RSP) at the new bridge abutments. The new bridge will be approximately 267 feet (ft) in length and 32 ft in width and will be constructed adjacent to, and downstream of, the existing bridge. The new bridge will have two spans with a center pier. The bridge type will be a cast-in-place, post-tensioned, concrete box girder structure. RSP, which will likely consist of 500-pound (lb) rocks, will be placed at each bridge abutment to prevent erosion and undermining of the structure. The length of the RSP along the banks of the river at the southerly and northerly abutments will be approximately 120 ft and 80 ft, respectively. The existing bridge removal will include the entire structure down to the piles. Per Caltrans standards, the piles will be removed down to a minimum of 3 ft below the existing ground surface.

The Project is a California Department of Transportation (Caltrans) Local Assistance Project. This Natural Environment Study (NES) has been prepared following Caltrans procedures.

Project Effects on Sensitive Biotic Habitats

Nine biotic habitats/land use types were identified within the BSA: California annual grassland (6.64 ac), willow riparian scrub (1.47 ac), developed (1.56 ac), aquatic (1.22 ac), freshwater emergent wetland (0.54 ac), California sage scrub (0.46 ac), valley oak riparian woodland (0.20), seasonal wetland (0.13 ac), and mule fat riparian (0.03 ac). Permanent effects on biotic habitats will occur from Project actions including construction of the new bridge including abutments and piers, installation of RSP, and construction of the approaches to the new bridge. The Project will result in permanent effects on 0.68 ac of California annual grassland, 0.20 ac of valley oak riparian woodland, up to 0.06 ac of willow riparian scrub (including both loss and trimming impacts), 0.03 ac of freshwater emergent wetland, up to 0.01 ac of mule fat riparian scrub (with trimming impacts) and 0.01 ac of seasonal wetlands. In addition, a small amount (<0.01 ac) of developed habitat will be impacted. We do not anticipate any substantial effects on water drainage or on the contributing watershed from Project implementation. With the implementation of measures designed to avoid and minimize impacts to water quality, we also do not anticipate substantial effects on water quality within the BSA or the San Antonio River as a result of Project implementation.

Project effects that are considered to be temporary include the utilization of the grassland and developed areas for staging and/or access, disturbance associated with removal of the existing bridge, and construction access. Temporary effects to approximately 0.08 ac of aquatic habitat within the San Antonio River channel on the site will occur due to the installation of falsework pads extending from each bank. Temporary effects to this habitat will be mitigated by restoring this channel to its pre-construction state after the completion of the Project and implementing measures designed to protect fish and other aquatic species. No permanent adverse effects on aquatic habitat will occur as part of the Project. In addition, access related to the Project construction will temporarily affect up to 0.02 ac of seasonal wetland and 0.06 ac of freshwater emergent wetland habitat, although these habitats will be avoided wherever feasible and where not feasibly avoided will be protected from permanent effects with the use of wooden crossing mats or similar measures. Finally, the Project will temporarily affect up to 2.1 ac of California annual grassland. In all cases, the temporarily affected habitats will be restored to pre-construction conditions within one year.

From a biological and regional perspective, the permanent effects on the wetlands, mule fat scrub, and willow riparian habitat, and the loss of three mature oak trees within the valley oak riparian woodland habitat are relatively minor in a regional context but could substantially affect the functions or values of the riparian corridor within the BSA if not mitigated. Because there has been a substantial loss of these habitat types within Monterey County and statewide, unmitigated Project effects could contribute to substantial cumulative effects on these habitats. Mitigation of the Project's permanent and temporary contributions to such effects will include stabilization and restoration of the affected bank areas and installation of compensatory wetland and riparian mitigation plantings totaling 0.63 ac to be installed in areas disturbed by Project construction and removal of the existing road approach and bridge. Compensatory mitigation is proposed at 2:1 (mitigation area: impact area) for permanent wetland impacts; 3:1 for permanent willow riparian scrub impacts related to fill placement; 2:1 for willow and mule fat riparian scrub impacts related to woody vegetation trimming; and 10:1 (mitigation stems planted:stems removed) for mature tree removal within the valley oak riparian habitat. With implementation of these mitigation measures, the permanent and temporary effects on the wetland, riparian, and grassland habitats and the removal of three oak trees, and the ecological functions and values these areas provide, will be fully mitigated. Additionally, following implementation and maturation of compensatory mitigation plantings for riparian impacts within the BSA, there will also be no substantial decrease in shading to aquatic habitat once the plantings are a few years old.

Special-status Plant Species

Several special-status plant species are known to occur in the region of the Project. Many of these plants are associated with habitat types that do not occur within the BSA, occur at elevations outside of the range of elevations that occur on the Project site, or are present on specific soil types that do not occur within the BSA. However, suitable habitat is present on-site for several other special-status plant species and protocol-level plant surveys were conducted in 2010. One hybrid individual between two rare plant species, Abbott's bush mallow (*Malacothamnus abbottii*) and Jones' bush mallow (*Malacothamnus jonesii*), was identified within the coastal sage scrub within the BSA. All coastal sage scrub, and the rare bush mallow hybrid itself, will be avoided by Project activities as the species and its habitat occur entirely outside of the Potential Impact Area (PIA). No other special-status plant species were detected within the BSA during our floristic surveys. Thus, we conclude that there will be no effect on this species, or any other special-status plant species, resulting from Project implementation; therefore, no further minimization and avoidance measures, beyond avoiding coastal sage scrub, or compensatory mitigation is proposed.

Special-status Animal Species

Several of the special-status animal species present in the region (i.e., in southern Monterey County) do not occur in the BSA because the Project area lacks suitable habitat and/or is outside the range of the species. Such species include the California tiger salamander (*Ambystoma californiense*), foothill yellow-legged frog (*Rana boylii*), arroyo toad (*Bufo californicus*), and California red-legged frog (*Rana draytonii*), among others. No CNDDB occurrences of these species are mapped, or other records known, from the BSA or its general vicinity. Because habitat on the site was determined to be potentially suitable for the red-legged frog, based on a site assessment performed for this study, H. T. Harvey & Associates conducted protocol-level surveys for red-legged frogs. No red-legged frogs, nor any other special-status amphibians, were observed during this survey, and all four of these species are considered absent from the site.

Several other special-status wildlife species may occur within the BSA only as uncommon or rare visitors, migrants, or transients, and are not expected to reside or breed on the site. These include species such as the northern harrier (*Circus cyaneus*), yellow-breasted chat (*Icteria virens*), pallid bat (*Antrozous pallidus*), mastiff bat (*Eumops perotis*), western red bat (*Lasiurus blossevillii*), and others.

Potentially suitable habitat exists within the BSA for a number of other special-status wildlife species that may reside in or breed on the site, or may occur on the site as transients but in ways that may subject individuals to Project impacts (e.g., by occurrence in dens or burrows on the site). These species include the Central California Coast steelhead (*Oncorhynchus mykiss*), Monterey roach (*Lavinia symmetricus subditus*), western spadefoot toad (*Spea hammondii*), western pond turtle (*Actinemys marmorata*), coast horned lizard (*Phrynosoma blainvillii*), silvery legless lizard (*Anniella pulchra pulchra*), San Joaquin whipsnake (*Masticophis flagellum ruddocki*), bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), burrowing owl (*Athene cunicularia*), white-tailed kite (*Elanus leucurus*), loggerhead shrike (*Lanius ludovicianus*), least Bell's vireo (*Vireo bellii pusillus*), yellow warbler (*Dendroica petechia*), tricolored blackbird (*Agelaius tricolor*), Salinas pocket mouse (*Perognathus inornatus psammophilus*), American badger (*Taxidea taxus*), and San Joaquin kit fox (*Vulpes macrotis mutica*).

Steelhead are considered extant in low numbers in the Salinas River Watershed, and historically the San Antonio River was a steelhead spawning stream. The current conditions of these waterways below the San Antonio Dam, including siltation, high water temperatures, non-native predators, and agricultural runoff, minimize the regularity of occurrence and the abundance of steelhead in the Project area; however, the National Marine Fisheries Service (NMFS) maps this reach of the San Antonio River as critical habitat for steelhead, and the California Department of Fish and Game (CDFG) has not mapped any complete barriers to fish passage between the Salinas River Mouth and the BSA, so salmonid passage is still possible along this reach. Monterey roach are known to frequent the warmer southern portions of the Salinas River watershed and are likely present in the Project area at some times. Therefore, both steelhead and Monterey roach could be subject to Project effects. Conservation measures that will be implemented to avoid effects on these species include 1) limiting all work within the banks of the creek to the dry season (roughly 15 June to 15 October, with the potential for extensions beyond this period, in consultation with NMFS, if dry weather permits); 2) installation of netting and other structures under the bridges to prevent debris from entering the channel; 3) implementation of a construction personnel education program to inform Project personnel of the sensitive species issues in the Project area; 4) adherence to standard Caltrans BMPs for avoiding impacts to water quality; 5) implementation of measures to protect individual fish from entrapment, injury, or mortality during the placement of temporary pads for falsework in the river; and 6) maintenance of a free-flowing channel between the falsework pads during all work. These measures would avoid or minimize effects on steelhead and Monterey roach, and thus no compensatory mitigation is recommended.

Suitable breeding habitat for the western spadefoot is not expected to occur within the BSA, but the BSA does support suitable upland habitat for the species. Suitable aquatic foraging and terrestrial egg-laying habitat for western pond turtles occurs within the BSA, and the BSA offers suitable burrowing and foraging habitat for coast horned lizards, silvery legless lizards, and San Joaquin whipsnakes. Permanent and temporary impacts to habitat for these species will be very minor. Further, the Project will incorporate conservation measures to avoid or minimize impacts to these species, including 1) preconstruction surveys, 2) installation of wildlife exclusion fencing, and 3) daily surveys of the area within the exclusion fence.

A pair of bald eagles has been documented nesting approximately 150 ft southeast of the BSA, and the Project site also offers suitable nesting and foraging habitat for golden eagles (although golden eagles are not expected to nest close to the BSA as long as bald eagles are also nesting so close). In order to avoid impacts to eagles, the following measures will be incorporated into the project: 1) conducting all work during the raptor non-breeding season if feasible (1 September – 31 January); and 2) preconstruction surveys if work must be conducted during the breeding season, coupled with the establishment of disturbance-free buffers developed in consultation with the U.S. Fish and Wildlife Service (USFWS), the CDFG, and Caltrans around any active eagle nests discovered in the Project area.

The grassy and ruderal habitats within the BSA support some small mammal burrows, but they are unsuitable for use by nesting or roosting burrowing owls because they are on sandy substrates that do not hold the structure of burrows well, and are mostly on steep slopes near shrubs, trees, or the existing bridge. Therefore, suitable nesting and roosting habitat for burrowing owls is absent. Occasional burrowing owls may forage in the BSA during migration, but we do not expect them to occur regularly or to colonize burrows there. Therefore no conservation measures or compensatory mitigation are recommended.

The BSA includes willow clusters that offer ostensibly suitable nesting habitat for least Bell's vireos, although these relatively sparse clusters of willows do not represent the thick willow shrub thickets preferred by this species. We cannot rule out the possibility of up to one pair of least Bell's vireos establishing a breeding territory within the BSA. The Project will employ conservation measures to avoid or minimize impacts to any nesting least Bell's vireos within the BSA, including 1) timing Project activities to avoid the least Bell's vireo breeding season (1 April to 31 July) to the greatest extent practicable; 2) removal of potential nesting substrates such as trees or other vegetation during the non-breeding season; and 3) preconstruction surveys conducted by a qualified ornithologist, coupled with the establishment of appropriate disturbance-free buffers, in consultation with the USFWS and CDFG through Caltrans, around any active Bell's vireo nests discovered within the BSA.

The BSA provides a small amount of suitable habitat for white-tailed kites, loggerhead shrikes, yellow warblers, and tricolored blackbirds. Territorial considerations and/or the limited amount of habitat available within the BSA would limit the number of pairs of any of these species that might establish nests within the BSA. The Project's effects on these species, if any, would not result in appreciable effects on the regional populations, and the Project is not expected to substantially affect any of these species of their habitats. Therefore, no compensatory mitigation is proposed. Measures to avoid and minimize effects on active nests of all migratory birds that are incorporated into the Project (see Section 4.4) would avoid effects on nesting pairs (or, in the case of tricolored blackbirds, colonies) of these species.

The BSA provides suitable habitat for Salinas pocket mice, but the dearth of records in the vicinity indicate that the species occurs locally and in low densities in the Project area. Thus, the species is expected to occur in the BSA in only low numbers, if at all, and the Project will not substantially affect the regional population of the species, or its habitat. Therefore no conservation measures or compensatory mitigation are recommended.

No badgers or badger dens were observed during the February reconnaissance survey, but suitable open grasslands occur adjacent to the Project area, and the grassy and ruderal portions of the BSA offer potential foraging and limited denning habitat for badgers. Because of the small size of the BSA, we would not expect more than one badger to occur in the BSA. Because of the low probability of a badger occurring on the BSA, no avoidance or minimization measures specific to badgers are recommended. However, the conservation measures described for San Joaquin kit foxes will also avoid or minimize impacts to badgers. If a badger den is discovered in the course of pre-construction surveys for kit foxes, or at any other time during Project activities, the CDFG will be consulted regarding the establishment of an appropriate disturbance-free buffer around the den, as well as any other avoidance or minimization measures to be taken.

No San Joaquin kit foxes or dens were found within the BSA during the February 2010 reconnaissance survey, or during subsequent focused surveys for rare plants and red-legged frogs, but the BSA offers suitable kit fox denning and foraging habitat. Given the extremely low population numbers for the closest known kit fox population and the lack of records elsewhere in the Project area, there is a low probability for occurrence of this species within the BSA. However, we cannot rule out the possibility that kit foxes could occur there in low numbers. In order to avoid or minimize any impacts to San Joaquin kit foxes as a result of Project activities, the following measures will be employed: 1) all surveys, den destructions, and monitoring related to the kit fox must be conducted by a qualified biologist; 2) a qualified biologist will conduct pre-construction surveys no less than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities; and 3) notification of Caltrans and consultation with the USFWS and

CDFG through Caltrans, and implementation of buffers and other measures if necessary, if an active den is detected.

Permits Required

In-stream work up to the ordinary high water (OHW) marks of the San Antonio River, as well as within associated wetlands on the site, will require a Section 404 permit (likely a Nationwide Permit) from the U.S. Army Corps of Engineers and a Section 401 certification from the Regional Water Quality Control Board. Any effects on riparian habitat will require a Streambed Alteration Agreement from the California Department of Fish and Game.

Presence of Invasive Non-native Plant Species

Several invasive plant species were observed within or adjacent to the BSA. These species included grassland and riparian understory invaders such as French broom and yellow star-thistle. Invasive species, particularly fast-growing herbaceous invaders, are often disturbance-adapted, and soil disturbance (an effect expected for this construction Project) will often be followed by an invasion of the disturbed area by these species. However, much of the areas that will be affected by Project activities will be covered under increased hardscape, or will be restored as part of compensatory mitigation for Project effects, both of which prevents weed growth. Upland areas disturbed during Project construction that will remain natural will be treated with a native seed mix. Additionally, Best Management Practices (BMP’s) intended to reduce the spread of invasive species, including vehicle washing before construction equipment is brought on-site, will be enacted. Therefore, Project-related effects are not expected to cause an increase in invasive plant species populations within the BSA. Invasive animal species, including bullfrogs (*Lithobates catesbeianus*) and crayfish (*Procambarus clarkii*), were also observed within the BSA. In addition, non-native bird species such as European starlings (*Sturnus vulgaris*), rock pigeons (*Columba livia*), and house sparrows (*Passer domesticus*) may occur in the Project vicinity. The Project will not alter the habitats within the BSA in such a way as to increase populations of any of these non-native animal species. Therefore, Project-related effects are not expected to cause an increase in invasive animal species populations within or adjacent to the BSA.

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List of Abbreviated Terms

AASHTO	American Association of State Highway and Transportation Officials
ac	acre(s)
APN	Assessor's parcel number
BMPs	Best Management Practices
BSA	Biological Study Area
CAD	Computer-Aided Design
Caltrans	California Department of Transportation
CCH	Consortium of California Herbaria
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CIDH	Cast-in-Drilled-Hole
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CSSC	California Species of Special Concern
CWA	Clean Water Act
DBH	Diameter at Breast Height
EFH	Essential Fish Habitat
ESA	Environmentally Sensitive Area
FESA	Federal Endangered Species Act
° F	Fahrenheit (in degrees)
ft	Foot/feet
ft^2	Square foot/feet
GIS	Geographic Information System
lb	Pounds
MBTA	Migratory Bird Treaty Act
mi	Mile(s)
mph	Miles per hour
NAIP	National Aerial Imagery Program
NEPA	National Environmental Protection Act
NES	Natural Environment Study
NGVD	National Geodetic Vertical Datum
NMFS	National Marine Fisheries Service
NRCS	National Resource Conservation Service
NWI	National Wetland Inventory
NWP	Nationwide Permit
OHW	Ordinary high water
PIA	Potential Impact Areas
PCE	Primary Constituent Element
ROW	Right-of-way
RSP	Rock Slope Protection
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SCS	Soil Conservation Service
SCVWD	Santa Clara Valley Water District
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

Chapter 1. Introduction

H. T. Harvey & Associates biologists conducted a background review and field surveys for the Nacimiento Lake Drive Bridge Replacement Project (hereafter "Project") from February through July 2010. On the basis of these studies, we drafted this Natural Environment Study (NES). All documents were compiled according to template guidelines prepared by the California Department of Transportation (Caltrans) (Caltrans 2002, 2009a).

1.1. Project History and Purpose and Need

Bridge 44C-0009, built in 1921, is a single-lane, 4-span, steel pratt through truss structure approximately 240 feet (ft) in length and 20 ft in width. The existing bridge does not meet current design or seismic safety standards and will be replaced to provide a two-lane crossing over the San Antonio River.

1.2. Project Description

1.2.1. Project Location

The existing Nacimiento Lake Drive bridge crosses the San Antonio River along Nacimiento Lake Drive, just over 5 miles (mi) south of Jolon Road. It is located approximately 5 mi southwest of the town of Bradley and approximately 2 mi northwest of the Camp Roberts Army National Guard training Facility, in unincorporated southern Monterey County, California (Figure 1). This rural area is dominated by extensive cattle ranches, with some viticulture and other agriculture occurring in areas immediately adjacent to the Salinas River and Highway 101. Military lands are also a prominent feature of the region, with Camp Roberts to the southeast and Fort Hunter Liggett to the northwest of the Project site. As shown in Figure 2, the biological study area (BSA) covers approximately 12.24 acres (ac) along Nacimiento Lake Drive at the bridge crossing over the San Antonio River, including the existing bridge, the alignment of the proposed replacement bridge, a potential mitigation area, and surrounding habitats that were surveyed on-foot by Project biologists. The Potential Impact Areas (PIA) is approximately 4.25 ac and is comprised of a smaller area within the BSA that may be directly affected by the construction of the Project, through structure removal, bridge construction, fill and rock slope protection (RSP) placement, construction access, and staging (Figure 2).

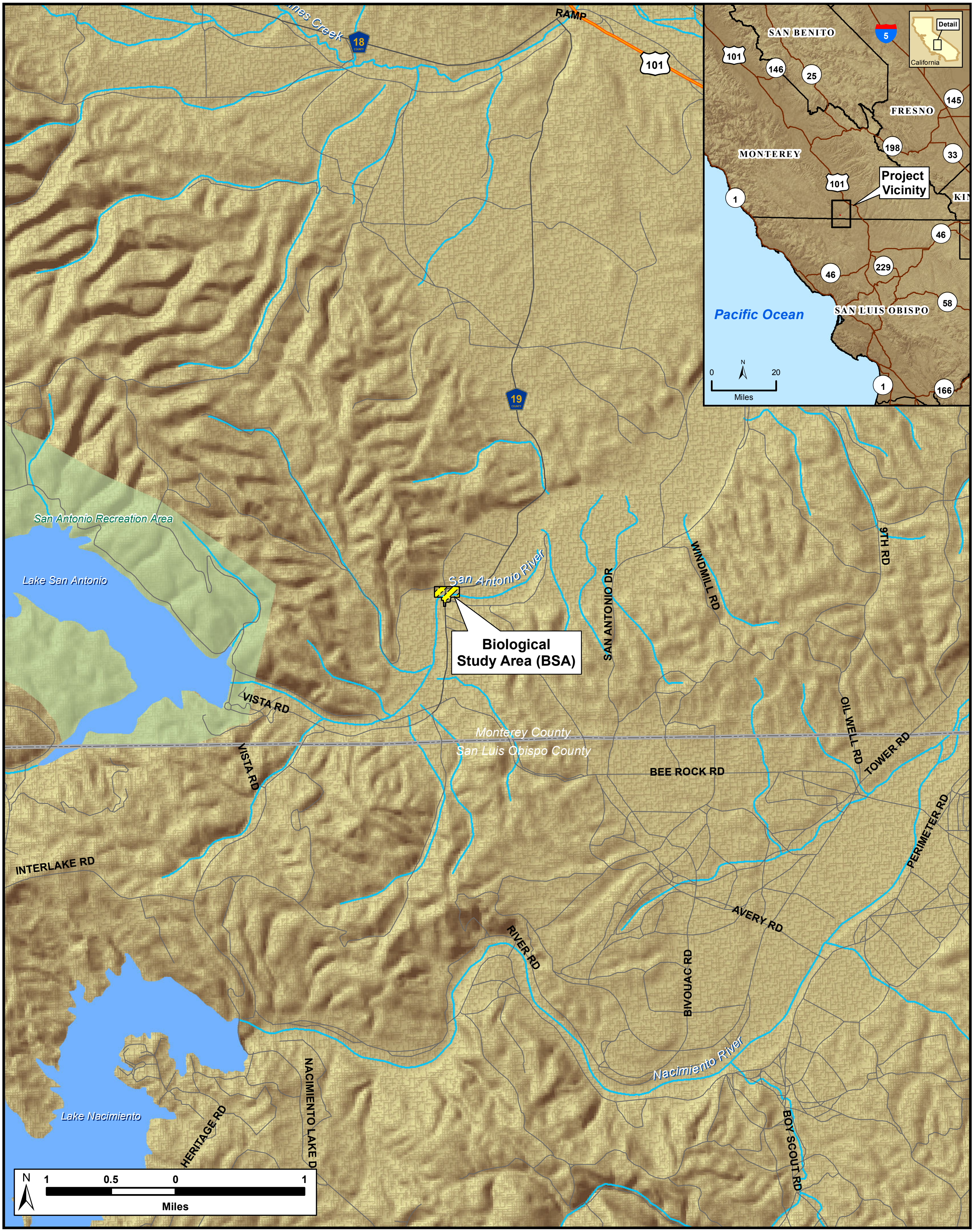
1.2.2. Project Components

The Monterey County Department of Public Works with funding from the Federal Highway Administration (FHWA) and in cooperation with Caltrans, proposes to replace existing bridge number 44C-0009 with a new bridge that can accommodate two lanes of traffic with shoulders, and will be approximately 267 ft in length and 32 ft in width. The first span will be 150 ft and the second span will be 117 ft in length. The replacement bridge will be constructed adjacent to, and downstream of, the existing bridge. The new bridge will have two spans with a center pier. The bridge type will be a cast-in-place, post-tensioned, concrete box girder structure supported on one single-column bent (the center pier) and two short-seat abutments. A Project plan view is shown on an aerial of the BSA in Figure 2.

The center pier will have a diameter of approximately 6-7 ft and will be supported on a large diameter cast-in-drilled-hole (CIDH) pile foundation. The depth of the pile foundation will be approximately 100 ft. The location of the center pier will be outside and to the north of the low-flow channel of the river, above the ordinary high water (OHW) mark of the channel.

The southerly bridge abutment will be supported on two CIDH pile foundations, each with a diameter of approximately 7 ft and a depth of approximately 75 ft. Excavation for this abutment will be to a depth of roughly 5 ft. The northerly bridge abutment will be supported on multiple CIDH pile foundations, each with a diameter of approximately 2 ft and a depth of approximately 35 ft. Excavation for this abutment will be to a depth of roughly 15 ft. The CIDH piles at the southern abutment and the center pier bent will require that permanent steel casings are installed, which may be vibrated or driven into place.

While neither the southern or northern abutments will be placed within the 100-year floodplain, embankment fills associated with both abutments will be placed within this area. Because of this, to prevent erosion of the abutment embankments which could undermine the structure and lead to possible adverse environmental effects, RSP will be required at both locations (Figure 2). The RSP, which will likely consist of 500-pound (lb) rocks, will be placed from 5 ft below the toe of slope at each bridge abutment and will extend up to an elevation 1 ft above the 100-year water surface elevation. The length of the RSP along the banks of the river at the southerly and northerly abutments will be approximately 120 ft and 80 ft, respectively (Figure 2).



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H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Figure 1: Vicinity Map

Nacimiento Lake Drive Bridge Replacement - NES (1212-10)
May 2012

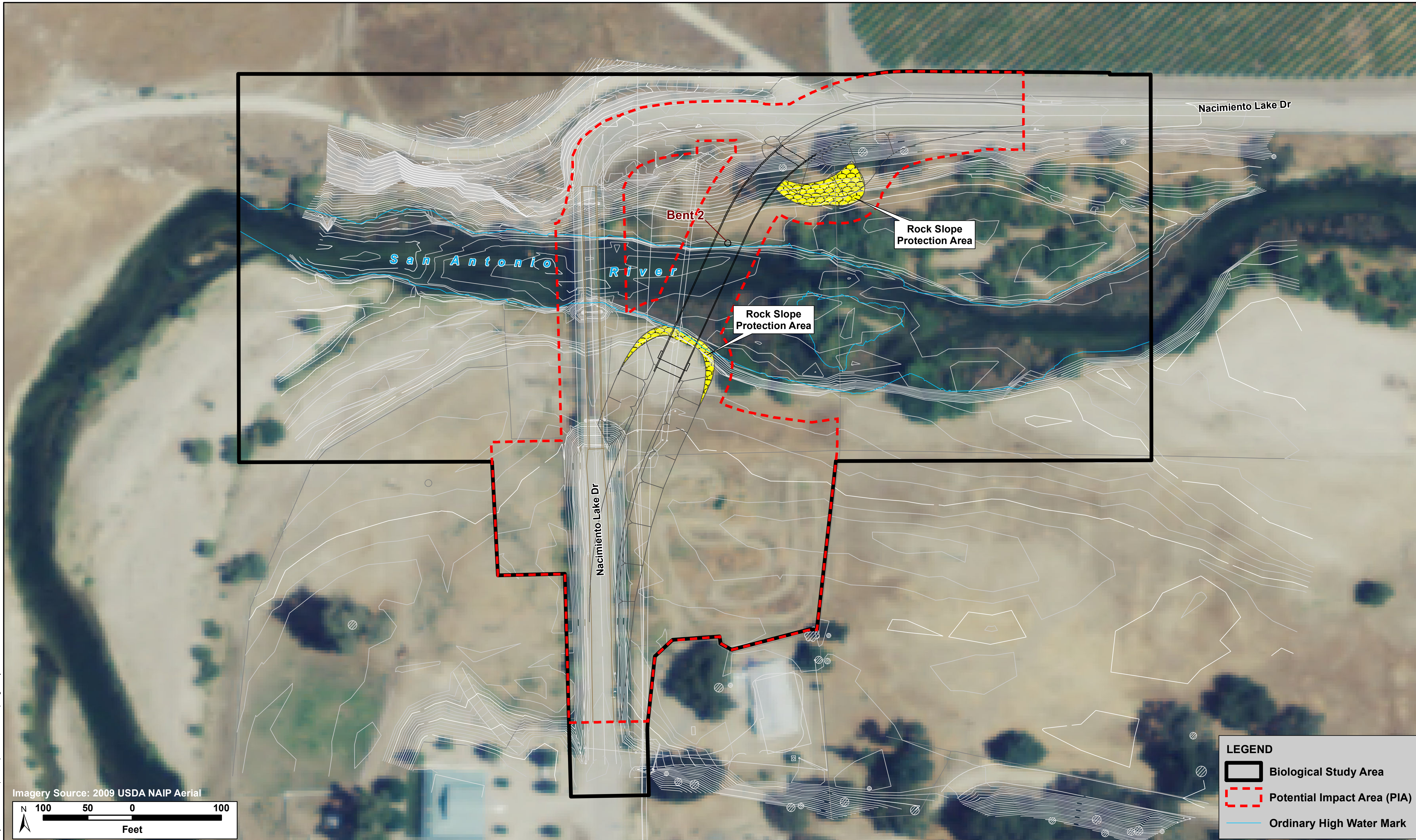

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Figure 2: Project Plan and Biological Study Area
Nacimiento Lake Drive Bridge Replacement - NES (1212-10)
May 2012

Construction of the bridge will begin with excavation and drilling holes for the CIDH pile foundations. During this drilling process, the permanent steel casings will be installed where required using a vibratory hammer only, no impact pile driving equipment will be used. The holes will then be filled with rebar cages and concrete. No dewatering is proposed or will be required for bridge construction (or later, for demolition of the existing structure). However, the bridge superstructure will be constructed using a falsework platform, which supports the formwork used to shape the superstructure concrete. The falsework platform will require supports in the river bed. At the proposed bridge location, the width of the channel is approximately 100-110 ft (Figure 2). A typical falsework span would be approximately 60 ft, and two temporary gravel pad supports will be required within the channel. On the south bank, a gravel pad would be placed at the edge of the channel, extending out approximately 20-25 ft into the channel. On the north bank, another gravel pad would be placed at the edge of the channel, extending about 35 ft into the channel to provide a support for a 60- to 65-ft falsework span. This would leave a clear channel width of approximately 50-60 ft. The length of the pads along the channel would be similar to the width of the bridge superstructure with an additional 10 ft on either side for a total channel length of 55 ft. These pads would be required for approximately one year.

Once the superstructure concrete has cured, barriers and railings will be installed on the bridge deck. In order to complete this work, site and river access will be needed for heavy construction equipment, such as long flat-bed trucks for delivering materials to the site, pile drilling equipment, cranes, concrete pumps, concrete mixer trucks, compaction equipment, loaders, and haulers. Access to the Project site from existing roadways will be provided. No new or temporary access roads will be necessary for the realigned roadway. Temporary access roads will be required on the river bed for the bridge construction. During construction, all equipment and materials will be stored at temporary staging areas located on or adjacent to the project site. These sites will be fenced and best management practices implemented to control tracking of soil from these sites. Proposed staging areas are located to the east of the existing bridge, outside the 100-year floodplain. Road or lane closures will be conducted in compliance with Monterey County Municipal Code and a traffic management plan will be implemented by the County.

As noted above, once the new Nacimiento Lake Drive Bridge is completed and open to traffic, the existing bridge will be removed. Upon completion of construction of the new bridge, the existing bridge will be removed, although due to seasonal work constraints

(Project work within the creek banks will be restricted to the dry season, or 15 June to 15 October) construction and removal may not occur during the same year. The existing bridge is an 87-year-old 4-span steel pratt through truss, approximately 20 ft wide and 240 ft long. The bridge superstructure has two through-trussed bridge main spans with a steel grid deck. The two approach spans have a cast-in-place concrete deck over four railroad car girders. The existing superstructure is supported by three bents, two of which have two octagonal columns supported on timber piles and connected at full height with an integral pier wall, while the remaining bent has two octagonal columns on spread footings connected with a pier cap at top and a concrete link beam below grade. The south abutment is a diaphragm type abutment with small wingwalls supported on four steel rail piles. The north abutment is a seat type abutment that was modified to be a diaphragm type abutment, has no wingwalls and bears directly on the soil.

Removal of the existing bridge will involve the removal of the entire structure down to the piles. Per Caltrans Standards, the piles will be removed down to a minimum of 3-ft below finished grade. This work will require demolition and removal of large amounts of steel and reinforced concrete material, which will require jack hammering. In order to complete this work, again site and river access will be needed for heavy construction equipment such as high reach demolition equipment, cranes, excavators, loaders and haulers.

1.2.3. Project Funding and Schedule

The Project is funded by the Federal Highway Bridge Program using Highway Bridge Monterey County Department of Public Works.

Construction is expected to take a total of approximately 1.5 years. The proposed project is expected to be constructed in 15 months or less, with an approximate seasonal start date in June. Construction activities would generally occur from Monday through Friday between 7:00 am and 7:00 pm. No night-time construction is proposed.

Chapter 2. Study Methods

2.1. Regulatory Requirements

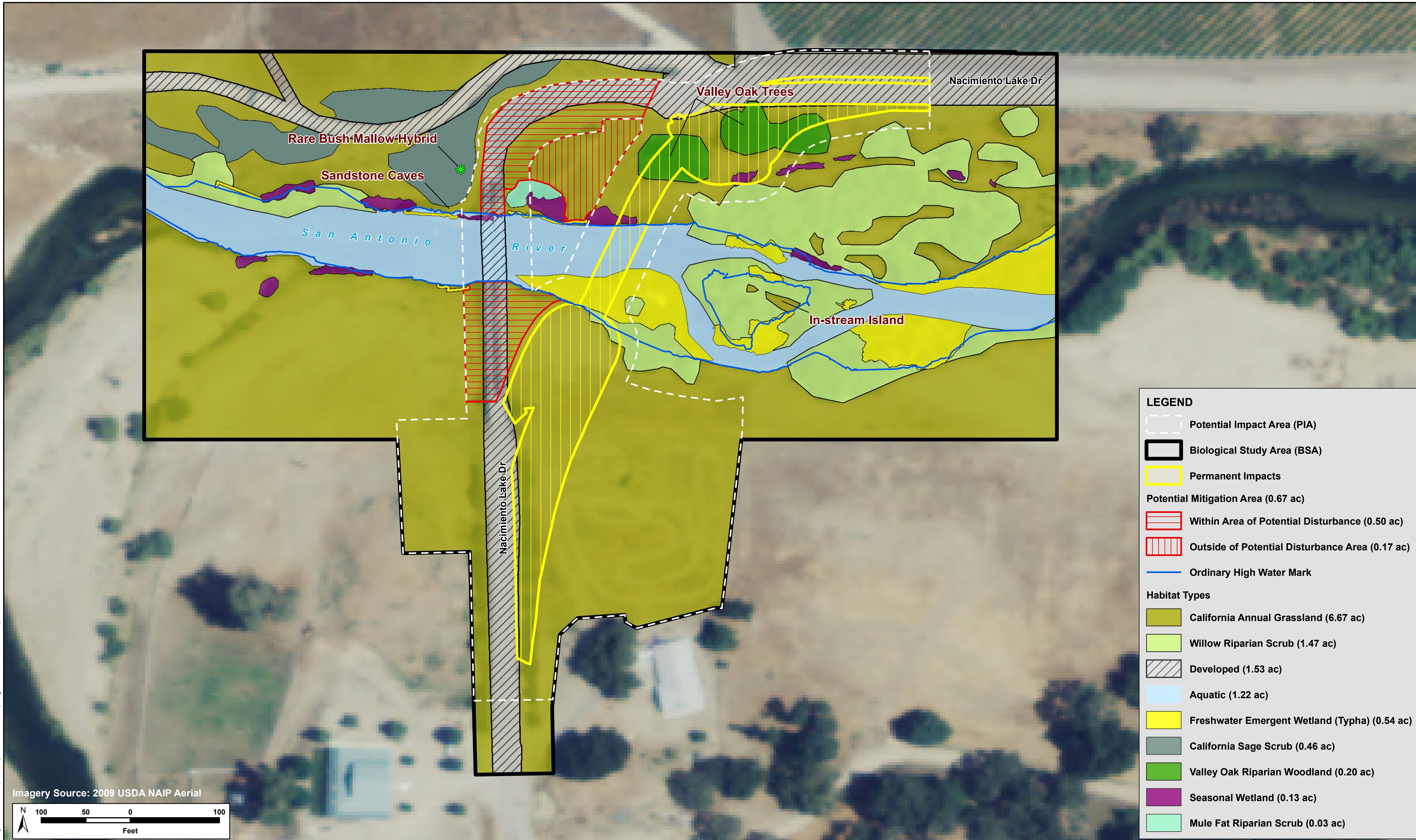
The primary contractor (David J. Powers & Associates) and Project engineers (Biggs Cardosa and Associates) provided H. T. Harvey & Associates the currently proposed Project planset dated 1 April 2010. This planset was used to determine the BSA and the PIA for the Project (Figure 3). The Project's BSA covers approximately 12.24 ac along Nacimiento Lake Road at the bridge crossing over the San Antonio River, and includes the smaller Project PIA, as well as the potential mitigation area and surrounding habitats that were surveyed during the biotic studies for the Project. Although not specifically directed to do so in the recent Caltrans NES Guidelines (2009a), several staff of District 5 have requested that we include additional sections within this chapter specifically addressing Project applicability under each of the regulations described below. For the purposes if this document, non-substantial effects are defined as those effects that, in a California Environmental Quality (CEQA) document, would be considered to not have a significant effect. The following regulates biological resources that may occur within the BSA.

2.1.1. Federal Endangered Species Act

The federal Endangered Species Act (FESA) protects listed wildlife species from harm or "take" which is broadly defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Take can also include habitat modification or degradation that directly results in death or injury to a listed wildlife species. An activity can be defined as "take" even if it is unintentional or accidental. Listed plant species are provided less protection than listed wildlife species. Listed plant species are legally protected from take under FESA if they occur on federal lands or if the Project requires a federal action, such as a Clean Water Act (CWA) Section 404 fill permit from the U.S. Army Corps of Engineers (USACE).

The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) have jurisdiction over federally listed, threatened and endangered species under the FESA. The USFWS also maintains lists of proposed and candidate species. Species on these lists are not legally protected under the FESA, but may become listed in the near future and are often included in their review of a Project.

Project Applicability: The Central California Coast steelhead (*Oncorhynchus mykiss*), California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), arroyo toad (*Bufo californicus*), least Bell's vireo (*Vireo bellii pusillus*), and San Joaquin kit fox (*Vulpes macrotis mutica*) are all known to occur in the regional vicinity of the BSA, or have occurred there historically, and are protected by the FESA. Steelhead occurred in the San Antonio River before the installation the San Antonio dam in 1965, but none have been documented in the reach of the stream below the dam since that time (Becker and Reining 2008). The Salinas River is considered an Impaired River by the California Department of Fish and Game (CDFG 2009), and the abundance of steelhead in the Salinas River watershed is low at best. However, there are no absolute barriers to fish passage between the Project area and the Monterey Bay, so we cannot entirely rule out the possibility of individual steelhead occurring in very low numbers on the Project site. Red-legged frogs are known to occur in the coastal drainages of Monterey County, and some records exist for the San Antonio River (Jennings and Hayes 1994), so the species was determined to have some potential for occurrence in the Project area. However, as discussed in Section 4.3.3 below, protocol-level surveys documented the absence of the California red-legged frog from the Project site. The range of the California tiger salamander generally includes southern Monterey County (USFWS 2004), but there are no known records anywhere in the Project vicinity (Jennings and Hayes 1994, CNDDB 2011). Intensive biological surveys on nearby military facilities have recorded a number of other special-status species, including species such as the western spadefoot (*Spea hammondii*) and vernal pool branchiopods that use seasonal aquatic habitats similar to those used for breeding by tiger salamanders, but have not detected the California tiger salamander. Thus, this species is not expected to occur on the Project site. Arroyo toads have been documented in the San Antonio River upstream of the Project site (USFWS 1999), and the Project area provides potential habitat for the species. However, no arroyo toads were detected during the reconnaissance survey or during multiple focused and protocol-level surveys for other amphibian species. Additionally, there are no records of the species downstream from the reservoir, populations of non-native predatory species in the San Antonio Reservoir downstream of the reservoir likely preclude the persistence of a population of arroyo toads in the Project area, and the species is thus considered absent from the Project site. Least Bell's vireos historically occurred in the Project vicinity along the upper Salinas River (Roberson and Tenney 1993), but none have been recorded in southern Monterey County in recent years. Although the probability of occurrence is very low, we cannot entirely



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H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Figure 3: Biotic Habitats and Impact Areas

Nacimiento Lake Drive Bridge Replacement - NES (1212-10)
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rule out the possibility that an individual Bell's vireo, and possibly a breeding pair, could occur on or near the Project site. San Joaquin kit foxes have been studied closely at the Camp Roberts Army National Guard training facility immediately south of the Project area, and individuals continue to be documented on the base periodically (CA ARNG 2009). Rare individuals could, therefore, occur on the Project site, although no kit fox dens were observed during a reconnaissance survey.

Only one federally listed plant species, Santa Lucia purple amole (*Chlorogalum purpureum* var. *purpureum*) is known to occur in the nine-quadrangle area encompassing the BSA (CNPS 2011, CNDDB 2011). This species is not known to occur in elevations as low as the Project elevation, but occurs at Fort Hunter Liggett and Camp Roberts and can occur in habitats similar to those found on the Project site. However, protocol-level floristic surveys conducted within the BSA during the species' blooming period in March, April, and May of 2010 failed to detect this species or any other federally listed species. No federally listed plants are reasonably expected to occur within the BSA.

If there is potential for take of any individuals of any of these species, Section 7 consultation with the USFWS and/or NMFS, depending on the species, will be necessary. Caltrans, with its delegated NEPA authority, is the lead federal agency for Section 7 consultation.

2.1.2. California Endangered Species Act

The California Endangered Species Act (CESA), California Fish and Game Code, Chapter 1.5, §§ 2050-2116, prohibits the take of any plant or animal listed or proposed for listing as rare (plants only), threatened, or endangered. In accordance with the CESA, the CDFG has jurisdiction over state-listed species (Fish and Game Code 2070). The CDFG regulates activities that may result in "take" of individuals (i.e., "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill"). Habitat degradation or modification is not expressly included in the definition of "take" under the California Fish and Game Code. The CDFG, however, has interpreted "take" to include the "killing of a member of a species which is the proximate result of habitat modification." The authorization for take of a state listed species (i.e. the Incidental Take Permit Process) is described within Section 2081 (b) and (c) of the CESA.

Project Applicability: As discussed above, the range of the California tiger salamander includes portions of southern Monterey County but there are no known records in the Project area (Jennings and Hayes 1994, CNDDB 2011), and thus this species is not expected to occur on the Project site. Bald eagles were observed nesting near the site. Least Bell's vireos and San Joaquin kit foxes are discussed above; there is some potential (albeit low) for both species to occur in the BSA. If there is potential for take of individuals of any state-listed species an Incidental Take Permit [Sections 2081(b) and (c)] may be needed. The conservation measures described below will be implemented in consultation with the CDFG, therefore, the Project will avoid effects on least Bell's vireos and San Joaquin kit foxes. No other state listed animal species are expected to occur in the BSA.

No state-listed plant species are known to occur in the nine-quadrangle area encompassing the BSA. Protocol-level floristic surveys conducted within the BSA during March, April, and May of 2010 failed to detect any state-listed species. No state-listed plants are reasonably expected to occur within the BSA.

2.1.3. Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act governs all fishery management activities that occur in federal waters within the United States 200 nautical mile limit. The Act establishes eight Regional Fishery Management Councils responsible for the preparation of fishery management plans to achieve the optimum yield from U.S. fisheries in their regions. These councils, with assistance from the NMFS, establish Essential Fish Habitat (EFH) in fishery management plans for all managed species. Federal agencies that fund, permit, or implement activities that may adversely affect EFH are required to consult with NMFS regarding potential adverse effects of their actions on EFH, and respond in writing to NMFS recommendations.

Project Applicability: No EFH is present within the BSA.

2.1.4. Clean Water Act and California Water Quality Issues

Under Section 404 of the CWA, the USACE is responsible for regulating the discharge of fill material into waters of the United States. Waters of the U.S. and their lateral limits are defined in 33 Code of Federal Regulations (CFR) Part 328.3 (a) and include streams that are tributary to navigable waters up to the OHW mark and their adjacent wetlands. Wetlands that are not adjacent to waters of the U.S. are termed "isolated wetlands" and, depending on the circumstances, may also be subject to USACE jurisdiction.

Under the Porter-Cologne Water Quality Control Act, the State Water Resources Control Board has the ultimate authority over State water rights and water quality policy. However, Porter-Cologne also establishes nine Regional Water Quality Control Boards (RWQCB) to oversee water quality on a day-to-day basis.

Pursuant to Section 401 of the federal CWA, projects that are regulated by the USACE must obtain water quality certification from the RWQCB. This certification ensures that the Project will uphold state water quality standards. The RWQCB may impose mitigation requirements even if the USACE does not. Work conducted within waters of the State may also require separate approval under the Porter-Cologne Act via issuance of a Waste Discharge Requirement.

Project Applicability: Any work within the San Antonio River channel or its associated wetlands, including access, falls under the jurisdiction of the USACE and the RWQCB. It is likely that Project effects would be covered under one or more USACE Nationwide Permits (NWP) such as the NWP 14 (Linear Transportation Projects). Notification to the USACE for a NWP will be required, as will application for 401 Certification from the RWQCB.

2.1.5. Executive Order 11990, Protection of Wetlands 1977

Executive Order 11990, dated May 24, 1977, "Protection of Wetlands", establishes a national policy "to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative." The order further provides that each agency shall provide leadership to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for (1) acquiring, managing, and disposing of federal lands and facilities, (2) providing federally undertaken, financed, or assisted construction and improvements, and (3) conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

Project Applicability: The proposed Project improvements have been designed to avoid permanent impacts to wetland habitats associated with the San Antonio River to the greatest extent feasible. Temporary impacts will include construction-phase access only. Any such disturbance within wetlands will include incorporation of

BMPs to avoid trampling of wetland vegetation where unnecessary for Project construction and to ensure protection of water quality.

2.1.6. Executive Order 11988, Floodplain Management

Executive Order 11988, Floodplain Management, requires federal agencies to avoid, to the extent possible, short- and long-term impacts to floodplains associated with their occupancy and modification. The order also requires federal agencies to avoid to the extent possible direct and indirect support of floodplain development wherever there is a practicable alternative.

Project Applicability: The proposed Project complies with Executive Order 11988 because the replacement bridge will accommodate flood flows associated with both the 100-year and 500-year floods. While a small amount of supporting embankment earthen fill and RSP will be placed within the 100-year floodplain with each abutment, this fill and RSP has been designed to withstand expected channel scour, to not affect scour of the channel in other areas, to not affect water levels within the floodplain, and to prevent erosion of the toe of the new fill (Schaaf & Wheeler 2010). Further, the proposed bridge has been designed to minimize floodplain impacts to the greatest extent feasible. Therefore, the proposed Project will not result in the substantial or adverse modification of any floodplain. Similarly, the Project does not directly or indirectly support further development within this floodplain.

2.1.7. The Federal Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA), 16 U.S.C. § 703, prohibits killing, possessing, or trading of migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Most native bird species are covered by this Act. In addition, Title 50 CFR Part 10 protects nesting birds.

Project Applicability: All native bird species that could potentially occur within the BSA are covered by this Act. As described in Chapter 4, the Project incorporates measures to avoid effects on nesting birds to comply with the MBTA and 50 CFR Part 10.

2.1.8. California Fish and Game Code

The California Fish and Game Code includes regulations governing the use of, or effects on, many of the state's fish, wildlife, and sensitive habitats. The CDFG exerts jurisdiction over the bed and banks of rivers, lakes, and streams according to provisions of §§1601 - 1603 of the Fish and Game Code. The California Fish and Game Code requires a Streambed Alteration Agreement (SAA) for the fill or removal of material within the bed and banks of a watercourse or waterbody and for the removal of riparian vegetation (CDFG 1994).

Certain sections of the California Fish and Game Code describe regulations pertaining to protection of certain wildlife species. For example, Fish and Game Code §2000 prohibits take of any bird, mammal, fish, reptile, or amphibian except as provided by other sections of the code.

California Fish and Game Code §§ 3503, 3513, and 3800 (and other sections and subsections) protects native birds, including their nests and eggs, from all forms of take. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "take" by the CDFG. Raptors (i.e., eagles, hawks, and owls) and their nests are specifically protected in California under the Fish and Game Code §3503.5. Section 3503.5 states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto."

Bats and other non-game mammals are protected by California Fish and Game Code § 4150, which 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 the commission. Activities resulting in mortality of non-game mammals (e.g., destruction of an occupied non-breeding bat roost, resulting in the death of bats) or disturbance that causes the loss of a maternity colony of bats (resulting in the death of young) may be considered "take" by the CDFG.

Project Applicability: Any work within the riparian corridor of the San Antonio River, including to the top of the outer banks, will require a SAA from the CDFG per §1602 of the California Fish and Game Code. As described in Chapter 4, measures will be taken to avoid affecting nesting birds per the California Fish and Game Code §§3503, 3513, and 3800. Two state listed species, Least Bell's vireos and San Joaquin kit foxes, are discussed above; there is some potential (albeit low) for both species to occur in the BSA. If there is potential for take of individuals of any state-listed species an Incidental Take Permit [Sections 2081(b) and (c)] may be needed. The conservation measures described below will be implemented in consultation with the CDFG, therefore, the Project will avoid effects on least Bell's vireos and San

Joaquin kit foxes. No other state listed animal species are expected to occur in the BSA.

2.1.9. California Streets and Highway Code (Barriers to Fish Passage)

California Streets and Highway Code § 156-156.4 requires that Caltrans complete an assessment of potential barriers to anadromous fish passage prior to commencing Project design, "for any Project using state or federal transportation funds programmed after 1 January 2006 if that Project affects a stream crossing on a stream where anadromous fish are, or historically were found".

Project Applicability: Although the Project crosses over a river where anadromous fish may occur, the Project will not create a barrier to fish passage from its implementation, as it will not block or otherwise alter the low-flow channel once it is complete. Flows will not be completely blocked during construction, and a passage for fish will be maintained during placement of the abutments and bridge bent and installation of temporary pads used to support bridge falsework.

2.1.10. State Senate Concurrent Resolution No. 17 — Oak Woodland Protection

State Senate Concurrent Resolution No. 17 requires that all state agencies having land use planning duties assess and determine the effects of their land use decisions or actions within any oak woodland containing blue, Engelmann, valley or coast live oak that may be affected by their decisions or actions. For purposes of this measure, the term "oak woodlands" means a 5-ac circular area containing five or more oak trees per ac. The state agencies are required to preserve and protect native oak woodlands to the maximum extent feasible or provide replacement plantings where any of the oak trees listed above are removed from oak woodlands.

Project Applicability: Oak woodlands as defined by State Senate Resolution No. 17 do not occur within the Project site. Three valley oaks will be removed as a result of the Project; however, these occur at a lower density than the five trees per ac within a 5-ac area limit set forth in Resolution No. 17. However, replacement plantings are planned as mitigation for Project-related impacts to these trees.

2.1.11. National Invasive Species Council

On 3 Feb 1999, Executive Order 13112 was signed establishing the National Invasive Species Council. The Executive Order requires that Council of Departments dealing with invasive species be created. It states:

"By the authority vested in me as President by the Constitution and the laws of the United States of America, including the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321 et seq.), Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990, as amended (16 U.S.C. 4701 et seq.), Lacey Act, as amended (18 U.S.C. 42), Federal Plant Pest Act (7 U.S.C. 150aa et seq.), Federal Noxious Weed Act of 1974, as amended (7 U.S.C. 2801 et seq.), Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.), and other pertinent statutes, to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health effects that invasive species cause."

Project Applicability: Several non-native, invasive species occur on the site including French broom (*Genista monspessulana*) and yellow star-thistle (*Centaurea solstitialis*). The Project is not expected to result in a substantial increase in invasive species within the BSA due to the limited grading and disturbance proposed for the Project. BMPs such as vehicle washing will be enacted to prevent the spread of invasive propagules to or from the site. Invasive plant material that is removed during site clearing and vegetation trimming will be deposited in a certified landfill to prevent the spread of noxious weeds such as yellow star-thistle and French broom. All grassland areas disturbed by vegetation removal, grading, construction access, and bridge replacement will be seeded with a native seed mixture that will help prevent erosion and the establishment of additional invasive plant infestations.

2.2. Studies Required

For the purposes of this report, the BSA encompasses approximately 12.24 ac along Nacimiento Lake Drive at the bridge crossing over the San Antonio River, and includes the PIA, or all areas with potential to be directly affected by the Project (Figure 3). Permanent effects will be associated with the installation of the new bridge and associated abutments, bents, tree removal, and fill for the structure, and temporary effects will include access and construction-related impacts, such as removal of the existing bridge, areas used for staging, and construction buffers (Figure 2). The footprint of the PIA and the area where permanent effects will occur were determined from most recent Project planset provided by David J. Powers & Associates, and Biggs Cardosa and Associates (1 April 2010). The BSA footprint was determined based on the area surveyed on foot during reconnaissance-level biological site studies, and included a potential mitigation area upstream of the existing bridge (Figure 3). A graphical illustration of the extent and location of the permanent effects, PIA, and BSA is shown on Figure 3. "Project vicinity" will be used to describe the wider area including the BSA and a 5-mi radius surrounding the Project boundaries.

2.2.1. Survey and Mapping Methods

H. T. Harvey & Associates biologists surveyed the BSA to describe biotic habitats and land use types within the Project boundaries, to identify plants and animals found, or likely found on the site, and to survey for special-status plant and animal species, and their habitats. Our surveys included inspections of all areas within the existing and proposed Nacimiento Lake Drive bridge crossings and surrounding areas, including the aquatic channel habitat, within the BSA.

H. T. Harvey & Associates used observations taken in the field to map all biotic habitats/land use types within the BSA onto an aerial of the Project site (Figure 3), and then also overlaid a computer-aided design (CAD) drawing showing topographic lines and the proposed structure and improvements (Figure 2). Where appropriate, plant communities were named according to Holland's system of classification (1986) and/or Sawyer and Keeler-Wolfe (1995). NatureServe (2011) names are used when available. Habitat acreages were calculated for all habitat types within the BSA using geographic information system (GIS) and aerial photograph interpretation.

Habitats may be considered to be sensitive if they are limited in distribution, are regulated (i.e., by the CWA), or provide habitat for a sensitive species in this region.

2.2.2. Resources Reviewed

To develop a list of species and habitats of concern that may occur in the Project region, H. T. Harvey & Associates biologists collected and reviewed information concerning threatened, endangered, or other special-status species or habitats of concern from several sources. These sources included Rarefind (California Natural Diversity Database [CNDDB] 2011) for the Bradley U.S. Geological Survey (USGS) 7.5 -minute quadrangle map in which the Project area occurs, and for the surrounding eight quadrangles including Wunpost, Valleton, San Miguel, Paso Robles, Adelaida, Lime Mountain, Tierra Redonda Mountain, and Hames Valley; their associated California Wildlife Habitat Relationships information; and natural resource information available through the USFWS, the CDFG, the California Native Plant Society (CNPS), the Consortium of California Herbaria (CCH), and other technical databases and publications. Additional sources reviewed included:

- Aerial imagery of the BSA and adjacent lands (National Aerial Imagery Program [NAIP 2005], Google Earth 2006),
- USGS 7.5-minute topographic quadrangle maps
- National Resource Conservation Service (NRCS 2010) Soils Mapping and the *Soil Survey of Monterey County* (SCS 1978), and
- National Wetland Inventory (NWI)

2.2.2.1. California Species of Special Concern

Section 15380(b) of the CEQA Guidelines provides that a species not listed on the federal or state lists of protected species may be considered rare if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definitions in FESA and CESA and the section of the state Fish and Game Code dealing with rare or endangered plants or animals. This section was included in the guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a substantial effect on a species that has not yet been listed by either the USFWS or the CDFG or species that are locally or regionally rare.

The CDFG has produced three lists (amphibians and reptiles, birds, and mammals) of "species of special concern" that serve as "watch lists." Species on these lists either are of limited distribution or the extent of their habitats has been reduced substantially, such that threat to their populations may be imminent. Thus, their populations should be monitored. They may receive special attention during environmental review as potential rare species, but do not have specific statutory protection.

All potentially rare or sensitive species, or habitats capable of supporting rare species, were considered for environmental review in this NES as per CEQA § 15380(b) (see Chapters 3 and 4).

2.2.2.2. USFWS Species list

H. T. Harvey & Associates biologists received a list of special-status species potentially occurring in the region (Monterey County) from the Ventura USFWS office on 13 May 2010 and an updated list on 10 May 2012 (Appendix A).

2.2.2.3. CALIFORNIA NATIVE PLANT SOCIETY

The CNPS, a non-governmental conservation organization, has developed lists of plant species of concern in California. Vascular plants included on these lists are defined as follows:

List 1A	Plants considered extinct.
List 1B	Plants rare, threatened, or endangered in California and elsewhere.
List 2	Plants rare, threatened, or endangered in California but more common elsewhere.
List 3	Plants about which more information is needed - review list.
List 4	Plants of limited distribution - watch list.

These CNPS listings are further described by the following threat code extensions:

.1—seriously endangered in California.
.2—fairly endangered in California.
.3—not very endangered in California.

Although the CNPS is not a regulatory agency and plants on these lists have no formal regulatory protection, plants appearing on CNPS lists are, in general, considered to meet CEQA's § 15380 criteria (see Section 2.2.2.1 above and adverse effects on these species may be considered substantial.

The CNPS *Online Inventory of Rare Plants* (http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi) supplied information regarding the distribution and habitats of vascular plants on CNPS Lists of category 1A, 1B, 2, and 3 in the Bradley USGS 7.5-minute quadrangle, and the eight surrounding quadrangles (Wunpost, Valleton, San Miguel, Paso Robles, Adelaida, Lime Mountain, Tierra Redonda Mountain, and Hames Valley). Quadrangle-level records are not maintained for List 4 species, so we also consulted the *Inventory* records for List 4 species occurring in Monterey County. Additional information on special-status plant species and their distribution within the area were obtained from *The Jepson Manual* (Hickman 1993), the USFWS lists, the CNDDB records from within the nine-quadrangle area, and occurrence and collection records maintained by CalFlora (2011) and the CCH (2011). All of these sources were combined to create the final target species list and determine the probability of occurrence for all special-status plant species within the Project BSA.

2.3. Personnel and Survey Dates

The following personnel at H. T. Harvey & Associates prepared this report:

Patrick Boursier, Ph.D., Principal, Senior Plant Ecologist
Steve Rottenborn, Ph.D., Division Head, Senior Wildlife Ecologist
Kelly Hardwicke, Ph.D., Project Manager, Senior Plant Ecologist
Nellie Thorngate, M.S., Wildlife Ecologist
Jeff Wilkinson, Ph.D., Herpetologist
Norman Sisk, M.S., Herpetologist
Steve Carpenter, B.S., Herpetologist
Yair Chaver, B.S., Wildlife Ecologist
Brian Cleary, M.S., Wetland Specialist
Catherine Roy, M.S., Plant Ecologist

2.3.1. Reconnaissance-level Surveys

On 2 February 2010, senior plant ecologist K. Hardwicke, Ph.D., conducted a reconnaissance survey of the BSA. Then, on 5 February 2010, wildlife ecologist N. Thorngate, M.S., and plant ecologist/wetland specialist B. Cleary, M.S., conducted a further reconnaissance survey of the BSA. The purpose of these surveys was to: 1) assess existing biotic habitats, 2) assess the area for its potential to support special-status species and their habitats, 3) identify potential jurisdictional habitats, including Waters of the U.S., and 4) provide information for the initial Project impact assessment.

2.3.2. Wetland Technical Assessment Riparian Habitat Surveys

K. Hardwicke and B. Cleary, performed reconnaissance-level surveys for riparian/wetland areas that fall within the potential jurisdiction of the CDFG, the USACE, and the RWQCB on 2 and 5 February 2010, respectively. B. Cleary revisited the site on 24 April 2010 to perform the remainder of work needed to complete a formal Wetland Technical Assessment (WTA) using the methods prescribed in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008). The extent of riparian habitats within the BSA was determined following guidance provided by the CDFG (CDFG 1994). The results of this survey are included as Appendix B.

2.3.3. Protocol-level Rare Plant Surveys

K. Hardwicke performed focused floristic surveys for rare plants considered to have potentially suitable habitat within the BSA on 10 March and 5 April 2010. A third floristic survey of the BSA was conducted by C. Roy, M.S., on 28 May 2010. The target list of species was developed as described above in Section 2.2.2.3. These surveys were performed to protocol level and were conducted in accordance with the most current USFWS, CDFG, and CNPS guidelines (USFWS 2002; CDFG 2000; CDFG 2009; CNPS 2001).

2.3.4. California Red-legged Frog Site Assessment

A California red-legged frog habitat assessment survey was conducted by H. T. Harvey & Associates herpetologist N. Sisk, M.S., on 1 April 2010 per the requirements of the *Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog* issued by the U. S. Fish and Wildlife Service (USFWS 2005). The survey was conducted by walking the BSA plus an additional 0.25 mi upstream and downstream along the San Antonio River, looking for California red-legged frogs and assessing habitat suitability for the species. The survey focused on assessing the BSA and the immediately surrounding areas for their potential to support the California red-legged frog through an evaluation of on-site habitat conditions. Biotic habitats within 1 mi of the project area were also assessed for potential suitability as habitat for this species. A review of background resources was conducted prior to and following the fieldwork.

2.3.5. Protocol-level California Red-legged Frog Surveys

Following the most recent guidance issued by the USFWS (2005), daytime and nighttime protocol-level California red-legged frog surveys were conducted within the BSA on 17 May 2010 by H. T. Harvey & Associates herpetologist Steve Carpenter, B.S.; on 24 May 2010 by S. Carpenter and N. Thorngate; on 8 June 2010 by S. Carpenter and H. T. Harvey & Associates herpetologist J. Wilkinson, Ph.D.; on 28 June 2010 by J. Wilkinson and H. T. Harvey & Associates field biologist Y. Chaver, B.S.; and on 22 July 2010 by S. Carpenter and N. Thorngate. The site assessment and datasheets for the protocol-level survey are provided in Appendix C.

2.4. Agency Coordination and Professional Contacts

H. T. Harvey & Associates biologists K. Hardwicke and S. Rottenborn, Ph.D., had conversations with Tom Edell of Caltrans District 5 on 9 and 11 March 2010 regarding necessary survey effort for completion of the Project, as well as refining elements of preliminary Project construction methods for avoidance and minimization.

2.5. Limitations That May Influence Results

No focused or presence/absence protocol-level surveys were conducted for any special-status species other than plants and California red-legged frogs. For other species, focused surveys or surveys during particular seasons were not deemed necessary given the particular species involved and project-specific conditions. For some species, such as the South-Central California Coast steelhead, San Joaquin kit fox, and least Bell's vireo, inferring presence was reasonable given the species' known or potential occurrence in the site vicinity and potential for dispersal onto the site. For these species, which may occur only infrequently and irregularly, focused surveys were not deemed appropriate because a negative finding would not necessarily guarantee that the species would not be present during Project construction. For other species, such as the California tiger salamander and arroyo toad, assessment of habitat conditions and occurrence records in the region, coupled with observations during the intensive surveys conducted for California red-legged frogs, was adequate to determine that the species were absent. In either case (i.e., whether inferring presence based on available information or determining absence based on the lack of suitable habitat), information obtained during more focused surveys or at a time of year more conducive for detecting the species would not have altered the determinations regarding potential presence or absence of these species. This methodology is consistent with the generally accepted standards for the preparation of an NES in that it may recommend further, focused surveys to determine presence/absence of species with potential to be present.

No access limitations were encountered during surveys of the BSA or the proposed staging area.

Chapter 3. Results: Environmental Setting

3.1. Description of the Existing Biological and Physical Conditions

3.1.1. Study Area

The Project site is located within the Bradley USGS 7.5-minute quadrangle in southern Monterey County (Figure 1). The BSA encompasses all areas and features expected to be temporarily or permanently affected by the Project. Areas expected to be permanently affected fall within the PIA, while all areas of direct impacts, both temporary and permanent, fall within the PIA (Figure 3). These include staging areas, road widening areas, existing bridge and approach removal areas, and the new bridge crossing over the San Antonio River.

The BSA comprises approximately 12.24 ac. It is situated along the San Antonio River located approximately 4 mi downstream of the San Antonio Reservoir, in unincorporated southern Monterey County. The surrounding land is dominated by extensive annual grasslands and oak savannahs used for grazing. The land to the north supports an active vineyard, and a few ranch houses and associated buildings are located immediately south of the BSA. The San Antonio River riparian corridor continues upstream and downstream of the Project site within the grassland and oak savannah landscape. The San Antonio River flows from the San Antonio Reservoir northeast into the Salinas River, which flows north through the Salinas Valley for approximately 85 mi before emptying into Monterey Bay.

3.1.2. Physical Conditions

Elevation ranges from approximately 560 to 675 ft National Geodetic Vertical Datum (NGVD). Natural topography and vegetation on the site consists primarily of a broad, riverine riparian floodplain associated with the San Antonio River. This floodplain is surrounded by steep rolling foothill grassland, sage scrub, and oak woodland situated along each side of the river corridor. Average annual precipitation is approximately 10 inches per year in this part of Monterey County, and average annual temperatures are between 55 to 55 degrees Fahrenheit (ºF) (SCS 1978). Most of the yearly precipitation occurs from November through March.

The USFWS has classified a number of wetland resources within the BSA under the NWI wetland classification system. The reach of the San Antonio River within the BSA is classified as riverine, intermittent streambed, seasonally flooded. Wetlands associated with the channel include palustrine scrub/shrub, temporarily flooded; palustrine scrub/shrub, seasonally flooded; and palustrine scrub/shrub, emergent, seasonally flooded.

3.1.3. Biological Conditions in the Biological Study Area

We identified nine biotic habitats/land use types (Table 1) on site within the BSA. These include: 1) California annual grassland; 2) willow riparian scrub; 3) developed; 4) aquatic; 5) freshwater emergent wetland; 6) California sage scrub; 7); Valley oak riparian woodland; 8) seasonal wetland and, 9) mule fat riparian scrub. Appendix D provides a list of all plant species identified within or directly adjacent to the BSA.

Table 1: Habitat Types Present within the BSA.

Habitat Type	Acreage within the BSA	Percent (%) of the BSA
California Annual Grassland	6.64	54 %
Developed	1.56	13%
Willow Riparian Scrub	1.47	12 %
Aquatic	1.22	10 %
Freshwater Emergent Wetland	0.54	4 %
California Sage Scrub	0.46	4 %
Valley Oak Riparian Woodland	0.20	2 %
Seasonal Wetland	0.13	1 %
Mule Fat Riparian Scrub	0.03	> 1 %
TOTAL	**12.24**	**100 %***

* including rounding error

3.1.3.1. California Annual Grassland

Vegetation. Approximately 6.64 ac of grasslands occur within the BSA in upland areas on both sides of the river channel. Soils tend to be more sandy on the southern side and near the sandstone outcrops on the western side of the existing bridge, and loamy on the northern side to the east of the existing bridge. In both areas, these grasslands have been disturbed by cattle grazing, occasional scouring floods associated with the river, and increased foot traffic, especially in areas nearest the existing roads and under the bridge. The vegetation is dominated by non-native grasses such as ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), wild oats (*Avena fatua*), and red brome (*Bromus rubens* var. *madritensis*). Other weedy, non-native species are common, such as black mustard (*Brassica nigra*), milk thistle (*Silybum marianum*), redstem filaree (*Erodium cicutarium*), and, closer to the river, yellow sweetclover (*Melilotus indicus*). Some areas, such as the sandy benches in the uplands adjacent to riparian vegetation, support a relatively diverse suite of native grassland species, such as bigleaf lupine (*Lupinus latifolius*), telegraph weed (*Heterotheca grandiflora*), narrow-leaf milkweed (*Asclepias fascicularis*), red sandspurrey (*Spergularia rubra*), valley lessingia (*Lessingia glandulifera*), and sandysoil suncup (*Camissonia strigulosa*). Areas underlain with sandier soils also have sparser growth, while areas underlain with loamier, more disturbed soils has a high incidence of thatch and very little bare ground. Isolated coyote brush (*Baccharis pilularis*) and French broom occur scattered in more disturbed areas and along the steep northern bank. California sagebrush (*Artemisia californica*) has colonized the disturbed roadside along the southern bridge approach. This habitat type closely resembles Holland's (1986) Non-native Grassland (42200).

Wildlife. Annual grasslands lack the structural diversity necessary to support a high diversity of wildlife species, but these habitats are used as foraging, burrowing, and nesting locations by many taxa. Much of the ruderal grassland within the BSA occurs on the sandy terraces bordering the stream, and these areas offer suitable nesting habitat for western pond turtles (*Actinemys marmorata*), as well as burrowing and foraging habitat for silvery legless lizards (*Anniella pulchra pulchra*) and coast horned lizards (*Phrynosoma blainvillii*). Western toads (*Bufo boreas*), western fence lizards (*Sceloporus occidentalis*), and gopher snakes (*Pituophis catenifer*) are also expected to use the grassland habitats throughout the BSA. While the ruderal grassland patches within the BSA are too limited in extent to support bird species associated with extensive grasslands, many bird species that nest or shelter in the more extensive grasslands nearby or in other adjacent habitats are likely to forage in these grassland patches from time to time. Such species include white-tailed kites (*Elanus leucurus*), red-shouldered hawks (*Buteo lineatus*), red-tailed hawks (*Buteo jamaicensis*), loggerhead shrikes (*Lanius ludovicianus*), and western meadowlarks (*Sturnella neglecta*). House finches (*Carpodacus mexicanus*), golden-crowned sparrows (*Zonotrichia atricapilla*), and white-crowned sparrows (*Zonotrichia leucophrys*) were observed foraging in the grasslands during the site visit. Burrows of Botta's pocket gophers (*Thomomys bottae*) and California ground squirrels (*Spermophilus beecheyi*) were found in the ruderal grasslands within the BSA.

3.1.3.2. DEVELOPED

Vegetation. The existing bridge and road approaches on each bank comprise approximately 1.56 ac of developed habitat within the BSA. These areas support little if any vegetation. Short-statured roadside weeds such as horehound (*Marrubium* *vulgare*) and non-native grasses adapted to the increased runoff found next to hardscape, such as foxtails (*Hordeum murinum*) occur sporadically in the compacted gravelly areas next to the roads themselves. The existing bridge is built of metal grating and as such supports no vegetation.

Wildlife. The paved roadway within the BSA serves as wildlife habitat only in a very limited capacity. The road is likely to be used by wildlife during movements back and forth across the road, and reptiles such as western fence lizards and gopher snakes may bask on the road surface in order to raise their body temperature. Acorn woodpeckers (*Melanerpes formicivorus*) are known to forage occasionally on roadways for invertebrate prey species such as ants, likely because of the increased visibility of approaching terrestrial predators. The existing bridge within the BSA offers some structure for nesting birds such as black phoebes (*Sayornis nigricans*) and cliff swallows (*Petrochelidon pyrrhonota*), and evidence of old nests of both species were observed on the bridge during the site visit. The steel surface and open structure of the bridge render it unsuitable for use by roosting bats.

3.1.3.3. WILLOW RIPARIAN SCRUB

Vegetation. Approximately 1.47 ac of the BSA contains willow riparian scrub habitat. These areas are closely associated with the banks of the river and contain a thick, brushy mix of native willow species such as sandbar willow (*Salix exigua*), Goodding's willow (*Salix gooddingii*), and red willow (*Salix laevigata*). On the outer, upland edges of this habitat, Fremont's cottonwoods (*Populus fremontii*) and blue elderberry (*Sambucus mexicana*) are interspersed among taller, more tree-like red willows. Closer to the lower stream bank, near the OHW mark, Goodding's willows occur as multi-stemmed trees. Thickets of sandbar willow occur in frequently flooded areas, or even as emergents below the OHW mark. Much of the sandy in-stream island and the shallow waters surrounding this sandbar support willow scrub. Patches also occur along the southern bank, where the banks are shallower, and in a large continuous area on a low shelf on the northern bank to the east of the proposed bridge. Due to frequent flooding, extreme shade, and thick carpets of leaf litter, the herbaceous understory in this habitat is sparse and infrequent, supporting facultative wetland species such as bird's-foot trefoil (*Lotus corniculatus*). This habitat type closely resembles Holland's (1986) Central Coast Riparian Scrub (63200).

Wildlife. Riparian habitats in California are exceptionally productive habitats, offering high habitat value for a wide array of wildlife species and contributing disproportionately to landscape-level biodiversity. The presence of water and abundant invertebrate fauna provide foraging opportunities for many taxa, and the diverse habitat structure provides ample cover and nesting opportunities. The robust willow riparian corridor within the BSA is expected to support a high diversity of wildlife species.

Leaf litter, downed trees, low-growing shrubs and forbs, and fallen logs provide upland refugia for arboreal salamanders (*Aneides lugubris*), slender salamanders (*Batrachoseps* spp.), western toads, and Pacific chorus frogs (*Pseudacris regilla*). Open sandy terraces within the riparian zone provide ideal habitat for silvery legless lizards and coast horned lizards; and western fence lizards, southern alligator lizards (*Elgaria multicarinata*), Skilton's skinks (*Plestiodon skiltonianus*), and gopher snakes likely forage in the riparian zone in and adjacent to the BSA.

Healthy riparian habitats such as that found within the BSA provide critical nesting and foraging habitat for a diversity of bird species during the various stages of their annual cycle. During the site visit in February 2010, over-wintering birds including white-crowned sparrows, golden-crowned sparrows, yellow-rumped warblers (*Dendroica coronata*), and ruby-crowned kinglets (*Regulus calendula*) were observed foraging throughout the riparian forest within the BSA, while year-round residents such as northern flickers (*Colaptes auratus*), black phoebes, song sparrows (*Melospiza melodia*), and Bewick's wrens (*Thryomanes bewickii*) were observed beginning to establish breeding territories. Other breeding birds expected to use the willow riparian habitat within the BSA include tree swallows (*Tachycineta bicolor*), ash-throated flycatchers (*Myiarchus cinerascens*), Pacific-slope flycatchers (*Empidonax difficilis*), warbling vireos (*Vireo gilvus*), common yellowthroats (*Geothlypis trichas*), yellow warblers (*Dendroica petechia*), spotted towhees (*Pipilo maculatus*), and California towhees (*Melozone crissalis*). Many neotropical migratory birds, including western tanagers (*Piranga ludovicianus*), willow flycatchers (*Empidonax traillii*), Swainson's thrushes (*Catharus ustulatus*), MacGillivray's warblers (*Oporornis tolmiei*), and Wilson's warblers (*Wilsonia pusilla*), are expected to use the site during stopover periods.

The riparian corridor offers suitable habitat for a variety of mammalian species: pocket gopher and broad-footed mole (*Scapanus latimanus*) burrows were observed in open areas of the riparian forest, and extensive American beaver (*Castor canadensis*) activity was evident in the willow thickets within the BSA downstream of the existing bridge. Several bat species, including Brazilian free-tailed bats

(*Tadarida brasiliensis*), California myotis (*Myotis californicus*), Yuma myotis (*M. yumanensis*), pallid bats (*Antrozous pallidus*), and western mastiff bats (*Eumops perotis*), are expected to forage aerially over the entire BSA, and medium-sized mammals such as raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*), and non-nativeVirginia opossums (*Didelphis virginianus*) are likely to forage in the riparian zone.

3.1.3.4. AQUATIC

Vegetation. Aquatic, open water habitat covers approximately 1.22 ac of the site within the OHW marks of the San Antonio River. This water is cool (average temperature approximately 65° F) and has moderate to swift flows. River flows in this reach are heavily affected by water control activities associated with San Antonio Reservoir upstream of the site. For example, flows increased and waters were 1-2 ft deeper after the release of water from the reservoir in early June of 2010. Water quality was generally very clear prior to and following recovery from this release, but was very turbid in the 2-3 week time period just after the release. The substrate is a mix of silt and isolated large cobbles, with the channel branch to the north of the in-stream island supporting the only riffle observed on-site. This riffle has an all-cobble substrate and fast flows approximately 1 ft deep. Water depth in the remainder of the channel averages 3-4 ft deep, although a 7-8 ft deep pool was observed at the far western edge of the BSA.

A beaver dam was located bridging both channels on the western end of the in-stream island. The beaver dam on the northernmost channel was removed, possibly by high flows associated with the release, at some point between the June and July 2010 surveys. Along the northern riverbank near a sandstone outcropping (Figure 3), strong hydrogen sulfide plumes were observed. Vegetation within the open water habitat was limited but included aquatic species such as duckweeds (*Lemna* sp.).

Wildlife. Many wildlife species are expected to occur in the aquatic habitat within the BSA. Non-native aquatic predators such as crayfish (*Procambarus clarkii*), bullfrogs (*Rana catesbeiana*), and green sunfish (*Lepomis cyanellus*) are expected to occupy the reach of the San Antonio River within the BSA. Historically the San Antonio River supported a steelhead/rainbow trout run, and in recent years, the waterway has been stocked with non-migratory rainbow trout. No absolute barriers between the Salinas River Mouth and the San Antonio Dam have been identified by NMFS or CDFG, so occasional steelhead could occasionally occur within the BSA, but the fine sands comprising the substrate of the stream in this reach of the river do not constitute a suitable spawning substrate. Other native fish species likely to occur within the BSA include hitch (*Lavinia exilicauda*), speckled dace (*Rhinicthys osculus*), and threespine stickleback (*Gasterosteus aculeatus*).

Common amphibians such as western toads and Pacific chorus frogs are characteristic of Monterey county streams and are known to breed in the aquatic areas of the Project's BSA. The deep and relatively slow-moving main stream within the BSA offers suitable aquatic habitat for western pond turtles, particularly adjacent to the existing bridge were partially submerged rocks offer basking sites. Great egrets (*Ardea alba*), American coots (*Fulica americana*), mallards (*Anas platyrhynchos*), and buffleheads (*Bucephala albeola*) were observed foraging in the main stream within the BSA. Several bat species, including California myotis, Yuma myotis, Brazilian free-tailed bats, pallid bats, western red bats (*Lasiurus blossevillii*), and western mastiff bats are expected to forage aerially for insects over the stream.

3.1.3.5. FRESHWATER EMERGENT WETLAND

Vegetation. Approximately 0.54 ac of the BSA supports freshwater emergent wetlands. These areas are dominated by a thick, 4-ft tall growth of cattails (*Typha latifolia*) interspersed with California bulrushes (*Schoenoplectus californicus*). In areas with slower flows or where protected on the downstream side of lush growths of cattails and bulrushes, watercress (*Nasturtium officinale*) occurs. This habitat is found on shallow underwater benches within the low flow channel of the San Antonio River and within the BSA often occurs along the outer, wetland edges of the willow riparian scrub on-site. Smaller patches of this habitat occur on the river banks to the west of the existing bridge, and here are associated with stinging nettles (*Urtica dioica*) along their upland edges. Large patches occur mostly on the southern bank and on the southern shore of the in-stream island within the BSA, although the wetlands on-site are not as large or contiguous as the thick marshes associated with the northern bank and bend in the river channel just to the east of the BSA (Figure 3). This habitat type closely resembles Holland's (1986) Coastal and Valley Freshwater Marsh (52410).

Wildlife. The emergent wetlands within the BSA are extensive enough to provide suitable habitat for a number of wildlife species. Breeding amphibians such as Pacific chorus frogs may attach their egg masses to the bases of sedges, rushes, and other vegetation occurring along the moist edge of the stream, and may forage on invertebrates living within the shelter of the hydrophytic vegetation there. The cattail beds dominating these emergent wetland patches comprise nesting habitat for common yellowthroats and red-winged blackbirds (*Agelaius phoeniceus*), both of which were observed using the BSA during the site visit; these vegetation patches also offer potential nesting sites for colonies of tricolored blackbirds (*Agelaius tricolor*). Beavers may forage on cattails and sedges during the summer months.

3.1.3.6. CALIFORNIA SAGE SCRUB

Vegetation. California sage scrub occurs in discrete patches, comprising approximately 0.46 ac, along the steep, south-facing riverbank in the northwest corner of the BSA. This area supports an open, patchy canopy about 3-4 ft tall dominated by California sagebrush, mixed with other shrubs such as California buckwheat (*Eriogonum californicum*), sticky monkeyflower (*Mimulus guttatus*), holly-leaved cherry (*Prunus ilicifolia*), coyote brush, and poison oak (*Toxicodendron diversilobum*). The herbaceous layer is sparse but mostly comprised of native forbs in this habitat, and includes golden yarrow (*Eriophyllum confertiflorum*), California poppy (*Eschscholzia californica*), and white nightshade (*Solanum americanum*). This habitat occurs associated with sandstone outcrops and boulders that are located with the steep cutbank in this area, and a group of small sandstone cave openings are located to the west of the existing bridge (Figure 3). This habitat type most closely corresponds to Holland's (1986) description of Central (Lucian) Coastal Scrub (32200).

Wildlife. The sage scrub within the BSA provides only a small amount of wildlife habitat by virtue of its limited extent and isolation from other sage scrub habitat patches, so it is unlikely to support substantial populations of sage scrub specialists. However, several species are expected to use the sage scrub habitat within the BSA for foraging, nesting, and/or shelter. Amphibians such as California newts (*Taricha torosa*), and reptiles such as western fence lizards and coast horned lizards are expected to frequent this patch of habitat for foraging and shelter. Ground- and shrub-nesting birds such as California quail (*Callipepla californica*), Bewick's wrens, and California towhees are likely to be found in the scrub in and near the BSA. It is possible that a pair of loggerhead shrikes could nest here. The mammal community expected to use the scrub within the BSA includes brush rabbits (*Sylvilagus bachmani*) and California pocket mice (*Chaetodipus californicus*).

3.1.3.7. VALLEY OAK RIPARIAN WOODLAND

Vegetation. Three large, mature valley oak (*Quercus lobata*) trees occur on the upper areas of the north bank to the east of the existing bridge. These trees have a combined canopy area of 0.2 ac, and comprise a small patch of valley oak riparian woodland habitat distinctly different in character than the willow riparian scrub that dominates much of the riparian habitat on site. The open understory in this area is comprised of native and non-native upland species indicative of the surrounding California annual grassland in composition and vegetation structure. The trees themselves have a diameter at breast height (dbh) of approximately 30, 36, and 32 inches, and are up to 50 ft tall. This habitat most closely resembles Holland’s (1986) Valley Oak Woodland (71130) in character, although it is within a riparian area. This is likely due to the reduced hydrological inputs received by the steep upper northern bank on which this habitat type is located within the BSA.

Wildlife. The wildlife species expected to use the valley oak riparian habitat within the BSA are similar to those described above for the willow riparian habitat. Additionally, oak-associated birds such as acorn woodpeckers, oak titmice (*Baeolophus inornatus*), and white-breasted nuthatches (*Sitta carolinensis*) were observed utilizing the valley oaks within the BSA.

3.1.3.8. SEASONAL WETLAND

Vegetation. Approximately 0.13 ac of the BSA supports seasonal wetlands associated with periodic flooding of the mid-level banks of the San Antonio River. These areas do not receive a sufficiently consistent source of riverine hydrology to support the growth of emergent hydrophytes such as seen in the freshwater emergent wetlands on-site. Instead, they support a mix of native and non-native hydrophytes that are adapted to soil saturation or shorter periods of flooding. Species observed in these areas included curly dock (*Rumex crispus*), clustered dock (*Rumex conglomeratus*), swamp knotweed (*Polygonum punctatum*), sneezeweed (*Helenium puberulum*), heliotrope (*Heliotropium curassavicum*), and wire rush *(Juncus balticus*).

Wildlife. The small patches of seasonal wetlands within the BSA are expected to support amphibian species similar to those described above for Freshwater Emergent Wetland. The vegetation is too low and limited to host nesting birds, although birds nesting elsewhere in the Project area may forage in this habitat on occasion. Small mammals may forage on the seasonal vegetation, as well.

3.1.3.9. MULE FAT RIPARIAN SCRUB

Vegetation. A small (0.03 ac) patch of mule fat (*Baccharis salicifolia*) riparian scrub occurs within the BSA on a low-lying bank area to the east of the existing bridge. This area is heavily dominated by a low (4 ft) canopy of mule fat shrubs and supports few other species beyond sparse non-native grass (foxtail) herbaceous cover. This habitat most closely resembles Holland's (1986) Mule fat Scrub (63310).

Wildlife. The wildlife species expected to use the mule fat riparian habitat within the BSA consist of a subset of those described above for the willow riparian habitat. Shrub-nesting birds such as bushtits (*Psaltriparus minimus*) were observed near the BSA and are likely to utilize the mule fat shrubs for nesting and foraging.

3.2. Regional Species and Habitats of Concern

3.2.1. Overview and Methods

The existing bridge and approach roads, riparian areas and grasslands dominate the Project area. Effects on sensitive riparian, wetland, and aquatic habitats are undesirable, and as such, Project plans and BMPs have been carefully developed to minimize direct and indirect effects on these habitat types within the BSA (Figure 3).

Special-status plant and wildlife species that occur in the Project region are presented in Table 2. Those species for which potential habitat is present in the BSA are noted and are discussed in further detail in Sections 4.2 and 4.3. Natural communities of special concern are discussed in Chapter 4.1.

3.2.2. Special-status Plant Species

Many of the special-status plant species that occur in the region are associated with habitat or soil types that do not occur within the BSA. Such areas that are absent from the BSA include serpentine soils, alkaline soils, clay soils, vernal pools, and saline salt marsh habitat. Additionally, many of the plant species that can potentially occur in the Project region are only found outside the elevation range of the BSA. Special-status plants considered for occurrence within the BSA are listed in Table 2. CNDDB records of special-status plants within the vicinity of the BSA are shown in Figure 3. Protocol-level surveys were targeted for those plants for which suitable habitat occurs on-site (i.e., Habitat Present, HP, Table 2); however, surveys were floristic in nature and all plant species found within the BSA were identified to a level sufficient to determine whether any were special-status.

3.2.3. Special-status Animal Species

H. T. Harvey & Associates biologists evaluated the list of special-status animal species that occur in the region, developed from the resources described in Section 2.2.2, for their potential to occur within the BSA (Table 2). Several special-status animal species known to occur in the broader southern Monterey County region were rejected for occurrence in the BSA because the Project area lacks suitable habitat and/or is outside of the range of the species. Several special-status species that occur in the region may occur within the BSA, but only as uncommon to rare visitors, migrants, or transients and are not expected to reside or breed on the site.

CNDDB records of special-status animals within the vicinity of the BSA are shown on Figure 4.

Table 2: Potential for Special-status Species and Critical Habitat to Occur in the BSA.

COMMON NAME	SCIENTIFIC NAME	*STATUS	HABITAT	CRITCAL HABITAT		PRESENCE	JUSTIFICATION
				DESIGNATED?	ON SITE?		
FEDERAL/STATE LISTED							
Santa Lucia purple amole	*Chlorogalum purpureum* var. *purpureum*	FT	Gravelly or clay soils in chaparral, cismontane woodland, and valley and foothill grassland	Yes	No	A	Suitable edaphic conditions not present within BSA. Not observed during protocol-level surveys.
Longhorn fairy shrimp	*Branchinecta longiantenna*	FE	Shallow ephemeral pools in grasslands or wet meadows	Yes	No	A	No suitable habitat within the BSA.
Vernal pool fairy shrimp	*Branchinecta lynchi*	FE	Shallow ephemeral pools in grasslands or wet meadows	Yes	No	A	No suitable habitat within the BSA.
Conservancy fairy Shrimp	*Branchinecta conservatio*	FE	Shallow ephemeral pools in grasslands or wet meadows, often alkaline playa pools	Yes	No	A	No suitable habitat within the BSA.
Smith's blue butterfly	*Euphilotes enoptes smithii*	FE	This species has an obligate association with two species of native buckwheat: coast buckwheat and/or sea cliff buckwheat.	No		A	BSA is outside the current known distribution of the species, and no suitable host plants occur within the BSA.

COMMON NAME	SCIENTIFIC NAME	*STATUS	HABITAT	CRITCAL HABITAT		PRESENCE	JUSTIFICATION
				DESIGNATED?	ON SITE?		
Steelhead (South-Central California Coast)	*Oncorhynchus mykiss irideus*	FT	Spawns in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for one or more years before migrating to the ocean.	Yes	Yes, within the San Antonio River channel	HP	The San Antonio River below the dam is considered to be critical habitat for this species. Steelhead were documented in the stream historically, and there are no absolute barriers between the BSA and the Salinas River Mouth, so steelhead could potentially migrate up to the Project area. However the current steelhead run in the Salinas River and its tributaries is estimated to be very low and aquatic habitat quality is poor due to low and irregular flows, warm water temperatures and presence of exotic predators, so we expect steelhead to occur in extremely low densities at most.
California tiger salamander	*Ambystoma californiense*	FT, ST	Vernal or temporary pools in annual grasslands or open woodlands.	Yes	No	HP/SA	Potentially suitable breeding habitat for this species occurs in the Project vicinity, and the BSA itself contains suitable foraging and aestivation habitat, though no still ephemeral pools suitable for breeding habitat occur on the site. However, regular vernal pool surveys at the Camp Roberts Army National Guard training facility south of the BSA have failed to detect any California tiger salamanders since 2001 (CA ARNG 2009), indicating the species' absence from the region. Not expected to occur within the BSA.

COMMON NAME	SCIENTIFIC NAME	*STATUS	HABITAT	CRITCAL HABITAT		PRESENCE	JUSTIFICATION
				DESIGNATED?	ON SITE?		
Santa Cruz long-toed salamander	*Ambystoma macrodactylum croceum*	FE, SE, SP	Occurs in dense riparian vegetation in 11 locations in southern Santa Cruz County and northern Monterey County.	No		A	BSA is outside the current known distribution of the species.
California red-legged frog	*Rana draytonii*	FT, CSSC	Streams, freshwater pools, and ponds with emergent or overhanging vegetation.	Yes	No	HP/SA	The historical distribution of the red-legged frog includes the BSA, and although there are no records of the species in the San Antonio River, the river provides structurally suitable habitat. Well-established populations of predatory species such as bullfrogs limit the suitability of this habitat for red-legged frogs, and no red-legged frogs, larvae, or egg masses were detected during protocol-level surveys in 2010.
Arroyo Toad	*Bufo californicus*	FE, CSSC	Sandy streambeds in cottonwood, sycamore, and willow riparian forests with stable, exposed sandy terraces for burrowing and still, shallow pools for breeding.	Yes	No	HP/SA	Arroyo toads have been documented in the San Antonio River upstream of the San Antonio Reservoir as recently as 1996 (USFWS 1999). Populations of sunfish, bullfrogs, and other non-native predators in the San Antonio River downstream of the reservoir preclude the persistence of a population of arroyo toads in the BSA, and no arroyo toads were observed during multiple focused and protocol-level surveys for other special-status amphibians. The species is thus not expected to occur within the BSA.
Blunt-nosed leopard lizard	*Gambelia silus*	FE, SE, SP	Open, sparsely vegetated areas in semi-arid grasslands, alkali flats, and washes.	No		A	BSA is outside of the current known range of the species.

COMMON NAME	SCIENTIFIC NAME	*STATUS	HABITAT	CRITCAL HABITAT		PRESENCE	JUSTIFICATION
				DESIGNATED?	ON SITE?		
California condor	*Gymnogyps californianus*	FE, SE, SP	Nests in caves in steep, isolated cliffs or cavities in mature redwood trees. Forages over grasslands, open woodlands, and along coastal cliffs and beaches.	No		A	California condors forage in flat grasslands and rolling hills in the Salinas Valley, and may fly over the BSA on occasion, but are not expected to forage or roost within the BSA itself. The BSA does not offer suitable nesting habitat for the species.
Bald eagle	*Haliaeetus leucocephalus*	SE, SP	Occurs mainly along seacoasts, rivers, and lakes; nests in tall trees or in cliffs, occasionally on electrical towers. Feeds mostly on fish.	No		SP	Bald eagles breed along the shores of nearby Lake Nacimiento and Lake San Antonio, and a pair of eagles was observed using a large stick nest in a sycamore approximately 150 ft east of the BSA.
Yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FC, SE	Breeds in large patches of dense mature riparian vegetation near meandering waterways.	No		A	BSA is outside of the current known distribution of this species, and the BSA does not provide suitable habitat for the species.
Least Bell's vireo	*Vireo bellii pusillus*	FE, SE	Nests in heterogeneous riparian habitat, often dominated by cottonwoods (*Populus* sp.) and willows (*Salix* sp.).	Yes	No	HP	The BSA falls within the historical distribution for this species, and although the species' range has contracted substantially and no breeding individuals have been documented in the area in recent years (Roberson and Tenney 1993), occasional individuals have been detected nearby along the upper Salinas River (Camp Roberts INRMP 2009, CNDDB 2011). The BSA contains potentially suitable breeding habitat for the species, though there is a low probability of occurrence.
Giant kangaroo rat	*Dipodomys ingens*	FE, SE	Large areas of open, gently sloping, sparsely vegetated grasslands on fine, sandy loam soils.	No		A	BSA is outside of the current distribution of the species.

COMMON NAME	SCIENTIFIC NAME	*STATUS	HABITAT	CRITCAL HABITAT		PRESENCE	JUSTIFICATION
				DESIGNATED?	ON SITE?		
Morro Bay kangaroo rat	*Dipodomys heermanni morroensis*	FE, SE	Stabilized dunes, coastal scrub, and maritime chaparral on sandy soils in san Louis Obispo County south of Morro Bay.			A	BSA is outside of the current distribution of the species.
San Joaquin kit fox	*Vulpes macrotis mutica*	FE, ST	Flat or gently sloping grasslands, mostly on the margins of the San Joaquin Valley and adjacent valleys.	No		HP	Kit foxes have been regularly documented south of the BSA at the Camp Roberts training facility. Populations in the vicinity appear to be declining, but individuals continue to be detected in extremely low densities. The BSA offers ostensibly suitable foraging and potential denning habitat, although no dens were observed on the site during reconnaissance surveys. There is a low probability of occurrence by this species within the BSA.
CNPS-LISTED SPECIES							
Bristlecone fir	*Abies bracteata*	CNPS 1B.3	Rocky areas in broadleaf upland forest, chaparral, and lower montane coniferous forest.	No		A	No suitable habitats occur within the BSA. Not observed during protocol-level surveys.
Santa Clara thorn-mint	*Acanthomintha lanceolata*	CNPS 4.2	Rocky, often serpentinite soils in chaparral, cismontane woodland, and coastal scrub.	No		A	No serpentine outcrops within BSA. Not observed during protocol-level surveys.
Douglas' fiddleneck	*Amsinckia douglasiana*	CNPS 4.2	Dry areas underlain by Monterey shale in cismontane woodland, valley and foothill grassland.	No		A	Suitable edaphic conditions not present in BSA. Not observed during protocol-level surveys.
Coast rock cress	*Arabis blepharophylla*	CNPS 4.3	Rocky areas in broadleaf upland forest, coastal bluff scrub, coastal prairie, and coastal scrub.	No		HP/SA	Marginally suitable habitat present near sandstone rock outcrops in coastal sage scrub, but not observed during protocol-level surveys.

COMMON NAME	SCIENTIFIC NAME	*STATUS	HABITAT	CRITCAL HABITAT		PRESENCE	JUSTIFICATION
				DESIGNATED?	ON SITE?		
Bishop manzanita	*Arctostaphylos obispoensis*	CNPS 4.3	Serpentine outcrops in closed-cone coniferous forest, chaparral, and cismontane woodland.	No		A	No serpentine outcrops within BSA. Not observed during protocol-level surveys.
Indian Valley spineflower	*Aristocapsa insignis*	CNPS 1B.2	Sandy areas in cismontane woodland.	No		A	Areas resembling cismontane woodland on-site are not sandy. Not observed during protocol-level surveys.
Carlotta Hall's lace fern	*Aspidotis carlotta-halliae*	CNPS 4.2	Serpentine soils in chaparral and cismontane woodland.	No		A	No serpentine habitat within BSA. Not observed during protocol-level surveys.
Ocean bluff milk-vetch	*Astragalus nuttallii* var. *nuttallii*	CNPS 4.2	Coastal bluff scrub, coastal dunes.	No		A	No suitable habitats occur within the BSA. Not observed during protocol-level surveys.
Crownscale	*Atriplex coronata* var. *coronata*	CNPS 4.2	Alkaline soils in chenopod scrub, valley and foothill grassland, and vernal pools.	No		A	No suitable habitats or edaphic conditions occur within the BSA. Not observed during protocol-level surveys.
Brewer's calandrinia	*Calandrinia breweri*	CNPS 4.2	Disturbed sites and burns with sandy or loamy soils in chaparral and coastal scrub/s	No		A	Coastal scrub within BSA not recently burned or disturbed. Not observed during protocol-level surveys.
Round-leaved filaree	*California macrophylla*	CNPS 1B.1	Clay soils in cismontane woodland, Valley and foothill grassland.	No		A	No suitable clay soils within BSA. Not observed during protocol-level surveys.
Large-flowered mariposa lily	*Calochortus uniflorus*	CNPS 4.2	Coastal prairie, coastal scrub, meadows and seeps, and North Coast coniferous forest.	No		HP/SA	Marginally suitable habitat present near riverbanks in coastal sage scrub, but not observed during protocol-level surveys.
Dwarf calycadenia	*Calycadenia villosa*	CNPS 1B.1	Fine-textured soils with rocks in chaparral, cismontane woodland, meadows and seeps, and valley and foothill grassland.	No		A	Outside species' elevation range. Not observed during protocol-level surveys.
Santa Cruz Mountains pussypaws	*Calyptridium parryi* var. *hesseae*	CNPS 1B.1	Openings in chaparral and cismontane woodland underlain with sandy or gravelly soils.	No		A	Outside species' elevation range. Areas resembling cismontane woodland on-site are not sandy. Not observed during protocol-level surveys.

COMMON NAME	SCIENTIFIC NAME	*STATUS	HABITAT	CRITCAL HABITAT		PRESENCE	JUSTIFICATION
				DESIGNATED?	ON SITE?		
Hardham's evening-primrose	*Camissonia hardhamiae*	CNPS 1B.2	Sandy, decomposed carbonate that has been disturbed or burned in chaparral and cismontane woodlands.	No		A	Suitable edaphic conditions not present in BSA. Not observed during protocol-level surveys.
San Luis Obispo owl's-clover	*Castilleja densiflora* ssp. *obispoensis*	CNPS 1B.2	Typically, moist, serpentine areas in meadows and seeps and valley and foothill grassland.	No		A	No serpentine habitat within BSA. Not observed during protocol-level surveys.
Monterey Coast paintbrush	*Castilleja latifolia*	CNPS 4.3	Sandy soils, closed-cone coniferous forest, openings in cismontane woodland, coastal dunes, and coastal scrub.	No		HP/SA	Marginally suitable habitat in sandy areas in coastal sage scrub, although these areas not likely to be sandy enough. Not observed during protocol-level surveys.
Lemmon's jewelflower	*Caulanthus coulteri* var. *lemmonii*	CNPS 1B.2	Pinyon and juniper woodland, valley and foothill grassland.	No		HP/SA	Marginally suitable habitat in the grasslands within the BSA, although these are somewhat disturbed. Not observed during protocol-level surveys.
Monterey ceanothus	*Ceanothus cuneatus* var. *rigidus*	CNPS 4.2	Sandy soils in closed-cone coniferous forest, chaparral, and coastal scrub.	No		HP/SA	Marginally suitable habitat in sandy areas in coastal sage scrub, although these areas may not be sandy enough. Not observed during protocol-level surveys.
Douglas' spineflower	*Chorizanthe douglasii*	CNPS 4.3	Sandy or gravelly soils in chaparral, cismontane woodland, coastal scrub, and lower montane coniferous forest.	No		HP/SA	Marginally suitable habitat in sandy areas in coastal sage scrub, although these areas may not be sandy enough. Not observed during protocol-level surveys.
Palmer's spineflower	*Chorizanthe palmeri*	CNPS 4.2	Serpentine outcrops in chaparral, cismontane woodland, and Valley and foothill grassland.	No		A	No serpentine outcrops within BSA. Not observed during protocol-level surveys.
Straight-awned spineflower	*Chorizanthe rectispina*	CNPS 1B.3	Chaparral, cismontane woodland, and coastal scrub.	No		HP/SA	Potentially suitable habitat within coastal scrub and near oaks in BSA, but species not observed during protocol-level surveys.

COMMON NAME	SCIENTIFIC NAME	*STATUS	HABITAT	CRITCAL HABITAT		PRESENCE	JUSTIFICATION
				DESIGNATED?	ON SITE?		
Potbellied spineflower	*Chorizanthe ventricosa*	CNPS 4.3	Serpentine soils in cismontane woodland and valley and foothill grassland.	No		A	No serpentine habitat within BSA. Not observed during protocol-level surveys.
Jolon clarkia	*Clarkia jolonensis*	CNPS 1B.2	Chaparral, cismontane woodland, coastal scrub, and riparian woodland.	No		HP/SA	Suitable habitat associated with the less-disturbed, non-wetland areas within the riparian corridor in the BSA. Not observed during protocol-level surveys.
Lewis' clarkia	*Clarkia lewisii*	CNPS 4.3	Broadleaf upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, and coastal scrub.	No		HP/SA	Potentially suitable habitat within coastal scrub and near oaks in BSA, but species not observed during protocol-level surveys.
San Antonio collinsia	*Collinsia antonina*	CNPS 1B.2	Chaparral and cismontane woodland.	No		A	Outside species' elevation range. Not observed during protocol-level surveys.
Gypsum-loving larkspur	*Delphinium gypsophilum* ssp. *gypsophilum*	CNPS 4.2	Chenopod scrub, cismontane woodland, and valley and foothill grassland.	No		A	Suitable edaphic conditions not present in BSA. Not observed during protocol-level surveys.
Umbrella larkspur	*Delphinium umbraculorum*	CNPS 1B.3	Cismontane woodland.	No		A	Outside species' elevation range. Not observed during protocol-level surveys.
Koch's cord moss	*Entosthodon kochii*	CNPS 1B.3	Growing on soil substrates in cismontane woodland.	No		A	Outside species' elevation range. Not observed during protocol-level surveys.
Yellow-flowered eriastrum	*Eriastrum luteum*	CNPS 1B.2	Sandy or gravelly soils in broadleaf upland forest, chaparral, and cismontane woodland.	No		A	Outside species' elevation range. Not observed during protocol-level surveys.
Virgate eriastrum	*Eriastrum virgatum*	CNPS 4.3	Sandy soils in coastal bluff scrub, chaparral, coastal dunes, and coastal scrub.	No		HP/SA	Marginally suitable habitat in sandy areas in coastal sage scrub, although these areas may not be sandy enough. Not observed during protocol-level surveys.
Clay buckwheat	*Eriogonum argillosum*	CNPS 4.3	Serpentinite or clay soils in cismontane woodland.	No		A	Suitable edaphic conditions not present in BSA. Not observed during protocol-level surveys.

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				DESIGNATED?	ON SITE?		
Protruding buckwheat	*Eriogonum nudum* var. *indictum*	CNPS 4.2	Serpentinite, clay soils in chaparral, chenopod scrub, and cismontane woodland.	No		A	Suitable edaphic conditions not present in BSA. Not observed during protocol-level surveys.
Stinkbells	*Fritillaria agrestis*	CNPS 4.2	Serpentinite, clay soils in chaparral, cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland.	No		A	Suitable edaphic conditions not present in BSA. Not observed during protocol-level surveys.
Phlox-leaf serpentine bedstraw	*Galium andrewsii* ssp. *gatense*	CNPS 4.2	Serpentine outcrops in chaparral, cismontane woodland, and lower montane coniferous forest.	No		A	No serpentine outcrops within BSA. Not observed during protocol-level surveys.
Hogwallow starfish	*Hesperevax caulescens*	CNPS 4.2	Mesic clays in valley and foothill grassland and shallow vernal pools.	No		A	No suitable habitats occur within the BSA. Not observed during protocol-level surveys.
Kellogg's horkelia	*Horkelia cuneata* ssp. *sericea*	CNPS 1B.1	Sandy or gravelly soils in openings in closed-cone coniferous forest, maritime chaparral, coastal dunes, and coastal scrub.	No		HP/SA	Marginally suitable habitat in sandy areas in coastal sage scrub, although these areas may not be sandy enough. Not observed during protocol-level surveys.
Coast iris	*Iris longipetala*	CNPS 4.2	Mesic soils in coastal prairie, lower montane coniferous forest, and meadows and seeps.	No		A	No suitable habitats occur within the BSA. Not observed during protocol-level surveys.
Santa Lucia dwarf rush	*Juncus luciensis*	CNPS 1B.2	Chaparral, Great Basin scrub, lower montane coniferous forest, meadows and seeps, and vernal pools.	No		A	No suitable habitats occur within the BSA. Not observed during protocol-level surveys.
Ferris' goldfields	*Lasthenia ferrisiae*	CNPS 4.2	Alkaline, clayey vernal pools.	No		A	No suitable habitats or edaphic conditions occur within the BSA. Not observed during protocol-level surveys.
Salinas Valley goldfields	*Lasthenia leptalea*	CNPS 4.3	Cismontane woodland and valley and foothill grassland.	No		HP/SA	Marginally suitable habitat in the grasslands within the BSA, although these are somewhat disturbed. Not observed during protocol-level surveys.

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Pale-yellow layia	*Layia heterotricha*	CNPS 1B.1	Alkaline or heavy clay soils in cismontane woodland, coastal scrub, pinyon and juniper woodland, and valley and foothill grassland.	No		A	Suitable edaphic conditions not present in BSA. Not observed during protocol-level surveys.
Jared's pepper-grass	*Lepidium jaredii* ssp. *jaredii*	CNPS 1B.2	Heavy clay, alkaline soils in valley and foothill grassland.	No		A	Suitable edaphic conditions not present in BSA. Not observed during protocol-level surveys.
Large-flowered leptosiphon	*Leptosiphon grandiflorus*	CNPS 4.2	Sandy soils in coastal bluff scrub, closed-cone coniferous forest, cismontane woodland, coastal dunes, coastal prairie, coastal scrub, and valley and foothill grassland.	No		HP/SA	Marginally suitable habitat in sandy areas in coastal sage scrub and grasslands within the BSA, Not observed during protocol-level surveys.
Small-leaved lomatium	*Lomatium parvifolium*	CNPS 4.2	Serpentinite soils in closed-cone coniferous forest, chaparral, coastal scrub, and riparian woodland.	No		A	No serpentine habitat within BSA. Not observed during protocol-level surveys.
Harlequin lotus	*Lotus formosissimus*	CNPS 4.2	Wetlands and roadsides in broadleaf upland forest, coastal bluff scrub, closed-cone coniferous forest, cismontane woodland, coastal prairie, coastal scrub, meadows and seeps, marshes and swamps, North Coast coniferous forest, and valley and foothill grassland.	No		HP/SA	Potentially suitable habitat in seasonal wetlands within the BSA, Not observed during protocol-level surveys.
San Luis Obispo County lupine	*Lupinus ludovicianus*	CNPS 1B.2	Sandstone or sandy soils in chaparral and cismontane woodland.	No		HP/SA	Suitable habitat in coastal sage scrub within the BSA, Not observed during protocol-level surveys.

COMMON NAME	SCIENTIFIC NAME	*STATUS	HABITAT	CRITCAL HABITAT		PRESENCE	JUSTIFICATION
				DESIGNATED?	ON SITE?		
Abbott's bush-mallow	*Malacothamnus abbottii*	CNPS 1B.1	Riparian scrub.	No		SP	One individual of *Malacothamnus abbottii x jonesii* identified in coastal sage scrub within northwest area of BSA. This plant is located outside of the PIA.
Indian Valley bush-mallow	*Malacothamnus aboriginum*	CNPS 1B.2	Rocky granitic soils, often in burned areas in chaparral and cismontane woodland.	No		A	Suitable edaphic conditions not present in BSA. Not observed during protocol-level surveys.
Davidson's bush-mallow	*Malacothamnus davidsonii*	CNPS 1B.2	Chaparral, cismontane woodland, coastal scrub, and riparian woodland.	No		HP/SA	Suitable habitat in coastal sage scrub within the BSA, Not observed during protocol-level surveys.
Jones' bush-mallow	*Malacothamnus jonesii*	CNPS 4.3	Chaparral and cismontane woodland.	No		SP	One individual of *Malacothamnus abbottii x jonesii* identified in coastal sage scrub within northwest area of BSA. This plant is located outside of the PIA.
Carmel Valley bush-mallow	*Malacothamnus palmeri* var. *involucratus*	CNPS 1B.2	Chaparral, cismontane woodland, and coastal scrub.	No		HP/SA	Suitable habitat in coastal sage scrub within the BSA, Not observed during protocol-level surveys.
Dusky-fruited malacothrix	*Malacothrix phaeocarpa*	CNPS 4.3	Burned or disturbed openings in closed-cone coniferous forest and chaparral.	No		A	No suitable habitats or edaphic conditions occur within the BSA. Not observed during protocol-level surveys.
Carmel Valley malacothrix	*Malacothrix saxatilis* var. *arachnoidea*	CNPS 1B.2	Rocky areas in chaparral and coastal scrub.	No		HP/SA	Suitable habitat in coastal sage scrub within the BSA, Not observed during protocol-level surveys.
Mt. Diablo cottonweed	*Micropus amphibolus*	CNPS 3.2	Rocky areas in broadleaf upland forest, chaparral, cismontane woodland, and valley and foothill grassland.	No		HP/SA	Marginally suitable habitat in areas near outcrops in coastal sage scrub and grasslands within the BSA, Not observed during protocol-level surveys.
Curly-leaved monardella	*Monardella undulata*	CNPS 4.2	Sandy soils in closed-cone coniferous forest, chaparral, coastal dunes, coastal prairie, coastal scrub, and ponderosa pine sandhills.	No		HP/SA	Marginally suitable habitat in sandy areas in coastal sage scrub, although these areas may not be sandy enough. Not observed during protocol-level surveys.

COMMON NAME	SCIENTIFIC NAME	*STATUS	HABITAT	CRITCAL HABITAT		PRESENCE	JUSTIFICATION
				DESIGNATED?	ON SITE?		
California spineflower	*Mucronea californica*	CNPS 4.2	Sandy soils in chaparral, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grassland/.	No		HP/SA	Marginally suitable habitat in sandy areas in coastal sage scrub, although these areas may not be sandy enough. Not observed during protocol-level surveys.
Adobe navarretia	*Navarretia nigelliformis* ssp*. nigelliformis*	CNPS 4.2	Vernally mesic, clayey or serpentinite soils in valley and foothill grassland and vernal pools.	No		A	No suitable habitats or edaphic conditions occur within the BSA. Not observed during protocol-level surveys.
California adder's-tongue	*Ophioglossum californicum*	CNPS 4.2	Vernally mesic soils in chaparral and valley and foothill grassland, vernal pool margins.	No		A	No suitable habitats or edaphic conditions occur within the BSA. Not observed during protocol-level surveys.
Fragile pentachaeta	*Pentachaeta fragilis*	CNPS 4.3	Sandy soils in chaparral and lower montane coniferous forest.	No		A	No suitable microhabitats occur within the BSA. Not observed during protocol-level surveys.
Gairdner's yampah	*Perideridia gairdneri* ssp. *gairdneri*	CNPS 4.2	Vernally mesic soils in broadleaf upland forest, chaparral, coastal prairie, valley and foothill grassland, and vernal pools.	No		A	Suitable edaphic conditions and microhabitat not present in BSA. Not observed during protocol-level surveys.
Michael's rein orchid	*Piperia michaelii*	CNPS 4.2	Coastal bluff scrub, closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub, and lower montane coniferous forest.	No		HP/SA	Potentially suitable habitat in coastal sage scrub. Not observed during protocol-level surveys.
Hickman's popcorn-flower	*Plagiobothrys chorisianus* var. *hickmanii*	CNPS 4.2	Vernal pools in closed-cone coniferous forest, chaparral, coastal scrub, and in marshes and swamps.	No		A	No suitable habitats occur within the BSA. Not observed during protocol-level surveys.
Hooked popcorn-flower	*Plagiobothrys uncinatus*	CNPS 1B.2	Sandy soils in chaparral, also cismontane woodland and valley and foothill grassland.	No		A	Outside species' elevation range. Not observed during protocol-level surveys.
Hoffmann's sanicle	*Sanicula hoffmannii*	CNPS 4.3	Serpentinite or clay soils in broadleaf upland forest, chaparral, and coastal scrub.	No		A	Suitable edaphic conditions not present in BSA. Not observed during protocol-level surveys.

COMMON NAME	SCIENTIFIC NAME	*STATUS	HABITAT	CRITCAL HABITAT		PRESENCE	JUSTIFICATION
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Maple-leaved checkerbloom	*Sidalcea malachroides*	CNPS 4.2	Disturbed areas in broadleaf upland forest, coastal prairie, coastal scrub, North Coast coniferous forest, and riparian woodland.	No		HP/SA	Suitable habitat associated with the less-disturbed, non-wetland areas within the riparian corridor in the BSA. Not observed during protocol-level surveys.
Santa Cruz microseris	*Stebbinsoseris decipiens*	CNPS 1B.2	Open, often serpentine areas in broadleaf upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, and valley and foothill grassland.	No		A	No serpentine habitat within BSA. Not observed during protocol-level surveys.
Mason's neststraw	*Stylocline masonii*	CNPS 1B.1	Sandy soils in chenopod scrub and pinyon and juniper woodland.	No		A	Suitable edaphic conditions and habitats not present in BSA. Not observed during protocol-level surveys.
Cook's triteleia	*Triteleia ixioides* ssp. *cookii*	CNPS 1B.3	Serpentinite seeps in closed-cone coniferous forest and cismontane woodland.	No		A	No serpentine seeps within BSA. Not observed during protocol-level surveys.
Dark-mouthed triteleia	*Triteleia lugens*	CNPS 4.3	Edges of broadleaf upland forest, chaparral, coastal scrub, and lower montane coniferous forest.	No		HP/SA	Marginally suitable habitat on edges of coastal sage scrub patches. Not observed during protocol-level surveys.
Marsh zigadenus	*Zigadenus micranthus* var. *fontanus*	CNPS 4.2	Vernally mesic, often serpentinite areas in chaparral, cismontane woodland, lower montane coniferous forest, meadows and seeps, and marshes and swamps.	No		A	No serpentine habitat within BSA. Not observed during protocol-level surveys.
CALIFORNIA SPECIES OF SPECIAL CONCERN							
Monterey roach	(*Lavinia symmetricus subditus*)	CSSC	Fairly warm streams and rivers flowing into Monterey Bay.	No		HP	Monterey roach are abundant in the Salinas River watershed, particularly in the southern streams (Watson 2010). The BSA provides suitable habitat for this species, and it is likely present within the river.

COMMON NAME	SCIENTIFIC NAME	*STATUS	HABITAT	CRITCAL HABITAT		PRESENCE	JUSTIFICATION
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Western spadefoot	(*Spea hammondii*)	CSSC	Grasslands, sandy washes, river floodplains, or other habitats with sandy or gravelly soils. Rainpools lasting at least 3 weeks are necessary for breeding.	No		HP	Suitable breeding habitat for this species occurs in the general Project vicinity, and the BSA itself contains suitable foraging and aestivation habitat, though no rainpools suitable for breeding habitat were observed on the site itself. The species may occur on the site.
Foothill yellow-legged frog	(*Rana boylii*)	CSSC	Partially shaded shallow streams and riffles with a rocky substrate. Occur in a variety of habitats in coast ranges.	No		HP/SA	The historical distribution of the foothill yellow-legged frog included areas in southern Monterey County, and although there are no records of the species in the San Antonio River, the river provides structurally suitable habitat, particularly upstream of the reservoir. However, no yellow-legged frogs were detected during protocol-level surveys for red-legged frogs, and if yellow-legged frogs were present, they should have been detectable. Therefore this species is determined to be absent from the BSA.
Western pond turtle	(*Actinemys marmorata*)	CSSC	Ponds, slow-moving streams and rivers, irrigation ditches, and reservoirs with abundant emergent and/or riparian vegetation.	No		HP	CNDDB records for this species occur in the Nacimiento and Salinas rivers in the Project vicinity. The BSA provides suitable nesting and aquatic habitat for this species.

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California horned lizard	(*Phrynosoma blainvillii*)	CSSC	Open habitats with sandy, loosely textured soils, such as chaparral, coastal scrub, annual grassland, and clearings in riparian woodlands with the presence of native harvester ants (*Pogonomyrmex barbatus*).	No		HP	A recent CNDDB record exists approximately 2 mi downstream of the BSA; other CNDDB records in the vicinity as well. The BSA provides suitable habitat for the species.
San Joaquin whipsnake	(*Masticophis flagellum ruddocki*)	CSSC	Flatlands, salt flats, and low foothills with scattered brush and sparse vegetation with squirrel burrows.	No		HP	San Joaquin whipsnakes have been documented in the Salinas Valley north of the BSA (Jennings and Hayes 1994, CNDDB). The BSA provides potentially suitable habitat where the more open sandy terraces of the stream support squirrel or other small mammal burrows.
Silvery legless lizard	(*Anniella pulchra pulchra*)	CSSC	Loosely textured, moist soils in chaparral, scrub, and riparian corridors featuring sandy terraces.	No		HP	The project area offers suitable soils in the sandy terraces and scrub within the BSA.
Northern harrier	(*Circus cyaneus*)	CSSC (breeding)	Nests and forages in grasslands and salt- or fresh-water marshes. Nests on the ground in shrubby vegetation or tall grasses.	No		A	Northern harriers have been observed in the Project vicinity at Lake San Antonio (eBird 2010). The BSA offers suitable foraging habitat but no suitable nesting habitat for the species. Northern harriers are only species of special concern when nesting.

COMMON NAME	SCIENTIFIC NAME	*STATUS	HABITAT	CRITCAL HABITAT		PRESENCE	JUSTIFICATION
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Burrowing owl	(*Athene cunicularia*)	CSSC	Found in open, dry grasslands, deserts, and ruderal areas. Requires suitable small mammal burrows for shelter and nesting.	No		HP	Burrowing owls are recorded in the CNDDB as occurring just south of the Project area at the Camp Roberts Army national Guard training facility. The ruderal areas of the BSA could potentially provide habitat for burrowing owls, although the tall vegetation and proximity of trees and shrubs limit the suitability of the BSA for this species.
Vaux's swift	(*Chaetura vauxi*)	CSSC (breeding)	Redwood, Douglas fir, & other coniferous forests. Nests in large hollow trees & snags, and occasionally in chimneys. Often nests in flocks. Forages over most terrains & habitats.	No		A	Occasional individuals are likely to forage over the BSA, but the site does not offer suitable nesting habitat for the species. Vaux's swifts are only species of special concern while nesting.
Black swift	(*Cypseloides niger*)	CSSC (breeding)	Nests in coastal cliffs and under tall waterfalls.	No		A	Occasional individuals may forage over the BSA, but the site does not offer suitable nesting habitat for the species. Black swifts are only species of special concern while nesting.
Loggerhead shrike	(*Lanius ludovicianus*)	CSSC (breeding)	Grasslands, open woodlands, and other open areas featuring hunting perches and sharp branches or barbed wire for impaling prey items. Nests in dense patches of shrubbery.	No		HP	Loggerhead shrikes breed throughout the Salinas River watershed (Roberson and Tenney 1993), and have been observed in the Project vicinity at Lake San Antonio (Roberson and Tenney 1993, eBird 2010). The BSA offers suitable foraging and nesting habitat for the species.

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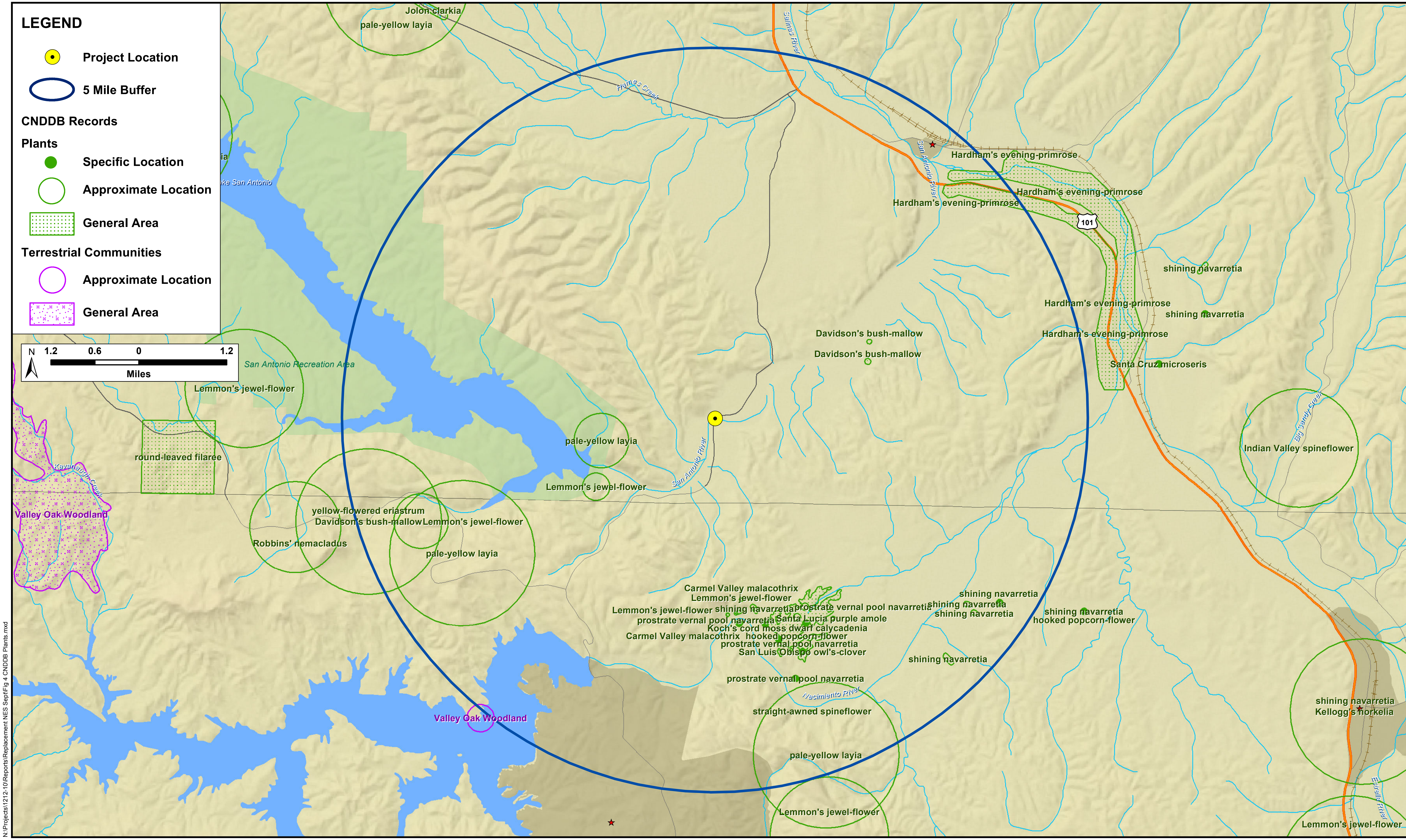
Yellow warbler	(*Dendroica petechia*)	CSSC (breeding)	Nests in dense stands of willow and other riparian habitat.	No		HP	Yellow warblers have been confirmed nesting near the BSA along the upper Salinas River downstream of its confluence with the San Antonio River (Roberson and Tenney 1993). The BSA offers suitable nesting habitat for the species.
Yellow-breasted chat	(*Icteria virens*)	CSSC (breeding)	Nests in extensive dense stands of willow and other riparian habitat.	No		A	Yellow-breasted chats have been documented nesting only rarely in the Project vicinity (Roberson and Tenney 1993). The BSA does not provide suitable nesting habitat for the species.
Tricolored blackbird	(*Agelaius tricolor*)	CSSC (breeding)	Nests colonially in cattails or other emergent vegetation around freshwater ponds.	No		HP	Tricolored blackbirds have been confirmed nesting near the Project site along the Salinas River just upstream of the confluence with the San Antonio River (Thorngate and Griffiths 2005). The BSA offers suitable nesting habitat for the species.
Western red bat	(*Lasiurus blossevillii*)	CSSC	Roosts in forest or woodlands, especially in or near riparian habitat.	No		HP	Western red bats have been documented throughout the Salinas River watershed (D. Johnston, pers obs). A few individuals could potentially roost in the Valley oak trees within the BSA, but not in sufficient numbers to form maternity roosts or to breed on-site.

COMMON NAME	SCIENTIFIC NAME	*STATUS	HABITAT	CRITCAL HABITAT		PRESENCE	JUSTIFICATION
				DESIGNATED?	ON SITE?		
Pallid bat	(*Antrozous pallidus*)	CSSC	Forages over many habitats; roosts in buildings, large oaks or redwoods, rocky outcrops and rocky crevices in mines and caves.	No		HP	Pallid bat roosts, including maternity colonies, have been documented in the Project vicinity on bridges over the Salinas River (D. Johnston pers. comm.). Although suitable roosting habitat is absent from the BSA, the species could forage on the site.
California mastiff bat	(*Eumops perotis californicus*)	CSSC	Found in central and south coastal California. Roosts primarily in cliffs or high buildings.	No		A	California mastiff bats are known to occur throughout the Salinas Valley (D. Johnston pers. comm.). The species is expected to forage in the BSA from time to time, but the site does not offer suitable roosting habitat.
Salinas pocket mouse	(*Perognathus inornatus psammophilus*)	CSSC	Open grasslands on alluvial sandy soils, often near stream courses.	No		HP	CNDDB records for Salinas pocket mice occur just south of the BSA. The BSA provides suitable habitat for this species.
Monterey dusky-footed woodrat	(*Neotoma fuscipes luciana*)	CSSC	Forested and chaparral habitats with dense to moderate cover.	No		A	The BSA does not provide large enough patches of moderate to dense shrub cover to support this species, and no nests were observed.
American badger	(*Taxidea taxus*)	CSSC	Burrows in grasslands and occasionally in infrequently disked agricultural areas.	No		HP	American badgers are widespread in the Salinas Valley, and multiple occurrences are recorded in the CNDDB near the BSA, on the Camp Roberts Army National Guard Training Facility. The BSA contains suitable badger habitat, although no dens were observed during the site visit.

COMMON NAME	SCIENTIFIC NAME	*STATUS	HABITAT	CRITCAL HABITAT		PRESENCE	JUSTIFICATION
				DESIGNATED?	ON SITE?		
STATE FULLY PROTECTED SPECIES							
Golden eagle	(*Aquila chrysaetos*)	SP	Breeds on cliffs or in large trees (rarely on electrical towers), forages in open areas.	No		HP	Golden eagles are well documented throughout the Project vicinity, and occasional individuals could forage in the grasslands and sandy terraces within the BSA, or nest in large oaks near the BSA (although the species is not expected to nest close to the BSA as long as bald eagles are also nesting nearby).
White-tailed Kite	(*Elanus leucurus*)	SP	Open habitats such as grassy plains, agricultural fields, open oak woodlands, and marshes. Nests in tall shrubs and trees.	No		HP	White-tailed kites occur in open riparian areas throughout the Salinas River watershed. The BSA provides suitable nesting and foraging habitat for the species, although no nests were observed during the site visit.

Key to Table 2 Abbreviations: Absent [A] - no habitat present and no further work needed. Habitat Present/Species Absent [HP/SA] - site conditions consistent with suitable habitat, but for other reasons (e.g., range or habitat quality), the species is not expected to occur. Habitat Present [HP] -habitat is, or may be present. The species may be present. Status: Federal Endangered (FE); Federal Threatened (FT); Federal Candidate for listing (FC); State Endangered (SE); State Threatened (ST); State Proposed Endangered (SPE); State Fully Protected (SP); State Rare (SR); California Species of Special Concern (CSSC); California Native Plant Society (CNPS).

CNPS List 1B = Plants rare, threatened, or endangered in California and elsewhere
CNPS List 2 = Plants rare, threatened, or endangered in California but more common elsewhere
CNPS List 3 = Plants about which information is needed-a review list
CNPS List 4 = Plants of limited distribution-a watch list
.1 = seriously endangered in California
.2 = fairly endangered in California
.3 = not very endangered in California



H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Figure 4: CNDDB Plant Records

Nacimiento Lake Drive Bridge Replacement - NES (1212-10)
May 2012

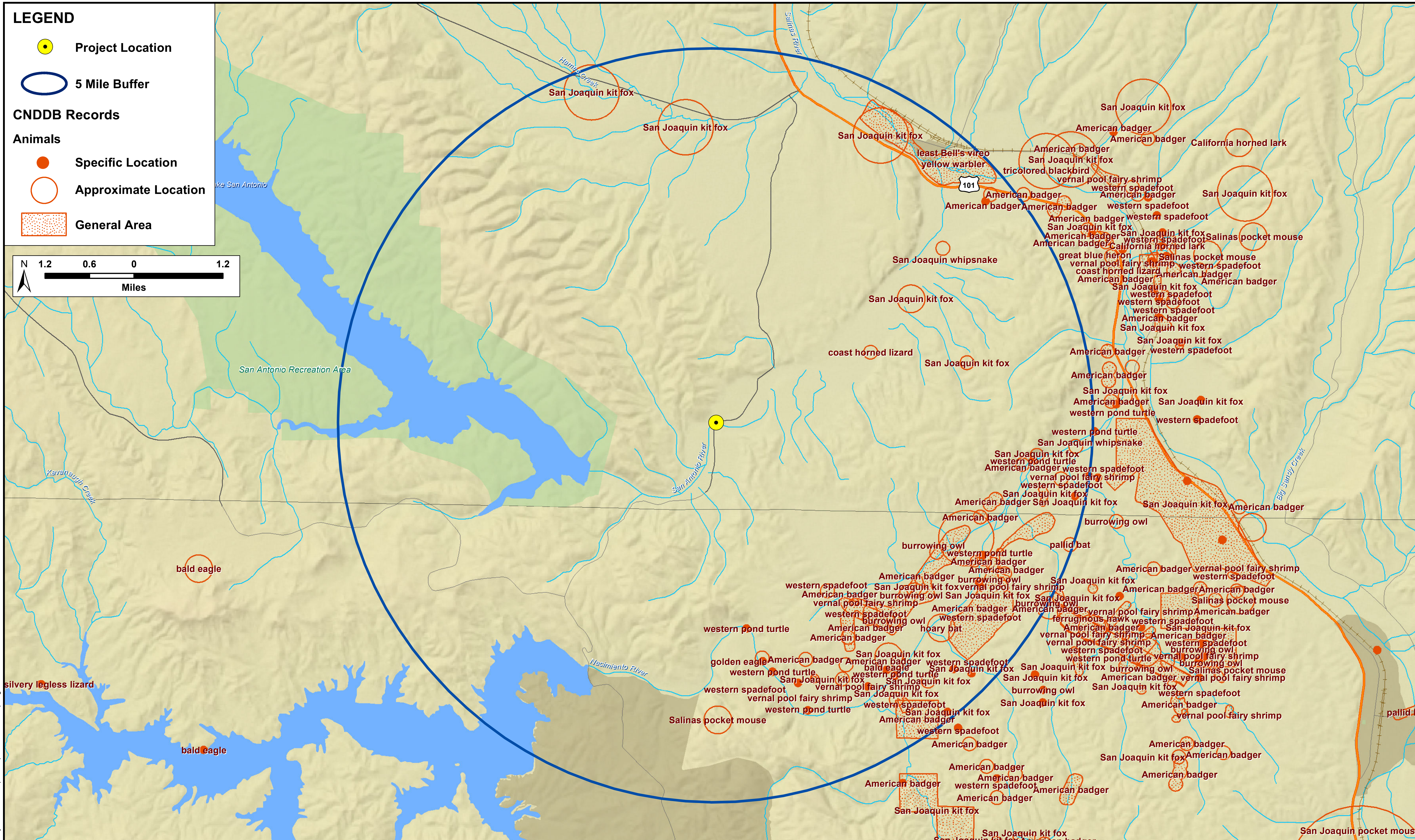


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Figure 5: CNDDB Animals Records

Nacimiento Lake Drive Bridge Replacement - NES (1212-10)
May 2012

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

4.1. Natural Communities of Special Concern

A query of sensitive habitats in Rarefind (CNDDB 2011) was performed for the Bradley USGS 7.5-minute quadrangle and all eight surrounding quadrangles (Wunpost, Valleton, San Miguel, Paso Robles, Adelaida, Lime Mountain, Tierra Redonda Mountain, and Hames Valley). The CNDDB (2010) identified only two sensitive habitats as occurring within the Project region: Sycamore Alluvial Woodland and Valley Oak Woodland. The site does not contain any Sycamore Alluvial Woodland, although it does contain three valley oaks mapped as Valley Oak Riparian Woodland habitat. The small area mapped as Valley Oak Riparian is too small and isolated to be considered a true example of Valley Oak Woodland such as would be mapped and tracked by the CNDDB; however, we considered this area of the riparian corridor on-site to be associated with high functions and values and to be considered a longer-term temporal loss than seen with willow riparian scrub. Therefore we recommend a higher mitigation associated with its removal.

The BSA contains approximately 1.22 ac of perennial aquatic habitat within the OHW marks of the San Antonio River and a total of approximately 0.67 ac of wetlands associated with the channel and outer riparian banks. In addition, a total of approximately 1.70 ac of riparian scrub and woodlands, including willow riparian scrub, valley oak riparian woodland, and mule fat scrub, occur within the BSA. While not technically a riparian habitat, the coastal sage scrub within the BSA supports woody vegetation within the riparian corridor of the San Antonio River, and also provides unique functions and values for wildlife species compared to other habitats within the BSA. All of these habitat types have been cumulatively affected by regional development, some support special-status wildlife species, and all are regulated by federal and state agencies. As a result, effects on sensitive aquatic/ wetland and riparian habitat types will be avoided and minimized to the extent practicable. Project effects on natural habitats are summarized in Table 3 and illustrated on Figure 3. No other sensitive communities occur in the BSA.

Table 3: Project Effects on Natural Communities of Special Concern within the BSA.

Habitat Type	Permanent Effects	Temporary Effects
Willow Riparian Scrub	0.01 ac	0.05 ac
Aquatic	0.0 ac	0.08 ac
Freshwater Emergent Wetland	0.03 ac	Up to 0.06 ac
California Sage Scrub	0.0 ac	0.0 ac
Valley Oak Riparian Woodland	0.20 ac	0.0 ac
Seasonal Wetlands	0.01 ac	Up to 0.02 ac
Mule Fat Riparian Scrub	0.00 ac	0.01 ac
TOTAL	**0.30 ac**	**0.22 ac**

4.1.1. Discussion of Aquatic Habitat and Wetland Habitat within/Adjacent to the San Antonio River

Throughout California, the quality and quantity of aquatic and wetland habitats has dramatically declined due to the construction of dams, dikes, and levees, as well as due to water diversions, and the filling of aquatic habitat for development. Additionally, there has been an overall degradation of general water quality in many watersheds due to inputs of runoff from agricultural and urban development and other sources. Aquatic habitats are important to numerous aquatic wildlife species, and they provide a source of water for terrestrial species. Wetlands also provide high functions and values for wildlife, and contribute to maintaining water quality within larger watershed systems.

4.1.1.1. Survey Results

The perennial aquatic habitat of the San Antonio River is considered to be of relatively high quality with clear, moving water (when not disturbed by releases from the upstream reservoir) and a mud and cobble substrate. One large pool occurs within the aquatic habitat near the western edge of the BSA. The majority of this habitat is currently unshaded due to the low canopy height of the riparian overstory immediately adjacent to the channel. The BSA contains approximately 1.22 ac of aquatic habitat that occurs within the OHW marks of the San Antonio River low flow channel (Figure 3).

Hydrophytes occur in patches along the length of the San Antonio River channel, creating areas of perennial emergent wetlands comprising 0.54 ac within the BSA. In addition 0.13 ac of seasonal wetland habitat occurs in areas that are periodically flooded, above the low-flow channel.

4.1.1.2. Avoidance and Minimization Efforts

All temporary and permanent effects on aquatic habitat and wetland vegetation along the San Antonio River have been limited to the absolute minimum needed to perform the proposed work. No dewatering or culverting is anticipated, although it is expected that a sandbag coffer dam will be installed to encompass the temporary fill for the falsework pads. Only the minimum area of temporary fill required for bridge falsework will be placed in the active channel (approximately 0.08 ac). The central bridge footing has been carefully designed to be placed outside the active river channel, above the OHW marks of the north bank (Figure 2). The southern abutment is placed outside the southern OHW mark, and only a small amount of RSP encroaches into riparian areas below the OHW, leaving all aquatic habitat avoided for permanent effects (Figures 2 and 3). Numerous design iterations conducted by Project engineers have resulted in moving the RSP associated with the southern abutment back so that no RSP will need to be placed within the wetland habitat (Figure 3). More generally, wetland habitats have been avoided to the maximum extent feasible and therefore permanent impacts to these areas will only occur from shading, and small areas of fill placement associated with the northern abutment and the central bridge bent. Although some wetland areas occur within the PIA and could be temporarily affected by construction access needs, such access will be minimized through the use of silt fencing to fully avoid protect those wetland areas within the PIA that can be avoided, thus decreasing the extent of temporary wetland impacts to the minimum degree feasible. Wooden mats or similar measures will be used to protect wetlands from staging or access impacts where these areas cannot be avoided by equipment and personnel, and in this way the intensity of temporary wetland impacts may be minimized.

However, indirect effects on water quality of the perennial aquatic habitat could occur through Project implementation, specifically during the construction phase. As such, the construction that could affect water quality will be limited to the dry season (15 June to 15 October). The following measures will be implemented to minimize any potential Project effects on aquatic habitat and water quality:

Minimization of Effects on Water Quality. Monterey County will implement BMPs contained within Caltrans Construction Site BMPs (Caltrans 2003). Implementation of the measures described below will reduce potential effects on aquatic species from degradation of water quality.

The following standard recommendations by the CDFG must be followed regardless of whether the watercourse on the site is dewatered or not in order to comply with proper mitigation measures:

- No equipment will be operated in the live stream channel;
- Standard erosion control and slope stabilization measures will be required for work performed in any area where erosion could lead to sedimentation of a waterbody;
- Silt fencing will be installed between any activities conducted within, or just above the edge of, the top-of-bank and the edge of the creek to prevent dirt or other materials from entering the channel;
- No debris, soil, silt, sand, bark, slash, sawdust, cement, concrete, washings, petroleum products or other organic or earthen material will be allowed to enter into or be placed where it may be washed by rainfall or runoff into waters of the U.S./State or aquatic habitat; and,
- Machinery will be refueled at least 60 ft from any aquatic habitat, and a spill prevention and response plan will be implemented.

In addition, measures will be taken to prevent any materials from falling into the San Antonio River or wetland habitat during bridge demolition and construction, including the erection of barriers and netting, as needed (see measures proposed for steelhead, Section 4.3.1.4, below).

4.1.1.3. PROJECT IMPACTS

Permanent impacts will occur to 0.03 ac of freshwater emergent wetlands due to shading impacts that will occur following placement of the southern bridge abutment and proposed bridge deck (Figure 3). Additionally, permanent impacts will occur to approximately 0.01 ac of seasonal wetlands due to placement of fill associated with the central bridge bent on the northern bank and RSP placed for the northern abutment, as well as a small area of increased shading under the proposed bridge deck at the northern bank. Temporary impacts to wetlands will be minimized to the greatest extent feasible in terms of extent and intensity, as described above. The maximum extent of temporary impacts that may occur to wetlands due to construction staging and access needs include 0.06 ac of freshwater emergent wetlands and 0.02 ac of seasonal wetlands.

No permanent impacts will occur to aquatic habitat on-site. All aquatic habitat within the PIA is only permanently affected by shading from the proposed bridge. Overall bridge-related shading of aquatic habitat in this portion of the river channel will not be substantially increased as the existing bridge is removed. However, due to the approximately 100-ft width of the low-flow channel, temporary bridge falsework cannot be entirely implemented from the banks of the low-flow channel. Therefore, two temporary falsework pads, each extending roughly 25-35 ft into the low-flow channel from each bank, will be constructed. The pads will be constructed of clean, washed gravel. The pads will be removed after bridge falsework is completed. This will result in temporary impacts to a maximum of approximately 0.08 ac of aquatic habitat within the low-flow channel of the San Antonio River.

4.1.1.4. Compensatory Mitigation

Due to the temporary nature of the impacts to aquatic habitat on site, no compensatory mitigation is proposed for impacts to this habitat. However, measures will be followed as described above to ensure that water quality will not be affected, including limiting temporary fill materials to the use of clean, washed gravel. Additionally, measures will be taken to minimize and avoid impacts to species dependent on aquatic habitat, such as the South-Central California Coast steelhead and Monterey roach (*Lavinia symmetricus subditus*) (See Section 4.3.1, below).

Temporary impacts to wetland habitats on site will be avoided and minimized to the greatest extent feasible. A maximum of 0.06 ac of freshwater emergent wetlands and 0.02 ac of seasonal wetlands may be affected by Project construction activities. However, the use of wooden mats or similar products where it is necessary for personnel and equipment to cross over and gain construction access within these areas will reduce the intensity of impacts to the soil and vegetation, thus limiting the impact intensity and allowing these areas to quickly recover once construction is complete. A qualified restoration ecologist will inspect these areas following construction, and if it is determined that the temporarily affected wetland areas require revegetation or remedial soil treatment (such as light ripping to reduce any soil compaction) following Project activities, a native seed mixture appropriate for that area will be applied. It is unlikely that the freshwater wetlands will require re-seeding, as these wetlands occur within the low-flow channel and temporary impacts should not affect the perennial rhizomes of these plants. In seasonal wetlands, areas determined to require active post-construction revegetation efforts may be seeded with species occurring at the site such as wire rush and Mexican rush (*Juncus mexicanus*). Therefore, all temporarily affected wetlands will be so mildly affected that they return to a pre-construction state within one year or will restored in-place and no additional compensatory mitigation is proposed for temporary wetland impacts.

Approximately 0.03 ac of freshwater emergent wetlands may be permanently lost due to shading impacts, and 0.01 ac of seasonal wetlands will be permanently lost due to impacts related to placement of fill and new structures, and shading. Because Project-specific effects on wetland habitats would be substantial if not mitigated, compensatory mitigation is required for the loss of wetlands within the PIA. Due to the low ecological functions and values of the disturbed seasonal wetlands occurring on-site, and the likely low actual level of shading impacts to the freshwater emergent wetlands from the approximately 20-ft tall proposed bridge deck, compensatory mitigation is proposed at a ratio of 2:1 (mitigation acreage:impact acreage). In-kind mitigation will be installed within the BSA in the areas noted on Figure 3, with mitigation preferentially installed within areas of potential disturbance where the existing bridge will be removed. This will require the creation of 0.06 ac of freshwater emergent wetlands and 0.02 ac of seasonal wetlands above the OHW mark. The suggested planting palette for these two habitats is listed below in Table 4. These wetland mitigation plantings will be planted alongside riparian mitigation plantings described below in Section 4.1.2.4.

Table 4: Suggested Planting Palette for On-site Wetland Mitigation Plantings

Habitat Type	Suggested Species
Freshwater Emergent Wetland	*Typha latifolia, Schoenoplectus californicus*
Seasonal Wetlands	*Juncus balticus, Juncus mexicanus, Helenium puberulum*

4.1.1.5. CUMULATIVE IMPACTS

Cumulative impacts to wetland and aquatic habitats result from past, current, and reasonably foreseeable future projects in the region, including periodic maintenance and replacement of bridges throughout unincorporated Monterey County. These projects will all undergo (or have undergone) separate CEQA review, and will require separate environmental permitting from regulatory agencies. Ecological impacts determined to be significant during CEQA review for these individual projects will be mitigated to less-than-significant levels. Thus, providing that this Project successfully incorporates the conservation, compensatory mitigation, avoidance, and minimization measures described in this NES, the Project will not contribute to substantial cumulative effects on wetland and aquatic habitat types.

4.1.2. Discussion of Riparian Habitat and Riparian Trees

Riparian habitat encompasses much of the floodplain surrounding the river channel and the adjacent terrestrial landscape influenced by the channel. In general, riparian vegetation has been extensively altered and removed throughout the state through land conversion for agriculture, bank stabilization, and extensive alteration of the hydrologic regime. Some estimates state that only 2 to 6% of historic riparian habitat remains in California (Barbour et al. 2007). However, riparian habitat is associated with high species richness and provides habitat for numerous special-status species.

Riparian habitat quality can be quantified based upon fish and wildlife habitat values such as the presence/absence and the density of the overstory vegetation, the presence or absence of native species, and the complexity of vegetation structure (e.g., presence of tree, shrub and herbaceous layers). The three habitat quality categories are:

- High quality — Native overstory with continuous understory or occurring in dense thickets; dense native overstory with sparse, non-native or no understory; and native willow thicket.
- Medium quality — Sparse native overstory with sparse, non-native or no understory, non-native overstory with native understory, and dense non-native overstory with sparse, non-native or no understory.
- Lower quality — Sparse non-native overstory with sparse, non-native or no understory. In addition, any areas *not* included in medium or high quality categories that will be covered with riprap, gabions, etc. (e.g., ruderal habitat and bare ground).

4.1.2.1. SURVEY RESULTS

High quality riparian habitat occurs within the BSA and consists of three types: 1) a thick, low riparian scrub dominated by willow trees occurring in extensive patches along the banks and low benches of the channel, especially in the area to the east of the existing bridge (1.47 ac); 2) a small (0.20 ac) patch of valley oak riparian woodland occurring high up on the steep northern bank to the east of the bridge; and 3) an isolated area of mule fat riparian scrub occurring next to the existing bridge (0.03 ac). In total, the BSA contains approximately 1.70 ac of riparian scrub and woodland habitat. The riparian habitat is not of uniformly high quality, as the native willow thickets support few large or mature trees, the valley oak riparian woodland has been separated from active flooding due to down cutting of the banks and only supports an upland, grassy understory, and the mule fat thicket, while native-dominated, is very low and shrubby with no trees.

4.1.2.2. Avoidance and Minimization Efforts

Temporary and permanent effects on the riparian woodlands and scrub within the BSA have been avoided to the maximum extent feasible through an iterative design process that has limited affected areas to the minimum necessary to perform the proposed work. Temporary staging areas will be located in upland habitat (that is not sensitive as it consists primarily of bare ground or non-native, invasive plant species, including, in areas, French broom) or in existing developed areas. The bridge deck will not be constructed over forested riparian habitat in the channel, such as that associated with the in-stream island (Figure 3), and therefore is not expected to result in the loss of riparian trees and shrubs due to shading effects.

4.1.2.3. Project Impacts

The Project will result in effects on up to 0.06 ac of willow riparian scrub due to placement of fill associated with the abutments. Only 0.01 ac of this habitat will be permanently affected within the footprint of fill placement, all within the area of the southern abutment. However, an additional 0.05 acres of willow riparian scrub occurs within the PIA along the north bank, where construction access is needed (Figure 3). In these areas, woody vegetation removal will be limited to trimming of the willow habitat. Similarly, approximately 0.01 ac of mule fat scrub falls within the PIA and will be affected by access needs. The woody, mule fat-dominated vegetation within this area will also be trimmed. While these areas support few trees, they do support sufficiently developed woody vegetation that trimming impacts may take multiple years to recover. Additionally, some individual shrubs and trees may be killed by the trimming, depending on the extent required for access. Therefore, woody vegetation trimming of these riparian habitats has been analyzed conservatively and is considered a permanent effect.

The Project will also result in permanent effects on three mature oak trees that form a small patch (0.2 ac) of valley oak riparian woodland on the north bank of the corridor (Figure 3). While not all 0.2 ac of the canopy falls within the area needed for the proposed structure and the fill prisms for the northern abutment, these trees will require removal and therefore all such habitat within the BSA will be lost. The trees are approximately 30, 36, and 32 inches dbh. Removal of these trees will have a small effect on the amount of channel shading in late afternoon and early morning (See Section 4.3.1.4).

4.1.2.4. Compensatory Mitigation

Approximately 0.01 ac of willow riparian scrub and 0.2 ac of valley oak riparian woodland will be lost due to impacts related to placement of fill and new structures. Additional trimming-related impacts will occur to approximately 0.01 ac of mule fat riparian scrub and 0.05 ac of willow riparian scrub. Because Project-specific effects on these riparian habitats would be substantial if not mitigated, compensatory mitigation is required for the loss of riparian vegetation associated with Project construction.

The three riparian habitat types on-site do not contribute identical ecological functions and values to the corridor, nor do the two types of impacts (permanent loss due to fill and structure placement vs. trimming) represent identical degrees of disturbance or temporal loss of this habitat. For example, the loss of all mature valley oak trees within the BSA may contribute to more substantial effects on the riparian character on the site than the removal of 0.01 ac or 0.7% of the willow riparian scrub that occurs within the BSA. The valley oaks to be removed are large, mature trees, and because of the lack of riparian understory associated with them, should be mitigated on a by-stem basis at a higher mitigation ratio. Similarly, trimming impacts will cause a temporal loss of riparian habitat functions and values, but in time it is expected that much of this habitat will regenerate in-place from the trimmed areas. Therefore, proposed mitigation ratios differ across habitat type and impact type as described in Table 5, below.

Table 5: Compensatory Mitigation Requirements for Project-related Effects on Riparian Habitats within the BSA

Habitat Type	Impact Type	Compensatory Mitigation Ratio	Mitigation Required	Totals
Valley Oak Riparian	Tree Removal, Fill and Structure Placement, 3 Trees	**10:1** (planted trees: removed trees)	30 trees	Approx. 0.4 ac
Willow Riparian Scrub	Tree Removal, Fill and Structure Placement, 0.01 ac	**3:1** (restored canopy area: removed canopy area)	0.03 ac	0.13 ac
	Trimming (Temporary), 0.05 ac	**2:1** (restored canopy area: removed canopy area – measured in ac)	0.10 ac	
Mule Fat Riparian Scrub	Trimming (Temporary), 0.01 ac	**2:1** (restored canopy area: removed canopy area– measured in ac)	0.02 ac	0.02 ac

Mitigation will be installed in-kind within the BSA for the Project (Figure 3). The 0.15 ac of willow and mule fat riparian scrub, as well the 0.08 ac of wetland mitigation required for permanent impacts to wetland habitats (See Section 4.1.1.4), will be planted in areas close to the existing OHW of the San Antonio River channel. Similar to the existing habitat, mule fat and willow riparian planting will be somewhat dense, planted on 8-, 10- and 12-ft centers, as described in Table 6 below. The 30 replacement trees for the valley oak riparian woodland mitigation should be planted on higher bank areas, on 24-ft centers, to better represent functions and values lost by the existing, well-spaced oak trees.

Because riparian mitigation requirements total an area of approximately 0.55 ac (see Table 6, below), approximately 0.63 ac of compensatory mitigation plantings will be required for the Project including wetland mitigation requirements (see Section 4.1.1.4, above). There is approximately 0.67 ac of non-wetland areas that does not currently support riparian vegetation available within the portion of the PIA that contains the existing bridge and road approaches to be removed by the Project, and between the existing road and proposed bridge abutment (Figure 3). As much of this area would require restoration following structure and roadway removal in any case, it presents a good opportunity for on-site, in-kind mitigation. Additionally, replanting these areas with wetland and riparian mitigation will reduce colonization of the disturbed areas by weedy species.

Table 6: Suggested Riparian Planting Palette.

Growth Form	Scientific Name	Common Name	On-center Spacing/Propagule Type
Willow and Mule Fat Riparian Scrub – 0.15 ac			
Tree	*Populus fremontii*	Fremont's cottonwood	12-ft rooted cutting
Tree	*Salix laevigata*	Red willow	10-ft rooted cutting
Tree/shrub	*Salix exigua*	Sandbar willow	8-ft rooted cutting
Tree/shrub	*Sambucus mexicana*	Blue elderberry	8-ft rooted cutting
Shrub	*Baccharis salicifolia*	Mulefat	6-8 ft Deepot
Shrub	*Artemisia ludoviciana*	Mugwort	6-8 ft Deepot
Valley Oak Riparian Woodland – 30 trees or approx. 0.4 ac			
Tree	*Quercus lobata*	Valley oak	24-ft rooted cutting
Grass	*Festuca rubra*	Red fescue	6-8 ft Deepot
Grass	*Bromus carinatus*	California brome	6-8 ft Deepot

The compensatory mitigation areas will be fully planted with a diverse mix of native trees, shrubs, and graminoids suited to the soils and hydrology of the San Antonio River and riparian corridor as described in Tables 4, 5 and 6, above. The goal of this mitigation is to create a self-sustaining native riparian habitat similar to and contiguous with the existing habitats. All woody plant materials will be contract grown and/or collected from native plants growing within a 5-mi radius of the mitigation site. If adequate and suitable plant material is not available within that radius, a qualified biologist can approve alternate collection sites. The proposed planting palette was selected based on observations of the geomorphic position of existing native vegetation in the vicinity of the mitigation site, as well as an assessment of the soils, hydrology and climate of the Project area. A Project-specific mitigation and monitoring plan will be prepared.

4.1.2.5. CUMULATIVE IMPACTS

Cumulative impacts to riparian habitats result from past, current, and reasonably foreseeable future projects in the region, including periodic maintenance and replacement of bridges throughout unincorporated Monterey County. These projects will all undergo (or have undergone) separate CEQA review, and will require separate environmental permitting from regulatory agencies. Ecological impacts determined to be significant during CEQA review for these individual projects will be mitigated to less-than-significant levels. Thus, providing that this Project successfully incorporates the conservation measures described in this NES, the Project will not contribute to substantial cumulative effects on riparian habitat types.

4.1.3. Discussion of Coastal Sage Scrub

Areas of steep cliffs composed of sandstone outcrops occur on the north bank of the river to the west of the existing bridge. The thin, and in many areas complete lack of soils, frequent boulders, and severe topography of this area supports several patches of coastal sage scrub, dominated by native shrubs such as California sage, California buckwheat, and sticky monkeyflower. This habitat is distinctly different that other areas within the riparian corridor in the BSA, and provides unique wildlife habitat, including small sandstone caves.

4.1.3.1. SURVEY RESULTS

Approximately 0.46 ac of coastal sage scrub occurs within the BSA. These areas are outside the PIA (Figure 3).

4.1.3.2. AVOIDANCE AND MINIMIZATION EFFORTS

All areas of coastal sage scrub within the BSA will be avoided and will not be subject to permanent or temporary effects. Environmentally Sensitive Area (ESA) fencing will be erected at the border between the coastal sage scrub and disturbed grassland closest to the existing bridge.

4.1.3.3. PROJECT IMPACTS

Due to avoidance built into the Project design, the Project will not result in substantial effects this habitat type.

4.1.3.4. COMPENSATORY MITIGATION

As no effects to this habitat type will occur from Project construction, no compensatory mitigation is required.

4.1.3.5. CUMULATIVE IMPACTS

Because the Project will not affect coastal sage scrub habitats within the BSA, the Project will not have a considerable contribution to cumulative effects on this habitat type.

4.2. Special-Status Plant Species

An initial list of 84 extant or historical records of special-status plant species that occur within the Project vicinity, within elevations similar to the Project site, in a wide variety of different habitat types (defined by the nine-quadrangle and Monterey County CNDDB search areas [CNDDB 2009]) was subsequently reduced to 26 species for which potentially suitable habitat was present after an analysis of habitat types present within the Project's BSA (Table 2). Protocol-level plant surveys were performed within the BSA in March, April, and May of 2010. While the surveys were targeted for the 26 plant species with potentially suitable habitat on the Project site, these surveys were floristic in nature and all plant species observed were identified to a level sufficient to determine status. One plant was observed on-site that was identified as a hybrid of two special-status plant species, Abbott's bushmallow (*Malacothamnus abbottii*) and Jones' bushmallow (*Malacothamnus jonesii*).

4.2.1. Discussion of Abbott's and Jones' Bushmallow

Abbott's bush-mallow is a deciduous shrub in the mallow family (Malvaceae) on CNPS List 1B.1, indicating it is seriously endangered in California. This state endemic typically blooms from May to October. It grows in sandy soils in riparian scrub communities at elevations between 443 and 1608 ft (CNPS 2011). Once thought to be extinct but rediscovered in 1990, Abbott's bush-mallow has a small endemic range and is only known to occur in Monterey County. In fact, CNPS (2010) indicates the species is now only known from 11 small populations. Three of these occurrences are located in an adjacent quadrangle to the Project site near Sargent Creek (CNDDB 2011).

Jones' bush-mallow is a deciduous shrub in the mallow family (Malvaceae) that blooms from May to July. The species is maintained on CNPS List 4.3, indicating it is not very endangered in California. This plant typically grows in open chaparral and cismontane woodland communities at elevations between 524 and 2723 ft (CNPS 2011, Hill 2011 [in press]). Jones' bush-mallow is only known to occur in Monterey and San Luis Obispo counties (CNPS 2011).

Hybridization occurs freely in members of the *Malacothamnus* genus when species overlap in range and co-occur in nearby populations, leading to much taxonomic uncertainty within the group (Bates 1993, Slotta 2004).

4.2.1.1. SURVEY RESULTS

One individual bush mallow was observed to the west of the existing bridge, and was identified as a hybrid between Abbott's and Jones' bushmallow (*Malacothamnus abbottii* x *jonesii*) (Figure 3). This indicates there are or were populations of these two species within the Project vicinity.

4.2.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

The rare bush mallow hybrid and its habitat will be completely avoided by Project activities.

4.2.1.3. PROJECT IMPACTS

Because the rare bush mallow hybrid and its habitat will be avoided, there will be no Project effects on the species.

4.2.1.4. COMPENSATORY MITIGATION

As the rare bush mallow hybrid and its habitat occur entirely outside of the PIA (Figure 3) and will therefore not be affected, the Project will have no effect on the regional abundance of either Abbott's or Jones' bush mallow, and no compensatory mitigation is proposed.

4.2.1.5. CUMULATIVE IMPACTS

Because the rare bush mallow hybrid and its habitat will remain unaffected by Project activities, the Project will not contribute to substantial cumulative effects to either Abbott's or Jones' bush mallow.

4.3. Special-Status Animal Species Occurrences

A list of special-status animal species that could potentially occur in the Project region, compiled from the USFWS species list and our search of the CNDDB (2010), is presented in Table 2, above. Particular attention was paid to information regarding the occurrence of special-status species in the general vicinity of the site, defined for the purposes of this report as areas within a 5-mi radius of the BSA (Figure 5). A number of these species were rejected for potential occurrence in the BSA because the Project area lacks suitable habitat and/or is outside of the range of the species.

Of the remaining species, we expect the northern harrier (*Circus cyaneus*) to occur in the Project area only as an infrequent forager, and thus we do not expect it to be impacted by Project activities. An additional two species, Vaux’s swifts (*Chaetura vauxi*) and black swifts (*Cypseloides niger*), are expected to occur only as foraging birds during the non-breeding season but are not expected to nest in the BSA; these species are only species of special concern during the nesting season and thus will not be impacted by Project activities. Likewise, western mastiff bats and pallid bats are expected to forage in the area, but not to form maternity roosts or to breed there, and thus are not at risk of being significantly impacted by Project activities.

The following sections discuss the remaining special-status animal species, which have the potential to breed on the site and/or regularly use it, which have the potential to be substantially impacted by the Project (e.g., due to their rarity), and/or which are of particular concern to resource agencies and require additional discussion.

4.3.1. Discussion of the South-Central California Coast Steelhead and Monterey Roach

The steelhead is an anadromous form of rainbow trout that spends portions of its life cycle both in the ocean and in freshwater streams. The South-Central California Coast steelhead ranges from the Pajaro River, Santa Cruz County, in the north down the coast to (but not including) the Santa Maria River in San Luis Obispo County in the south. In central California, adult steelhead migrate upstream to spawn from early winter to mid-spring, after winter storms provide sufficient flows to facilitate migration to spawning grounds (Moyle 2002). Spawning occurs between December and June. Steelhead eggs remain in gravel depressions, known as redds, for 1.5 to 4 months before hatching. After hatching, young steelhead use the deeper reaches of streams as rearing areas, and will remain in fresh water for 1 to 4 years before migrating to the ocean. After migration to the ocean, steelhead typically grow rapidly for 2 to 3 years before returning to freshwater streams to spawn. Unlike other salmonids, steelhead do not necessarily die after spawning. Many adults survive and return to the ocean after spawning, coming back to spawn for one or more additional seasons.

Steelhead usually spawn in clear, cool, perennial sections of relatively undisturbed streams. Preferred streams typically support a dense canopy cover that provides shade, woody debris, and organic matter. Stream reaches in which spawning occurs are usually free of rooted or aquatic vegetation. Gravel substrates are the optimum spawning habitat. Steelhead usually cannot survive long in pools or streams with water temperatures above 70°F. Despite their general requirement for cool water, steelhead can use warmer habitats if food is available, such as at fast water riffles where fish can feed on drifting insects (Moyle 2002).

Streambed degradation, alteration, and blockages have significantly reduced steelhead habitat, and this reduction, as well as reduced genetic diversity and climate change, has seriously impacted South-Central California Coast steelhead populations (Busby et al. 1996). In 1998, the NMFS published a final rule to list the South-Central California Coast steelhead as threatened under the FESA. In 2005, NMFS published an updated critical habitat rule, including specific accessible streams (NMFS 2005); the San Antonio River below the San Antonio Dam is considered to be critical habitat under this designation.

The Primary Constituent Elements (PCEs) of critical habitat for the South-Central California Coast steelhead include sites or habitat components that are essential to supporting one or more life stages of the species, such as sites for spawning, rearing, migration, and foraging. The PCEs of critical habitat for the steelhead, quoting from NMFS (2005), include:

- Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development.
- Freshwater rearing sites with water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; water quality and forage supporting juvenile development; and 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.

- Freshwater migration corridors free of obstruction with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival.
- Estuarine areas
- Nearshore marine areas
- Offshore marine areas

The Monterey roach, a California species of special concern, is one of several subspecies of the widespread California roach. The Monterey roach occurs in tributaries of Monterey Bay, including the Pajaro, Salinas, and San Lorenzo River drainages. These small, omnivorous fish occur primarily in smaller, often intermittent and relatively warm streams, where they spawn in shallow areas of streams with gravel or cobbled substrate in spring and early summer. However, the species as a whole is a habitat generalist, occurring in a wide variety of aquatic habitats and tolerating human-altered streams.

4.3.1.1. Survey Results

No fish were observed in the river within the BSA during the reconnaissance survey, and the only fish detected during subsequent special-status amphibian surveys were three-spine sticklebacks. No CNDDB records of either steelhead or Monterey roach exist in the Project area, but steelhead are still considered extant in low numbers in the Salinas River Watershed, and historically the San Antonio River was a steelhead stream (Becker and Reining 2008). The current conditions of the Salinas and San Antonio rivers below the San Antonio Dam, including siltation, high water temperatures, non-native predators, and agricultural runoff, most likely minimize the occurrence of steelhead in the Project area (Becker and Reining 2008). However, NMFS maps this reach of the San Antonio River as critical habitat for steelhead (NMFS 2005), indicating that there are no absolute barriers to fish passage between the mouth of the Salinas River and the Project site. The CDFG has also not mapped any complete barriers to fish passage between the Salinas River Mouth and the BSA (CDFG 2010), so salmonid passage is still possible along this reach. Therefore, steelhead are likely to occur in the reach of the river within the Project area, albeit in low numbers and irregularly. Spawning is not expected to occur in the Project reach due to absence of suitable gravel substrate.

The BSA for the proposed Project includes designated steelhead critical habitat, which is present within the San Antonio River channel. Of the six PCEs of critical habitat that have been identified for the steelhead, four are absent from the Project site. The three estuarine/marine PCEs are absent since the site contains riverine habitat well inland from estuarine and marine areas. Also, suitable gravel substrate for spawning is absent from the Project site. However, the reach of river on the Project site provides potentially suitable rearing habitat for juvenile steelhead, and it provides a freshwater migration corridor (though spawning is expected to be limited, if it occurs at all, upstream from the site).

Monterey roach are known to frequent the warmer southern portions of the Salinas River watershed (Watson 2010), and are likely present in the Project area.

4.3.1.2. Avoidance and Minimization Efforts

Project-related impacts to aquatic habitats have been avoided to the maximum extent feasible through design considerations and implementation of water quality BMPs, as discussed in Section 4.1.1.2. Additionally, the following conservation measures will protect water quality and minimize effects on steelhead and Monterey roach:

1. All work within the banks of the river will occur during the dry season (roughly 15 June to 15 October, although Caltrans may engage in or authorize consultation with NMFS to extend this period, if dry weather permits). During this time, stream flows are expected to be at annual lows to mid flows (though releases from the dam upstream will influence flow levels to some extent), and movement of steelhead through the BSA, if they are present at all, will be minimal.
2. During demolition and construction activities, netting and other structures will be installed under the existing bridge and the proposed bridge to prevent debris from entering the channel, as such debris could degrade water quality and potentially injure fish in the stream.
3. A construction personnel education program will be given by a qualified biologist before the commencement of construction to explain to construction personnel how best to avoid the accidental take of steelhead. The approved biologist will conduct a training session that will be scheduled as a mandatory informational field meeting for contractors and all construction personnel. The field meeting will include topics on species identification, life history, descriptions of habitat requirements during various life stages, review of habitat sensitivity, required practices before the start of construction and a discussion of general measures that are being implemented to conserve the species as they relate to the project, penalties for noncompliance, and boundaries of the construction area. Emphasis will be placed on the importance of the habitat and life stage requirements within

the context of Project avoidance and minimization measures. Handouts, illustrations, photographs, and/or Project mapping showing areas where minimization and avoidance measures are being implemented will be included as part of this education program. Upon completion of training, employees will sign a form stating that they attended the training and understand all the conservation and protection measures. Training shall be conducted in languages other than English for workers who do not speak or understand English.

4. Project personnel will adhere to standard Caltrans BMPs for avoiding impacts to water quality. For example, silt fencing will be installed between any activities conducted within, or just above the edge of, the top-of-bank and the edge of the creek to prevent dirt or other materials from entering the channel.
5. A qualified biologist will be present to monitor all activities involving the placement of gravel (for temporary falsework pads) in the river, including the construction of a sandbag coffer dam to encompass the pads. The biologist will inspect the areas where these coffer dams will be constructed prior to construction and will flush any fish from the coffer dam area before in-water work begins. The coffer dam will be constructed starting from the upstream end. Just prior to completion of the coffer dam, the biologist will walk through the area within the coffer dam to flush fish out the gap in the downstream end. Once all fish have been flushed out of the work area, the coffer dam will be completed so that fish cannot re-enter this area. In the event that fish will not flush out of the coffer dam completely, the biologist will capture the fish using a seine or dipnet and relocate the fish outside of the coffer dam. If at any time an individual steelhead or Monterey roach appears to be at risk of injury or mortality due to Project-related activities, all work will stop until the qualified biologist has flushed the individual from the work area
6. While temporary falsework and associated pads are present within the river, a channel of free-flowing water between the pads will remain to allow fish to continue to move through the Project area

4.3.1.3. PROJECT IMPACTS

All portions of the new bridge structure will be located outside of the low-flow channel, and the existing bridge structure will be removed entirely. Because the piers will all be located outside of the low-flow channel, all construction access and installation activities will occur via existing roads, and standard BMPs for water quality will be followed as described above, there will be no permanent impacts to in-stream habitat for steelhead or other aquatic species resulting from this Project.

Temporary impacts to steelhead and roach habitat will include the construction of temporary falsework pads extending approximately 25-35 ft into the low-flow channel from both banks. Installation of these pads will result in temporary loss of aquatic habitat, potential degradation of water quality in and downstream of the BSA, and potential injury or mortality of fish using the BSA during Project activities (including potential injury or mortality during relocation of fish from areas outside the coffer dams, if this is necessary).

The use of pile drivers to install bridge piers could result in impacts to salmonids. Such impacts include mortality of, or inner ear injury to, individual fish, disorientation leading to increased predation risk, or avoidance of the disturbance, leading to temporary loss of habitat. However, no installation of in-water piles is proposed. Further, piles will be installed using only non-impact methods (i.e., vibratory hammer). Vibratory hammers (even for in water installation) typically generate sound levels that are below the thresholds known to adversely impact fish (J. Casagrande pers comm). Thus, installation of piles is not expected to adversely affect salmonids.

Removal of the existing bridge will reduce the total amount of shading on the creek within the BSA; however, shading provided by the new bridge structure will compensate for the shade lost by removal of the existing bridge, so the removal of the existing bridge will not impact water temperatures in the creek.

Because willow and mule fat riparian scrub habitat impacts will involve only limited amounts of low-statured scrub vegetation set well back from the open water of the channel, no reduction in shading of the creek will occur due to these impacts. However, loss of the three mature valley oaks will contribute to a small decrease in shading along the river channel. These trees are set back by some distance from the channel and only provide substantial shade in the very early morning and afternoon, at approximately 0.02 ac of channel shading for approximately 3 hours per day. Shade provided by the trees is also reduced in winter months, when they drop their leaves and only the upper branch profile provides shading over the creek. Thus there will only be a very minimal loss of shaded riverine aquatic (SRA) habitat, which will be mitigated by riparian mitigation plantings installed within a currently open bank area of the BSA with no existing riparian canopy as described in Section 4.1.2.4.

4.3.1.4. Compensatory Mitigation

Steelhead are not expected to occur regularly in the Project reach; however, in the event that rare individuals find their way into the BSA, impacts to steelhead (and to

Monterey roach, which are expected to be present more regularly) will be minimized if the conservation measures described above are successfully implemented, and no permanent loss of aquatic habitat is expected as a result of Project activities. Also, permanent impacts to riparian habitat will be mitigated as described above in Section 4.1.2.4. Thus, no specific compensatory mitigation of impacts to steelhead or Monterey roach is proposed.

4.3.1.5. CUMULATIVE IMPACTS

Cumulative impacts to South-Central California Coast steelhead and Monterey roach result from past, current, and reasonably foreseeable future projects in the region, including periodic maintenance and replacement of bridges throughout Monterey County. These projects will all undergo (or have undergone) separate environmental review, and will require separate environmental permitting from regulatory agencies, if needed. It is expected that ecological impacts to steelhead and Monterey roach identified for these individual projects will be mitigated through the CEQA and/or permitting process. Thus, provided that this Project successfully incorporates the conservation measures described in this NES, the Project will not contribute to substantial cumulative effects on steelhead or Monterey roach.

4.3.2. Discussion of the California Tiger Salamander

The California tiger salamander is a California endemic species ranging from Yolo County in the north to Santa Barbara County in the south (Shaffer and Trenham 2005), including portions of the Central Valley, the central and southern Coast ranges, and the Sierra Nevada foothills where suitable habitat is available (Shaffer and Trenham 2005). Tiger salamanders breed in lowland grassland habitats where ephemeral ponds form suitable aquatic breeding habitat (Jennings and Hayes 1994). While breeding pools are typically ephemeral, they must retain water long enough for metamorphosis to occur (i.e., at least 3 months, Shaffer and Trenham 2005). Permanent ponds are also used for breeding on occasion, but larger ponds often contain predators that consume eggs and larvae, and prevent successful breeding (Jennings and Hayes 1994). Generally, ephemeral breeding ponds dry up during summer months, but over-summering larvae have been observed (Shaffer et al. 1993). Following metamorphosis, juveniles spend a few days at the pond margin, and then migrate to refuge sites (Jennings and Hayes 1994). Overland migration may extend up to 1.2 mi, but most California tiger salamanders remain within 0.4 mi of their breeding ponds (USFWS 2004). Aestivation sites are comprised of open habitat with an abundance of small mammal burrows, particularly those of California ground squirrels, within a reasonable distance of breeding sites (Jennings and Hayes 1994, Shaffer and Trenham 2005). Prime habitat is characterized by shallow ephemeral ponds embedded in a matrix of grassland habitat with plentiful small mammal burrows.

Loss and fragmentation of wet meadow and grassland habitats throughout their range has caused considerable and continuing population declines in the species. The USFWS listed the California tiger salamander as threatened throughout its range in 2004 (USFWS 2004). Critical habitat for the species was designated in 2005 (USFWS 2005). The Project is not within designated critical habitat for this species. In 2010, the CDFG found that listing the species under the California Endangered Species Act is warranted, and the formal finalization of the listing has begun.

4.3.2.1. Survey Results

Although southern Monterey County is included in the general range of the species (Shaffer and Trenham 2005), there are no CNDDB records for California tiger salamanders in the Project area. Jennings and Hayes (1994) do not list any records of California tiger salamanders in southern Monterey County, along the San Antonio River, or along the Salinas River south of Gonzales. At the Camp Roberts Army National Guard training facility, several years of vernal pool surveys have not detected any evidence of California tiger salamanders, even though species such as the western spadefoot and vernal pool branchiopods, with which California tiger salamanders often occur, were detected in numerous areas (CA ARNG 2009). Collectively, the lack of reports from the region, despite the intensity of surveys in at least some areas, indicates that the California tiger salamander is absent from the region. The annual grasslands and oak savannahs in the Project vicinity offer potential upland habitat for California tiger salamanders, and the terraces and embankments within the BSA provide potential upland habitat where small mammal burrows occur. However given the dearth of known records of the species in southern Monterey County, we do not expect California tiger salamanders to occur on the Project site.

4.3.2.2. Avoidance and Minimization Efforts

Because California tiger salamanders are not expected to occur in the BSA, no avoidance or minimization measures specifically for tiger salamanders are recommended.

4.3.2.3. PROJECT IMPACTS

Because California tiger salamanders are not expected to occur in the BSA, the Project will not affect California tiger salamanders or their habitat.

4.3.2.4. COMPENSATORY MITIGATION

Because California tiger salamanders are not expected to occur in the BSA, no compensatory mitigation of impacts to tiger salamanders is necessary.

4.3.2.5. CUMULATIVE IMPACTS

California tiger salamanders are not expected to occur on the Project site, or to be impacted by Project activities. Therefore, the Project will not contribute to cumulative effects on this species.

4.3.3. Discussion of the California Red-legged Frog

The California red-legged frog is California's largest native frog. The species is generally restricted to riparian and lacustrine habitats in California and northern Baja California. Red-legged frogs prefer deep, calm pools (usually more than 2 ft deep) in creeks, rivers, or lakes below 5000 ft in elevation (Jennings and Hayes 1994). Breeding habitat requirements include freshwater emergent or dense riparian vegetation, such as willows adjacent to shorelines. Red-legged frogs can survive in seasonal bodies of water that are dry for short periods if a permanent water body or dense vegetation stands are nearby.

Adult red-legged frogs are normally active at night and breed in still water during the late winter or early spring after waters recede. Females attach eggs in a single cluster to vegetation just under the surface of the water. The eggs hatch in approximately one week and larvae feed on plant and animal material. It takes a minimum of approximately 4 months for the larvae to metamorphose into juvenile frogs. On rare occasions larvae over winter. Red-legged frogs can move considerable distances overland. Dispersal often occurs within creek drainages, but movements of more than a mile over upland habitats have been reported (Bulger et al. 2003). Red-legged frogs are often found in summer months in habitat that would not be suitable for breeding; these individuals presumably move seasonally between summer foraging habitat and winter breeding habitat.

The USFWS listed the California red-legged frog as threatened in 1996, due to continued habitat degradation throughout the species' range and population declines.

Critical habitat was most recently designated in 2010 (USFWS 2010); no portion of the BSA is within designated critical habitat.

4.3.3.1. Survey Results

California Red-legged frogs were historically present in southern Monterey County, but they may be extirpated from much of the area according to Jennings and Hayes (1994). There are no CNDDB records from the Project vicinity. Nevertheless, a reconnaissance survey of the BSA determined that potentially suitable habitat for red-legged frogs was present in the BSA. As a result, a focused red-legged frog site assessment was conducted for the Project in accordance with USFWS (2005a) guidelines. H. T. Harvey & Associates herpetologist Norman Sisk, M.S., visited the site on 1 April 2010, walking the BSA plus an additional 0.25 mi upstream and downstream along the San Antonio River, looking for California red-legged frogs and assessing habitat suitability for the species. The survey focused on assessing the BSA and the immediately surrounding areas for their potential to support the California red-legged frog through an evaluation of on-site habitat conditions. Biotic habitats within 1 mi of the project area were also assessed for potential suitability as habitat for this species. A review of background resources was conducted prior to and following the fieldwork. The site assessment, included as Appendix C, determined that habitat was suitable enough that protocol-level surveys for red-legged frog were warranted.

H. T. Harvey herpetologists then conducted surveys according to the USFWS (2005a) protocol. Daytime, breeding-season surveys were conducted on 17 and 24 May, and nighttime, breeding-season surveys were conducted on 17 and 24 May and 8 and 23 June. During the non-breeding season (i.e., after 30 June), single daytime and nighttime surveys were conducted on 22 July.

No red-legged frogs were detected during any of these surveys, whereas other amphibians, including bullfrogs, western toads, and Pacific chorus frogs, were repeatedly observed during surveys (see the survey data sheets included in Appendix C). As a result of these negative survey results, the California red-legged frog is considered absent from the BSA.

4.3.3.2. Avoidance and Minimization Efforts

Because red-legged frogs were determined to be absent from the BSA, no avoidance or minimization measures specific to red-legged frogs are deemed necessary for this Project.

4.3.3.3. PROJECT IMPACTS

Because red-legged frogs were determined to be absent from the BSA, the Project will not affect this species.

4.3.3.4. COMPENSATORY MITIGATION

Because red-legged frogs were determined to be absent from the BSA, the Project will not affect this species and therefore no compensatory mitigation is necessary.

4.3.3.5. CUMULATIVE IMPACTS

California red-legged frogs were determined to be absent from the BSA, and thus will not be impacted by Project activities. Therefore, the Project will not contribute to cumulative effects on this species.

4.3.4. Discussion of the Foothill Yellow-legged Frog

The foothill yellow-legged frog (*Rana boylii*) is a stream-breeding frog typically found in small to mid-sized streams and rivers from the coast to the western slope of the Sierra Nevada (Jennings and Hayes 1994). In California, foothill yellow-legged frogs were historically found in most Pacific drainages from the Coast Ranges to the western Sierra Nevada and San Gabriel mountain foothills, but the range has contracted considerably, likely due in large part to alteration of seasonal water flows resulting from barriers such as dams (Wheeler et al. 2006). Shallow stream riffles with cobble-sized rocks and slow water flows are necessary components of breeding habitat for the species, while open, sunny banks surrounding breeding locations provide foraging habitat (Fellers 2005). This species displays breeding site fidelity, highlighting the importance of protecting known breeding locations (Wheeler et al. 2006). Breeding occurs during the spring in California, typically April to June, although rainfall during the breeding season can cause females to delay oviposition. Egg masses are anchored to cobbles in the streambed, and hatch within one to four weeks after oviposition. Tadpoles take refuge amongst the cobbles near their hatching site, where they forage on algae and detritus (Fellers 2005). Adult yellow-legged frogs feed on a wide variety of terrestrial and aquatic invertebrates.

4.3.4.1. SURVEY RESULTS

The historical distribution of foothill yellow-legged frogs may have included southern Monterey County (Fellers 2005). However, Jennings and Hayes (1994) did not map any historical or current foothill yellow-legged frog records in the Salinas Valley or southern interior Monterey County, although several records occur on the eastern slope of the Santa Lucia Mountains north of the Project vicinity. There are no

CNDDB records for the species in the Project vicinity. The sandy substrate and flashy flows of the San Antonio River within the BSA do not provide suitable aquatic habitat for this species, and the likely presence of exotic predators such as bullfrogs and bluegills in the San Antonio Reservoir and the reaches of the river below the dam further minimize the probability of occurrence of this species within or near the BSA. No yellow-legged frogs were found during protocol-level red-legged frog surveys, yet yellow-legged frogs should have been detectable if present. Therefore, the species is not expected to occur within the BSA.

4.3.4.2. AVOIDANCE AND MINIMIZATION EFFORTS

Because yellow-legged frogs are not expected to occur within the BSA, no avoidance or minimization measures specific to yellow-legged frogs are deemed necessary for this Project.

4.3.4.3. PROJECT IMPACTS

Because yellow-legged frogs are not expected to occur within the BSA, the Project will not affect this species.

4.3.4.4. COMPENSATORY MITIGATION

Because yellow-legged frogs are not expected to occur within the BSA, the Project will not affect this species and therefore no compensatory mitigation is necessary.

4.3.4.5. CUMULATIVE IMPACTS

Foothill yellow-legged frogs are not expected to occur within the BSA, and thus will not be impacted by Project activities. Therefore, the Project will not contribute to cumulative effects on this species.

4.3.5. Discussion of the Arroyo Toad

The arroyo toad is distributed along the coastal slopes of California and Baja California from the San Antonio River in southern Monterey County, through the Transverse and Peninsular ranges of southern California, to the Rio Santo Domingo in Mexico. The distribution of this species is highly fragmented, with isolated populations persisting only in an estimated 35% of their historical range. This pattern of extreme fragmentation and the associated population declines are likely due to large-scale habitat loss and conversion including artificial changes in flow regimes, as well as the introduction of non-native predators and nonnative plant species that have altered the character of southwestern riparian habitats (Sweet and Sullivan 2005). Arroyo toads are aquatic breeders with markedly specific breeding habitat requirements. These toads breed in the margins of open

3rd to 6th order streams with gently sloping or flat banks and little or no tree canopy, where the water is shallow and moves slowly, and where invasive predators such as bullfrogs and predatory fish are absent. Arroyo toads avoid riffle areas and pools that have been isolated from stream flow, and typically select sandy or gravelly substrates. Eggs are laid by the females at the male calling sites on bare substrate where water movement is minimal (Griffin and Case 2001; Sweet and Sullivan 2005). Juveniles and adult toads are insectivorous, foraging primarily on ants. Elevated streamside terraces near breeding sites with alluvial soils and patchy vegetation characteristic of flashy flow regimes comprise ideal foraging and aestivation habitat, although arroyo toads have been documented as far as 0.75 mi (1.2 km) from suitable breeding locations in low-elevation regions. Female toads tend to have larger home ranges than males, and exploit a wider variety of terrestrial habitats during the breeding season, but both males and females have been observed to show a strong preference for channel and terrace habitats over upland, agricultural, or campground habitats in all phases of the annual cycle (Griffin and Case 2001).

The arroyo toad was listed as endangered by the USFWS in 1994 (USFWS 1994), and critical habitat was subsequently designated in 2005 (USFWS 2005). The Project site is not within designated critical habitat.

4.3.5.1. Survey Results

The only area in Monterey County where arroyo toads have been documented in recent years is the San Antonio River upstream of the San Antonio Reservoir, where the species was recorded as recently as 1996 (USFWS 1999). However, no arroyo toads have been detected in areas downstream of the reservoir or elsewhere closer to the Project site. Furthermore, none were detected during the reconnaissance survey or during multiple focused surveys for other amphibian species, yet the species should have been detectable if present. Therefore this species is not expected to occur within the BSA.

4.3.5.2. Avoidance and Minimization Efforts

Arroyo toads are not expected to occur within the BSA and therefore no avoidance or minimization measures specific to the species are necessary.

4.3.5.3. Project Impacts

Arroyo toads are not expected to occur within the BSA, and the nearest known population is located upstream of the BSA and the San Antonio Reservoir. Therefore the Project is not expected to affect arroyo toads.

4.3.5.4. COMPENSATORY MITIGATION

Arroyo toads are not expected to occur within the BSA or to be affected by Project activities, and therefore no compensatory mitigation is necessary.

4.3.5.5. CUMULATIVE IMPACTS

Arroyo toads are not expected to occur within the BSA or to be impacted by Project activities. Therefore, the Project will not contribute to cumulative effects on this species.

4.3.6. Discussion of Potentially Occurring California Amphibians and Reptiles of Special Concern

The western spadefoot is a small California endemic toad that ranges from the northern Central Valley to southern San Diego County, including populations in the central and southern Coast Ranges (Morey 2005). Spadefoot toads are almost completely terrestrial in nature, and spend much of their lives in burrows that they dig themselves, or in abandoned small mammal burrows (Morey 1990 [updated 2000]). They can be found in oak woodlands, grasslands, and even rarely in coastal scrub or chaparral habitat in proximity to suitable breeding pools or sites where such pools will form (Morey 2005). Spadefoot toads emerge from their burrows in response to sufficient rain each fall (Jennings and Hayes 1994), to breed in ephemeral rainpools and ponds that persist for at least 3 weeks, although 30 days is typically the minimum duration necessary for completion of metamorphosis (Jennings and Hayes 1994, Morey 2005). The breeding season typically lasts from late February through late May (Morey 1990 [updated 2000]). Spadefoot toads forage in the vicinity of their breeding pools, eating a variety of invertebrates, particularly beetles (Morey 2005). It is unknown how far they disperse from their breeding sites to aestivation sites. Prime habitat is likely similar to that of California tiger salamanders, featuring ephemeral pools in a matrix of grassy open habitat, with abundant small mammal burrows. Loss of such habitats has contributed to long-standing, severe, and continuing population declines.

The western pond turtle can be found in freshwater aquatic habitats throughout the Pacific states from Baja California Norte to northern Washington State (Bury and Germano 2008). The central California population was historically present in most drainages on the Pacific slope (Jennings and Hayes 1994), but streambed alterations and other sources of habitat destruction, exacerbated by frequent drought events, have caused substantial population declines throughout most of the range (Stebbins 2003). Western pond turtles can be found in intermittent and perennial slow-moving waters, including stock ponds, streams, rivers, marshes, and lakes. The nesting season typically occurs from April through July with the peak occurring in late May to early July. Ponds or slack-water pools with suitable basking sites (such as logs) are an important habitat component, and western pond turtles do not occur commonly along high-gradient streams. Nesting habitat comprises open, sandy or silty uplands with full sun exposure. Females typically lay their eggs within 165 ft of their aquatic habitat, but are known to make considerable overland journeys, and have been documented making their nests as far as 1300 ft (0.25 mi) from the water (Jennings and Hayes 1994, Bury and Germano 2008). Breeding occurs in late spring or early summer (typically May to June). Juveniles feed in shallow aquatic habitats (often creeks) with emergent vegetation and ample invertebrate prey. Adults are omnivorous, feeding on a variety of aquatic and terrestrial invertebrates, detritus, and vegetation. Pond turtles may aestivate in upland areas when water sources are intermittent, but more study is needed.

The coast horned lizard is a California endemic that is distributed along the coast from Contra Costa County in the north to San Diego County in the south, and in patches throughout the Central Valley (Jennings and Hayes 1994). Coast horned lizard populations have declined significantly due to loss of habitat and possibly the influx of invasive invertebrate species (Fisher et al. 2002). Coast horned lizards occupy a variety of open habitats possessing sandy, loosely textured soils, including chaparral, coastal scrub, annual grassland, and clearings in riparian woodlands (Jennings and Hayes 1994). Coast horned lizards are most strongly associated with loose soils free of plant debris, and with the presence of native ants (Fisher et al. 2002). Coast horned lizards breed between April and August, and disperse to over-wintering habitats where they hibernate from November through March (Jennings and Hayes 1994).

The silvery legless lizard is the non-melanistic form of the California legless lizard, a small fossorial reptile nearly endemic to California, with a known distribution from Contra Costa County south to Baja California (Jennings and Hayes 1994, Parham and Papenfuss 2008). Legless lizards live underground in loose, sandy, damp soils with sparse vegetation clumps (Jennings and Hayes 1994). California scrub plants that produce thick root systems and abundant litter are a prominent feature of high quality legless lizard habitats, while few lizards are found in disturbed soils or habitats with a high percentage of annual grass or forb cover (Kuhnz et al. 2005). Legless lizards begin breeding in July, and bear live young between September and November (Jennings and Hayes 1994).

The San Joaquin whipsnake (= coach whip, *Masticophis flagellum ruddocki*) is a small, thin snake endemic to California and restricted to areas of the Sacramento Valley, San Joaquin Valley, and the inner south Coast Ranges (Jennings and Hayes 1994). San Joaquin whipsnakes inhabit relatively xeric, open habitats such as deserts, chaparral, valley grasslands, and saltbush scrub (Palermo 1990 [updated 2000]). Whipsnakes take refuge and lay their eggs in the burrows of small mammals including California ground squirrels and Botta's pocket gophers (Jennings and Hayes 1994). Little is known about the life history of this subspecies, but based on closely related whipsnakes in the deserts of the southwest; they are likely to breed From April through July (Palermo 1990 [updated 2000]). Whipsnakes climb low shrubs in order to gain a vantage from which to search for prey, which includes primarily lizards and bird eggs. Prime habitat for this species is likely to be comprised of large patches of dry, open habitat with some shrub cover, few or no trees, and plentiful small mammal burrows. Habitat loss, particularly through conversion to intensive row crop agriculture, has seriously depressed populations of this geographically restricted species (Jennings and Hayes 1994).

4.3.6.1. Survey Results

The current distribution of each of these species includes the inland central and south Coast Ranges in the vicinity of the Project area. Western spadefoots have been documented in grasslands with ephemeral pools in southern Monterey County and northern San Luis Obispo County (CA ARNG 2009, CNDDB 2011). Suitable breeding habitat for the western spadefoot is not expected to occur within the BSA; western spadefoot toads breed successfully in seasonal rainpools that persist for at least 30 days, and the permeability of the sandy and loamy soils within the BSA is unlikely to allow such pools to form. The nearest ephemeral pools detected during the 5 February 2010 reconnaissance survey are separated from the BSA by active vineyards, which do not provide a hospitable landscape for western spadefoot, and would limit or prevent dispersal to the BSA. However, other seasonal pools could occur in the Project vicinity in areas that offer connectivity to the BSA, and the BSA does support suitable upland habitat for the species. Therefore, western spadefoots may occur on the site, though they are not expected to breed there and likely occur in low numbers since the BSA is not very close to suitable breeding habitat.

No western pond turtles have been recorded in the BSA itself, but they have been documented in the Salinas River upstream of its confluence with the San Antonio River, as well as in the Nacimiento River, which joins the Salinas River upstream of the San Antonio River confluence (CNDDB 2011). Due to their presence in other portions of the watershed in the project vicinity, pond turtles are expected to occur at least occasionally within the BSA, although none were detected during the 5 February 2010 wildlife reconnaissance survey or during subsequent focused surveys for red-legged frogs. The small number of records in the CNDDB coupled with the lack of presence during the wildlife survey suggests that turtles are sparsely distributed in the Project vicinity, and are expected to occur within the BSA only in low numbers. The sandy terraces within the ruderal grassland habitat in the BSA provides potentially suitable nesting habitat, though no evidence of prior nesting (e.g., eggshells) was seen, and the probability of nesting within the BSA is low due to the apparent low abundance of turtles along this reach of the river.

One coast horned lizard was found approximately 2.5 mi downstream of the BSA in 1997 (CNDDB 2011), and several other records exist from the Camp Roberts Army National Guard training facility (CNDDB 2011). Coast horned lizards, silvery legless lizards and San Joaquin whipsnakes have all been documented in the Salinas River watershed in the Project vicinity (Jennings and Hayes 1994). The BSA offers suitable burrowing and foraging habitat for coast horned lizards, silvery legless lizards and San Joaquin whipsnakes in the form of sandy terraces and other sandy substrates, open areas with sparse clumps of scrub and riparian vegetation, and plentiful small mammal burrows. The limited area of the BSA offers only a small amount of habitat for each of these species compared with the amount of habitat available regionally.

4.3.6.2. Avoidance and Minimization Efforts

We do not expect any of these species to occur within the BSA in large enough numbers that Project activities would substantially affect the populations or habitats of these species. However, the following measures will avoid or minimize any impacts to individuals that may occur as a result of Project activities.

1. Prior to the start of construction or demolition activities, a qualified biologist will conduct a preconstruction survey for these species. If any of the above animals are found within the BSA, the qualified biologist will relocate them to a suitable location outside of the BSA.
2. Prior to the start of construction or demolition activities, exclusion fencing will be installed around the work area and between the work area and the water’s edge where feasible. When the fence is completed, the area within the fence will be surveyed for the species described above. The qualified biologist will safely relocate any individuals of these species that are detected within the exclusion fence to a suitable location outside of the BSA.

3. Each morning prior to the start of construction, a designated construction crewmember who has received training in recognizing and handling these species by the qualified biologist will search the area within the exclusion fence for amphibians and reptiles. If any individuals of these species are found, the designated crewmember will relocate those individuals to a suitable location outside of the BSA.

4.3.6.3. Project Impacts

The Project will not directly affect breeding western spadefoot toads or potential spadefoot breeding habitats because the BSA does not contain suitable breeding habitat. However, potential breeding habitat for the western pond turtle, coast horned lizard, silvery legless lizard, and San Joaquin whipsnake does occur in the Project area. Therefore, there is some potential for nests or young of these species to be impacted by Project grading and construction.

Small numbers of individuals of each of these species may be injured or killed by Project activities, such as trampling by construction personnel or crushing by equipment. Additionally, the Project will result in the permanent loss of 0.99 ac and temporary impacts to 2.23 ac of habitat potentially used by one or more of these species. However, construction of the Project will not affect a large enough number of individuals to have a substantial effect on the regional population, and the amount of habitat impacted is minute compared with the available habitat in the vicinity. Therefore this Project will not result in substantial effects to these species or their habitats.

4.3.6.4. Compensatory Mitigation

Project activities are not expected to have a substantial adverse effect on coast horned lizards, silvery legless lizards, or San Joaquin whipsnake populations or habitats, so no compensatory mitigation of effects on these species is warranted.

4.3.6.5. Cumulative Impacts

Cumulative impacts to western spadefoot toads, western pond turtles, coast horned lizards, silvery legless lizards, and San Joaquin whipsnakes result from past, current, and reasonably foreseeable future projects in the region, including continuing maintenance of bridges in southern Monterey County. It is expected that most current and future projects that impact these habitats will have to mitigate these impacts through the CEQA, Section 1600, or Section 404/401 permitting process, including measures to avoid, minimize, or mitigate impacts to these species where they are present. Because there is a low probability that the Project will result in effects on these species and their habitats, the project will not make a considerable contribution to cumulative effects on western spadefoot toads, western pond turtles, coast horned lizards, silvery legless lizards, or San Joaquin whipsnakes.

4.3.7. Discussion of the Bald Eagle and Golden Eagle

The bald eagle (*Haliaeetus leucocephalus*) was removed from the federal endangered species list in 2008 (USFWS 2008), but remains listed as both endangered and fully protected by the state of California (CDFG 2008). Bald eagle populations exhibited precipitous declines in the early part of the 20th century primarily as a result of pesticide poisoning, which severely impacted reproductive rates. DDT was the most debilitating of these chemicals, and when its use was banned in the United States in 1972, eagle populations recovered rapidly (Buehler 2000). Currently, bald eagles are distributed throughout North America along waterways and coasts. In California, bald eagle populations remain low, although they are increasing steadily, and can be found nesting extensively in the northern forested foothills and mountains, near Lake San Antonio and Lake Nacimiento in central California, and locally in the Sierra Nevada range and southern California (Buehler 2000, Thorngate 2004, CDFG 2008). Bald eagles select nest sites in relatively close proximity to aquatic foraging areas but isolated from human activities, and build nests in tall, sturdy trees (Buehler 2000); eagles exhibit very high site fidelity (Jenkins and Jackman 1993). The breeding season extends from January through August. Eagles forage in fresh and salt water where prey species (fish) are abundant and diverse. Ideal habitat for bald eagles is comprised of remote, forested landscape with old growth or mature trees and easy access to an extensive and diverse prey base (Buehler 2000).

The golden eagle (*Aquila chrysaetos*) is widely distributed across the holarctic in a variety of open habitats (Kochert et al. 2002). In California, the golden eagle is an uncommon permanent resident and migrant throughout the state and the breeding distribution excludes only the Central Valley, the immediate coast in the far north, and the southeastern corner of the state (Polite and Pratt 1990). Until recently, golden eagle populations in North America were considered both abundant and stable, but recent declines have been noted in several western states, including southern California (Good et al. 2007). Loss of habitat and accidental or purposeful mortalities due to human activities are the primary factors contributing to these declines (Kochert and Steenhof 2002), which are expected to continue as habitat loss and anthropogenic landscape alteration continue. Golden eagles breed in a range of open habitats including desert scrub, foothill cismontane woodlands, and annual or perennial grasslands. Prime golden eagle habitat is characterized by large, remote patches of grassland or open woodland; a hilly topography that generates lift; an abundance of small mammal prey; and tall structures to serve as nest platforms and hunting perches. Once a breeding pair establishes a territory, they may build a number of nests in tall structures including tall trees or snags, cliffs, or utility towers, only one of which is used in any given year. The breeding season begins in late January and runs through August. After the nesting period is over, adults usually remain in or near their breeding territories, although in higher elevations they may move down-slope somewhat. Migratory individuals from northern portions of the species range may winter in California. Young birds in California tend to be sedentary, remaining in or near their parental home ranges (Polite and Pratt 1990, Kochert et al. 2002).

4.3.7.1. Survey Results

Known breeding pairs of bald eagles occur at both Lake San Antonio and Lake Nacimiento, and at several locations along the San Antonio River and the Nacimiento River (Thorngate 2004). During the February reconnaissance survey of the BSA, a pair of eagles was observed approximately ¼-mi south of the BSA, perching in a blue oak. During diurnal red-legged frog surveys in late May, a pair of eagles, likely the same birds observed earlier in the year, was observed using a large stick nest in a sycamore approximately 150 ft southeast of the BSA, which had appeared to be occupied by a red-tailed hawk during the initial reconnaissance survey in February. This nesting pair of bald eagles may forage on fish in the river in the vicinity of the BSA, or they may forage upstream at Lake San Antonio.

No golden eagles were observed during Project site surveys, but they have been regularly observed nesting and foraging in southern Monterey County (Roberson and Tenney 1993, CNDDB 2011). The BSA supports some suitable foraging habitat for this species (e.g., in the grasslands), and a few oak trees large enough to support nests are present within the BSA. However, due to the territorial nature of large raptors such as eagles, it is unlikely that a nesting pair of golden eagles would be present on the site if bald eagles are nesting just ¼-mi away, and therefore, golden eagles are unlikely to nest in or near the BSA.

4.3.7.2. Avoidance and Minimization Efforts

Nesting bald eagles and golden eagles are sensitive to increases in disturbance near their nesting territories, and are known to abandon their nests due to noises and activities related to heavy machinery and increased human presence. In order to avoid impacts to eagles, the following measures will be incorporated into the project.

1. To the extent feasible, work will be conducted during the raptor non-breeding season (September 1 – January 31), so as to avoid causing nest abandonment due to Project-related disturbances.
2. If work must occur during the breeding season, a pre-construction survey to determine if eagles are nesting in the Project area shall be conducted by a qualified biologist. If eagles are found to be nesting near enough to the BSA to be disturbed by Project activities, a Project-specific disturbance-free buffer around the nest shall be established in consultation with the USFWS and CDFG through Caltrans. In general, a 660-ft buffer is recommended by the USFWS in these cases according to the latest National Bald Eagle Management Guidelines published by the USFWS (USFWS 2007). No new disturbance will be allowed within the designated Project-specific buffer until the eaglets have fledged or the nest has been abandoned.

4.3.7.3. PROJECT IMPACTS

If eagles nest close to the BSA, Project-related activity and noise could disturb the eagles sufficiently that they abandon their nest, resulting in the loss of nestlings and temporal loss of habitat while the disturbance continues. Three valley oak trees large enough to support eagle nests will be removed within the BSA, so permanent loss of potential breeding habitat within the BSA will occur as a result of Project activities. However, no eagle nests are currently present in these trees, and therefore the Project is not expected to result in the loss of actual nesting habitat. The Project will result in permanent impacts to 0.99 ac and temporary impacts to 2.23 ac of habitats that may be used to some extent by foraging eagles. However, these acreages represent a minute proportion of the available foraging habitat present both regionally and within the home range of a pair of nesting eagles, and therefore these impacts are not expected to result in substantive adverse effects on eagles. Application of the conservation measures described above will avoid or minimize Project effects on bald and golden eagles.

4.3.7.4. COMPENSATORY MITIGATION

Because the Project will have no substantive effects on eagles or their habitats, no compensatory mitigation for such impacts is proposed.

4.3.7.5. CUMULATIVE EFFECTS

Cumulative effects on bald and golden eagles result from past, current, and reasonably foreseeable future projects in the region, including continuing maintenance of bridges in southern Monterey County. It is expected that most current and future projects that impact these habitats will have to mitigate these impacts through the CEQA, Section 1600, or Section 404/401 permitting process, including measures to avoid, minimize, or mitigate impacts to bald eagles where they are present. Assuming that this Project adheres to the conservation measures described in this NES, the Project will not contribute substantially to cumulative effects on bald or golden eagles.

4.3.8. Discussion of the Burrowing Owl

Western burrowing owls (*Athene cunicularia*) can be found in grassland habitats throughout western and midwestern North America (Haug et al. 1993). In California burrowing owls are distributed throughout the state, with populations in the northeast; in the Central Valley, interior San Francisco Bay Area, and Salinas Valley; on the Carrizo Plain and in the Imperial Valley; and on several of the Channel Islands (Gervais et al. 2008). Habitat loss has reduced the abundance of this species within its range and resulted in local extirpations, particularly along the central and southern coasts (Gervais et al. 2008). California hosts both migratory and sedentary populations of burrowing owls (Rosenberg et al. 2007). These owls favor flat, open grassland or gentle slopes and sparse shrubland ecosystems for nesting, through they will readily colonize agricultural fields and other developed areas (Haug et al. 1993, Conway et al. 2006, Gervais et al. 2008). Mammal burrows, or other structures that mimic burrows, provide secure nesting locations and non-breeding refuges and are a fundamental ecological requirement of burrowing owls (Gervais et al. 2008); in California, owls are most often found in close association with California ground squirrel burrows (Rosenberg et al.. 2007). Ideal habitat for burrowing owls is comprised of annual and perennial grasslands with low vegetation height, sparse or nonexistent tree or shrub cover, and an abundance of mammal burrows (Coulombe 1971, Haug and Oliphant 1990, Plumpton and Lutz 1993, Rosenberg et al. 2007). The nesting season as recognized by the California Department of Fish and Game (1995) runs from February 1 through August 31. After nesting is completed, adult owls may remain in their nesting burrows or in nearby burrows, or may migrate (Rosenberg et al. 2007); young birds disperse across the landscape, from 0.1 mi (0.2 km) to 32.9 mi (53 km) from their natal burrows (Rosier et al. 2006).

4.3.8.1. Survey Results

The CNDDB query for this report indicated that there are several records of burrowing owls in the Project vicinity, at various locations on the Camp Roberts Army National Guard training facility. The grazed annual grasslands in the general vicinity provide suitable habitat where ground squirrels are present. Although the grassy and ruderal areas within the BSA support some small mammal burrows, they are on relatively unstable sandy substrates that do not hold the structure of burrows well, and are on steep slopes near shrubs and trees or close to the bridge. As a result, burrowing owl breeding and roosting habitat is absent from the BSA. Occasional burrowing owls may forage in the BSA during migration, but we do not expect them to occur regularly or in large numbers on the project site, or to nest or roost in burrows there.

4.3.8.2. Avoidance and Minimization Efforts

We do not expect burrowing owls to occur within the BSA in large enough numbers that Project activities would substantially affect the populations of or habitats for this species. Furthermore, because no suitable roosting or nesting sites are present, we do not expect Project activities to have any potential for causing the injury or mortality of burrowing owls (e.g., in burrows). Therefore, no avoidance or mitigation measures specific to burrowing owls are deemed necessary. This species, along with other native bird species in the vicinity of the BSA, is protected by both the MBTA and the California Fish and Game Code, which prohibit the take of migratory birds and their nests. This Project will implement measures to avoid and minimize effects (described in Section 4.4 below) on active nests of all birds protected under these regulations. In the unlikely event that burrowing owls nest on or near the BSA, these measures will result in the avoidance of effects on a burrowing owl nest.

4.3.8.3. Project Impacts

Because burrowing owls are not expected to roost or nest within the BSA, the Project will not result in impacts to individual owls or their burrows. The Project’s permanent impacts to 0.68 ac and temporary impacts to 2.11 ac of grassland could result in impacts to habitat that is occasionally used by foraging owls. However, because burrowing owls are expected to use the site infrequently and in low numbers, the Project will not result in substantial effects on burrowing owls.

4.3.8.4. Compensatory Mitigation

Because burrowing owls are not expected to occur within the BSA in large numbers or to occupy burrows within the BSA, and because the Project will not result in substantial loss of burrowing owl habitat, no compensatory mitigation is necessary.

4.3.8.5. Cumulative Impacts

Cumulative impacts to burrowing owls result from past, current, and reasonably foreseeable future projects in the region, including continuing maintenance of bridges in southern Monterey County. It is expected that most current and future projects that impact these habitats will have to mitigate these impacts through the CEQA, Section 1600, or Section 404/401 permitting process, including measures to avoid, minimize, or mitigate impacts to burrowing owls where they are present or where suitable habitat exists. Because this Project will not result in substantial effects on burrowing owls or substantial loss of potential habitat, the project will not contribute to cumulative impacts on burrowing owls.

4.3.9. Discussion of the Least Bell's Vireo

The least Bell's vireo, one of four recognized subspecies of Bell's vireo (Kus 2002, Kus et al. 2010), is a small neotropical migratory songbird sparsely distributed along waterways in southern California and northern Baja California, Mexico (Kus et al. 2010). In California, the least Bell's vireo was historically distributed throughout much of the state, including the Central Valley, the central and southern Coast Ranges, local areas of the eastern Sierra Nevada, and the southwestern portion of the state (Franzreb et al. 1994, Kus 2002). Once purported to be the most common vireo throughout its range (Grinnell and Miller 1944), extensive habitat destruction, exacerbated by population pressures brought to bear by heavy brown-headed cowbird (*Molothrus ater*) parasitism, has caused precipitous population declines, and the species has been extirpated from all portions of its range except for a few small remnant populations in riparian drainages in the 8 counties south of Santa Barbara, with the greatest abundance of the vireos occurring in San Diego County (Franzreb 1994, Kus 2002). In the past several years, populations have begun to rebound due to intensive recovery efforts, and occasional individuals have recently been detected singing or nesting in portions of their historical range, including San Luis Obispo, Santa Clara, and Sacramento Counties (Kus 2002, USFWS 2006). The least Bell's vireo is a riparian-obligate breeder (Kus 1998), using dense thickets of willows and other low bushes along perennial or ephemeral streams (Franzreb 1994, Kus 2002). Prime least Bell's vireo habitat can be described as a wide (greater than 820-ft [250 m]) riparian corridor (Kus 2002) with dense shrub growth extending vertically from 2 – 10 ft (0.6 to 3 m, Kus et al. 2010), few trees greater than 3.12 inch (8 cm) dbh (diameter at breast height) in the canopy, and an open canopy (Sharp and Kus 2006). Vireos arrive on their breeding grounds in mid-March, and the nesting season runs from early April through July (Kus et al. 2010). Least Bell's vireos exhibit high breeding site fidelity, returning to the same territory, and even nesting in the same shrub, over multiple years (Kus 2002).

The least Bell's vireo was listed as endangered by the state of California in 1980 and by the USFWS in 1986 (USFWS 1986). The USFWS designated 38,000 ac of lands in southern California as critical habitat in 1994 (USFWS 1994). The Project site is not located within designated critical habitat.

4.3.9.1. SURVEY RESULTS

Least Bell's vireos historically nested in the upper Salinas River Valley in the Project vicinity. The last documented nest in the area was located along the Salinas River near Bradley, approximately 5 mi northeast of the BSA, in 1983. Since that time, occasional singing males have been detected along the upper Salinas River (Roberson and Tenney 1993, CA ARNG 2009). However, intensive point count surveys along the Salinas and Nacimiento Rivers just south of the Project area between 1992 and 2007 failed to detect any least Bell's vireos (Thorngate 2007), indicating that their presence in the vicinity is extremely sporadic, if the species currently occurs in the region at all. No vireos were observed during the reconnaissance survey; however, least Bell's vireos are neotropical migrants and as such would not have been present during the winter, when the survey was conducted. The BSA includes willow clusters that offer ostensibly suitable nesting habitat for least Bell's vireos, although these relatively sparse clusters of willows do not represent the thick willow shrub thickets preferred by this species. Due to the absence of high-quality habitat, there is a low probability that least Bell's vireos occur in the BSA. However, we cannot rule out the possibility of up to one pair of least Bell's vireos establishing a breeding territory within the BSA.

4.3.9.2. AVOIDANCE AND MINIMIZATION EFFORTS

In order to avoid effects on least Bell's vireos, should they occur within the BSA, the following measures will be incorporated into the project.

1. Project activities will be timed to avoid the least Bell's vireo breeding season (1 April to 31 July) to the greatest extent practicable.
2. Where vegetation is to be removed by the project, potential nesting substrates (e.g., bushes, trees, grass, and suitable artificial surfaces) that will be disturbed by the project will be removed during the non-breeding season, if feasible, to help preclude nesting.
3. If it is not feasible to schedule vegetation removal and commencement of construction activities during the non-breeding season, then pre-construction surveys for nesting birds will be conducted by a qualified ornithologist to detect any least Bell's vireos using the areas and to ensure that no nests will

be disturbed during project implementation. This survey will be conducted no more than 7 days prior to the initiation of construction activities. During this survey, the ornithologist will inspect all trees, shrubs, and other potential nesting habitats in and immediately adjacent to the impact areas for nests. In the unlikely event that nesting least Bell's vireos are detected during such a survey, Caltrans will be notified, and will determine an appropriate buffer (typically approximately 250 ft) in consultation with the USFWS and CDFG.

4.3.9.3. Project Impacts

In the unlikely event that least Bell's vireos occupy riparian habitat in or near the BSA prior to the commencement of construction, the Project could potentially result in the removal of nesting and foraging habitat. Up to 0.27 ac of forested or scrub riparian habitat will be removed by the Project, although this habitat is of marginal quality for use by Bell's vireos. Implementation of the measures described in the previous section would prevent destruction or abandonment of a nest due to Project-related disturbance.

4.3.9.4. Compensatory Mitigation

Permanent loss of willow riparian habitat will be mitigated at a 3:1 (mitigation:loss) ratio, and heavy trimming will be mitigated at a 2:1 ratio as described above in Section 4.1.2.4.

4.3.9.5. Cumulative Effects

Cumulative impacts to least Bell's vireos result from past, current, and reasonably foreseeable future projects in the region, including continuing maintenance of bridges in southern Monterey County. It is expected that most current and future projects that impact these habitats will have to mitigate these impacts through the CEQA, Section 1600, or Section 404/401 permitting process, including measures to avoid, minimize, or mitigate impacts to least Bell's vireos where they are present. Regardless, the Project vicinity is far north of the current range of the species. Given the abundance of unoccupied habitat in the region, habitat availability is not currently limiting Bell's vireo populations, and any impacts to potential least Bell's vireo habitat in this area would thus not contribute to cumulative impacts to the species.

4.3.10. Discussion of Other Special-status Nesting Birds

The white-tailed kite ranges throughout the western states and Florida where suitable habitat occurs. In California, white-tailed kites can be found in the Central Valley and along the coast, in grasslands, agricultural fields, cismontane woodlands, and other open habitats (Polite et al. 1990, Dunk 1995, Erichsen et al. 1996). Although the species rallied impressively after marked reductions during the early 20th century, populations may be exhibiting new declines resulting from recent increases in habitat loss and disturbance (Dunk 1995, Erichsen et al. 1996). White-tailed kites are year-round residents of the state, establishing breeding territories that encompass open areas with healthy prey populations, and snags, shrubs, trees, or other nesting substrates (Dunk 1995). Non-breeding birds typically remain in the same area over the winter, although some movements do occur (Polite et al. 1990). The presence of white-tailed kites is closely tied to the presence of prey species, particularly voles, and prey base may be the most important factor in determining habitat quality for white-tailed kites (Dunk and Cooper 1994, Skonieczny and Dunk 1997).

The loggerhead shrike is distributed throughout much of California, except in higher-elevation and heavily forested areas including the Coast Ranges, the Sierra Nevada, the southern Cascades, the Klamath and Siskiyou ranges, and the highest parts of the Transverse Ranges (Humple 2008). While the species range in California has remained stable over time, populations have declined steadily (Cade and Woods 1997, Humple 2008). Loggerhead shrikes establish breeding territories in open habitats with relatively short vegetation that allows for visibility of prey; they can be found in grasslands, scrub habitats, riparian areas, other open woodlands, ruderal habitats, and developed areas including golf courses and agricultural fields (Yosef 1996). They require the presence of structures for impaling their prey; these most often take the form of thorny or sharp-stemmed shrubs, or barbed wire (Humple 2008). Ideal nesting habitat for loggerhead shrikes is comprised of short grass habitat with many perches, shrubs or trees for nesting, and sharp branches or barbed wire fences for impaling prey (Yosef 1996). Shrikes nest earlier than most other passerines, especially in the west where populations are sedentary (Yosef 1996). The breeding season may begin as early as late February, and lasts through July (Yosef 1996). Nests are typically established in shrubs and low trees including sagebrush, willow, and mesquite, through brush piles may also be used when shrubs are not available (Yosef 1996, Humple 2008). Loss and degradation of nesting habitat, as well as possible negative impacts of pesticides, are considered to be the major contributors to the population declines exhibited by this species (Cade and Woods 1997, Humple 2008).

The yellow warbler is a widespread neotropical migrant that inhabits wet deciduous forests throughout North America (Lowther et al. 1999). In California, yellow warblers can be found occupying riparian habitats along the entire coast, on both eastern and western slopes of the Sierra Nevada up to approximately 1700 ft, and throughout the northern portion of the state. Both the historical and current range excludes the southwestern desert region of the state, and yellow warblers have been largely extirpated from the Central Valley (Heath 2008). Their range has remained relatively stable over time, but their populations have declined substantially in many localities due to habitat loss (Cain et al. 2003). Yellow warblers breed from early May through early August in wet, early-successional or recently disturbed habitats dominated by willow thickets, where they construct cup nests approximately 3 to 40 ft off the ground in upright forks of shrubs or trees in dense willow thickets or in other dense vegetation.

The tricolored blackbird is a year-round near-endemic to California, where more than 99% of the global population can be found (Beedy 2008). Tricolored blackbirds are most abundant in the Central Valley, but nesting colonies can also be found locally on the North Coast and in northeastern California, along the Central and Southern Coasts, and in the western Mojave Desert (Beedy and Hamilton 1999, Beedy 2008). Tricolored blackbirds form the largest nesting colonies of any landbird, ranging from fewer than 20 to over 30,000 birds in a single colony (Beedy 2008). Tricolored blackbirds historically established their nesting colonies in bulrushes, cattails, and other emergent vegetation over open water, but currently many of the largest colonies are found nesting in non-native Himalayan blackberry (*Rubus discolor*) and thistles, and in grain fields near dairies (Cook and Toft 2005, Beedy 2008). Prime nesting habitat for tricolored blackbirds must include an open source of fresh water; protected nesting microhabitat such as flooded or thorny vegetation; and nearby foraging areas such as grain fields, pastures, or dairies (Churchwell et al. 2005). Tricolored blackbird colonies begin forming in March, and the nesting season extends through mid-July (Hamilton 2004). After the nesting season, colonies disband and populations from across the species range congregate in the Central Valley to form loose foraging flocks (Hamilton 2004).

4.3.10.1. SURVEY RESULTS

Each of these species is known to occur in the Project vicinity during the nesting season, and all have been documented nesting in the Salinas Valley (Roberson and Tenney 1993). White-tailed kites were observed only rarely during 10 years of avian point counts along the Salinas River and the Nacimiento River just south of the Project area (Thorngate 2007), but no evidence of nesting was documented in those reaches during that time; and only one confirmed incidence of nesting white-tailed kites was documented in the Salinas Valley during the Monterey county Breeding Bird Atlas effort between 1988 and 1992 (Roberson and Tenney 1993), indicating that the species breeds sparsely in the Project vicinity. However the Project site does offer a few large trees that provide potentially suitable nesting habitat for up to one pair of white-tailed kites.

Loggerhead shrikes were occasionally observed during 10 years of avian point counts along the Salinas River and the Nacimiento River just south of the Project area (Thorngate 2007), and no evidence of nesting was documented in those reaches during that time. However several confirmed incidences of nesting loggerhead shrikes were documented in the Salinas Valley and around Lake San Antonio during the Monterey county Breeding Bird Atlas effort between 1988 and 1992 (Roberson and Tenney 1993), indicating that the species is a regular breeder in the Project vicinity. The BSA offers some shrubs and trees suitable for a pair of nesting loggerhead shrikes.

Yellow warblers were historically common in California; however, populations of this species have been reduced and even extirpated in many areas. Yellow warblers were still documented breeding in low numbers in the Salinas Valley during the 1988-1992 nesting bird atlasing effort (Roberson and Tenney 1993), including one nest along the Salinas River approximately 4.5 mi northeast of the BSA. Yellow warblers were documented regularly during 10 years of avian point counts along the Salinas River and the Nacimiento River just south of the Project area (Thorngate 2007). The BSA offers suitable nesting and foraging habitat, although the extent is too limited to support more than one nesting pair.

Nesting colonies of tricolored blackbirds have periodically been documented in the upper Salinas Valley near the BSA (Thorngate and Griffiths 2005, CNDDB 2011). The BSA offers beds of cattails that comprise suitable habitat for a small nesting colony.

4.3.10.2. Avoidance and Minimization Efforts

These species, along with other native bird species in the vicinity of the BSA, are protected by both the MBTA and the California Fish and Game Code, which prohibit the take of migratory birds and their nests. This Project will implement measures to avoid and minimize effects (described in Section 4.4 below) on active nests of all birds protected under these regulations. In the event that white-tailed kites, loggerhead shrikes, yellow warblers, or tricolored blackbirds nest in or near the BSA, these measures will result in the avoidance of effects on these species.

4.3.10.3. Project Impacts

With implementation of the conservation measures described in Section 4.4.2 below, the Project will avoid the potential to cause the death or injury of any migratory bird species, including white-tailed kites, loggerhead shrikes, yellow warblers, and tricolored blackbirds, or their active nests, eggs, or young. The Project will result in permanent impacts to 0.99 ac and temporary impacts of 2.23 ac of habitat that may be used by one or more of these species, or that may support prey (e.g., insects) used by these species.

4.3.10.4. Compensatory Mitigation

Because the Project will have no effect on the regional abundance of white-tailed kites, loggerhead shrikes, yellow warblers, or tricolored blackbirds, and thus no substantial effects on these species or their habitats, no compensatory mitigation is warranted. However, mitigation of impacts to wetland and riparian habitat used by these species will be provided as described in Sections 4.1.1.4 and 4.1.2.4, respectively.

4.3.10.5. Cumulative Impacts

Cumulative impacts to white-tailed kites, loggerhead shrikes, yellow warblers, and tricolored blackbirds result from past, current, and reasonably foreseeable future projects in the region, including periodic maintenance and replacement of bridges throughout Monterey County. These projects will all undergo (or have undergone) separate environmental review, and will require separate environmental permitting from regulatory agencies, if needed. It is expected that any significant ecological impacts to special-status birds and their habitats, in particular sensitive habitats such as riparian habitats, identified for these individual projects will be mitigated through the CEQA and/or permitting process. Any contribution of this Project to cumulative effects on riparian habitats that may be used as nesting or foraging habitat by these species will be mitigated as described in Section 4.1.2.4 above. Thus, provided that this Project successfully incorporates the conservation measures described in this NES, the Project will not contribute to substantial cumulative effects on these special-status birds.

4.3.11. Discussion of Western Red Bat

The western red bat is a locally common bat in coastal California and the Central Valley from Shasta County to Baja California (Zeiner et al. 1990). Western red bats are strongly associated with intact cottonwood/sycamore valley riparian habitats in low elevations (Pierson et al. 2006), and the loss of such habitat throughout its range threatens the persistence of the species (WBWG 2005). Both day and night roosts are usually located in the foliage of trees; red bats in the Central Valley show a preference for large trees and extensive, intact riparian habitat (Pierson et al. 2006). Day roosts are often located along the edges of riparian areas, near streams, grasslands, and even urban areas (WBWG 2005). During the breeding season, red bats establish individual tree roosts and occasionally small maternity colonies in riparian habitats, in locations usually hidden from every direction except below (Zeiner et al. 1990). Little is known about the habitat use of western red bats during the non-breeding season (Pierson et al. 2006). The red bat uses echolocation to capture insects in mid flight and require habitat mosaics or edges that provide close access to foraging sites as well as cover for roosting (Zeiner et al. 1990)

4.3.11.1. Survey Results

The breeding range of western red bats includes the San Antonio River Valley below the reservoir, and the species has been documented breeding in the Salinas Valley (D. Johnston, pers. comm.). However, the BSA does not support large cottonwoods, eucalyptus, or sycamore trees, which are the preferred nesting substrate for the species. Western red bats may occasionally roost in the foliage of trees on the site, and may forage over the site, but they are not expected to form maternity roosts there.

4.3.11.2. Avoidance and Minimization Efforts

Because western red bats are not expected to form maternity roosts on the site, no impacts to individuals are expected to occur. Any individuals that might be roosting in foliage of trees to be disturbed would flush before injury or mortality could occur. Therefore, no avoidance or minimization measures are necessary.

4.3.11.3. Project Impacts

The Project will result in the removal of trees, totaling 0.27 acres of forest or scrub riparian habitat, that offer potential day-roosting sites for low numbers of western red bats. If any red bats are flushed from roosts due to Project-related disturbance during daylight hours (when Project activities would occur), the potential for predation by predatory birds would increase. However, the Project is expected to result in impacts to few such bats, if any.

4.3.11.4. Compensatory Mitigation

The Project will not have substantial effects on habitat for western red bats. Therefore, no compensatory mitigation is proposed. However, mitigation of impacts to riparian habitat potentially used by this species will be provided as described in Section 4.1.2.4 above.

4.3.11.5. CUMULATIVE IMPACTS

Cumulative effects on western red bats result from past, current, and reasonably foreseeable future projects in the region, including periodic maintenance and replacement of bridges throughout Monterey County. These projects will all undergo (or have undergone) separate environmental review, and will require separate environmental permitting from regulatory agencies, if needed. Many of the ecological impacts identified for these individual projects will be mitigated. Thus, provided that this Project successfully incorporates the conservation measures described in this NES, the Project will not contribute to substantial cumulative effects on western red bats.

4.3.12. Discussion of the Salinas Pocket Mouse

The Salinas pocket mouse (*Perognathus inornatus psammophilus*), a subspecies of the California endemic San Joaquin pocket mouse, is restricted to arid annual grasslands and savannahs with sandy or otherwise finely textured soils in the Salinas Valley from Soledad to Hog Canyon in southern Monterey County (Williams et al. 1993, Best 1993). Habitat loss, fragmentation, and conversion due to agricultural and urban development have resulted in the steadily declining population of this species, as well as contractions in distribution (Brylski 1998). This subspecies was identified as a taxon being considered for federal listing as endangered or threatened in 1985, but to date the Service has found that, while a proposed listing may be warranted, there is not enough persuasive data to support such a proposal (USFWS 1985, 1994). Salinas pocket mice excavate small (0.75 – 1.2 inch [2-3 cm]) burrows, usually at the base of shrubs, in sandy soils with low herbaceous vegetation. These mice are nocturnal animals, resting in their burrows by day and emerging at night to forage on seeds and other plant materials. Salinas pocket mice breed from March – July, bearing two or more litters of four to six pups each season. In late fall, most individuals enter a period of hibernation, typically extending from October to March (Best 1993).

4.3.12.1. SURVEY RESULTS

Several Salinas pocket mice were trapped on the Camp Roberts Army National Guard training facility in the mid-1990s (CNDDB 2011). While no pocket mouse burrows were observed during the February reconnaissance survey, the BSA provides suitable habitat for the species. The scarcity of captures during concerted small mammal trapping surveys at Camp Roberts, as well as the dearth of other records in the vicinity, indicate that the species occurs locally and in low densities in the Project vicinity. Thus, the species is expected to occur in the BSA in only low numbers, if at all.

4.3.12.2. Avoidance and Minimization Efforts

Because Salinas pocket mice are expected to occur only in low numbers if they occur at all within the BSA, no avoidance or minimization measures specific to the species are recommended.

4.3.12.3. Project Impacts

If Salinas pocket mice are present within the BSA, they could suffer injury or mortality due to construction activities such as excavation, grading, filling, or vehicular access. Additionally, a small amount of suitable habitat will be lost as a result of Project activities. However, these impacts will not have a substantial effect on Salinas pocket mouse populations, and the amount of habitat that will be lost is small compared with the total amount of suitable habitat available regionally.

4.3.12.4. Compensatory Mitigation

Because the Project will not have a substantial effect on Salinas pocket mouse populations, and because the amount of habitat that will be lost is miniscule compared with the total amount of suitable habitat available regionally, no compensatory mitigation is proposed.

4.3.12.5. Cumulative Effects

Cumulative impacts to Salinas pocket mice result from past, current, and reasonably foreseeable future projects in the region, including periodic maintenance and replacement of bridges throughout Monterey County. These projects will all undergo (or have undergone) separate environmental review, and will require separate environmental permitting from regulatory agencies, if needed. Many of the ecological impacts identified for these individual projects will be mitigated. Due to the low probability and magnitude of Project impacts on Salinas pocket mouse populations or habitats, this Project will not contribute to cumulative effects on the species.

4.3.13. Discussion of the American Badger

American badgers (*Taxidea taxus*) in California typically occur in annual grassland habitats, oak woodland savanna, semi-arid shrub/scrublands, and any habitat with stable ground squirrel populations, or other fossorial rodents (i.e., gophers, kangaroo rats, and chipmunks; Zeiner et al. 1990). Badgers typically hunt for these rodent species by excavating their burrow systems (Long 1973); they also prepare deep, broad burrows to shelter and hibernate in. The home ranges of both male and female badgers expand during the breeding season, suggesting that males and females travel more extensively to find mates. Males have larger home ranges that typically overlap with the home ranges of several females (Long 1999). Mating occurs in late summer or early fall and embryos are arrested early in development. Implantation is delayed until December or February; after this period embryos implant into the uterine wall and resume development (Long 1999).

4.3.13.1. Survey Results

Numerous badgers have been documented on the lands of the Camp Roberts California Army National Guard training facility to the south of the BSA. No badgers or badger dens were observed in the BSA during the February reconnaissance survey, but suitable open grasslands occur adjacent to the Project area, and the grassy and ruderal portions of the BSA offer potential foraging and limited denning habitat for badgers. Because of the small size of the BSA, we would not expect more than one badger to occur in the BSA.

4.3.13.2. Avoidance and Minimization Efforts

Because of the low probability of a badger occurring on the BSA, no avoidance or minimization measures specific to badgers are recommended. However, the conservation measures described below for San Joaquin kit foxes will also avoid or minimize impacts to badgers. If a badger den is discovered in the course of pre-construction surveys for kit foxes, or at any other time during Project activities, the CDFG will be consulted regarding the establishment of an appropriate disturbance-free buffer around the den, as well as any other avoidance or minimization measures to be taken.

4.3.13.3. Project Impacts

There is a low probability of badgers occurring within the BSA. However, if individuals do occur in the Project area during Project activities, impacts could occur. Individuals could be struck and suffer injury or mortality from construction machinery or from increased construction-related traffic on the road during the construction process. Occupied dens could be collapsed during earth moving, grading, and excavating activities, potentially causing injury or mortality as well as loss of denning habitat. However, the conservation measures described above for kit foxes will help to avoid or minimize potential effects on badgers. The number of badgers that could potentially occupy the BSA is very low, and the amount of potential badger habitat lost as a result of Project activities (0.68 ac of permanent and 2.11 ac of temporary impact to grassland) is minute compared with the amount of suitable habitat available regionally. Therefore the Project will not have substantial effects on regional populations of badgers, or on their habitats.

4.3.13.4. Compensatory Mitigation

Because the amount of badger habitat that will be lost as a result of Project activities is negligible compared with the amount of habitat available regionally, no compensatory mitigation is warranted.

4.3.13.5. Cumulative Effects

Cumulative effects on American badgers result from past, current, and reasonably foreseeable future projects in the region, including periodic maintenance and replacement of bridges throughout Monterey County. These projects will all undergo (or have undergone) separate environmental review, and will require separate environmental permitting from regulatory agencies, if needed. Many of the ecological impacts identified for these individual projects will be mitigated. Due to the expected environmental review and conservation measures taken by each individual project, and because the current Project will not have a substantial effect on American badger populations or habitats, this Project will not contribute to cumulative effects on the species.

4.3.14. Discussion of the San Joaquin Kit Fox

The federally endangered and state threatened San Joaquin kit fox is a California endemic, currently restricted to the San Joaquin Valley and the interior central and southern Coast Ranges (Spiegel et al. 1994). The San Joaquin kit fox was listed as endangered by the U.S. Department of the Interior (USFWS 1967) in 1967 and was listed as threatened by the State of California in 1971. Habitat loss in the Central Valley, and increasingly in the interior Coast Ranges, has been a primary cause of kit fox declines; competition with and predation by larger canids including coyotes (*Canis latrans*) and nonnative red foxes (*Vulpes vulpes*) (Cypher and Spenser 1998, Clark et al. 2005, Nelson et al. 2007), and automobile collisions (Spiegel et al. 1994) also pose significant threats to the persistence of the species. Subpopulations of the San Joaquin kit fox appear to be increasingly isolated from one another. The isolation of subpopulations can lead to increased rates of extinction due to the effects of inbreeding, genetic drift, Allee effects (Dennis 1989, Fowler and Baker 1991) and stochastic events (Gilpin and Soulé 1986, White et al. 2000).

Kit foxes are found primarily in large annual grasslands or other open, grassy habitats where shrub cover is sparse and scattered and where mammalian prey is abundant (Ahlborn 1990 [updated 2000]). Kit foxes dig multiple complex, multi-chambered dens where soils are friable and easily moved; or may exploit small mammal burrows or manmade structures such as culverts where the soil is harder and more difficult to dig. Pups are born and reared in these dens, and both kits and adults use the dens throughout the year to minimize heat stress in summer and cool temperatures in winter, and to avoid predators such as coyotes. Thus, the availability of dens is a critical component of suitable kit fox habitat (Spiegel et al. 1994, Koopman et al. 1998). The pupping season begins in February and continues through April, and pups begin dispersing in late June with peak dispersal occurring in July (Koopman et al. 2000). Adults remain on their territories year-round, maintaining home ranges that range from 420 ac (170 hectares (ha)) to 3705 ac (1500 ha) (Spiegel et al. 1994). Kit foxes are nocturnal predators, primarily preying on small mammals, although they will also eat carrion, insects, reptiles, and birds (Spiegel et al. 1994).

4.3.14.1. Survey Results

Several CNDDB records of San Joaquin kit foxes exist just south of the Project area on the Camp Roberts Army National Guard training facility (CNDDB 2011). Surveys for kit foxes at Camp Roberts began in 1986, and an annual live-trapping program intended to estimate the kit fox population on the base ran from 1988 to 2002. Spotlighting surveys conducted on a biannual basis since 2002 have continued to detect kit foxes on the base in very low numbers (CA ARNG 2009). No dens of appropriate size (e.g. 4-inch diameter or greater) or shape (e.g. “keyhole”-shaped) indicating potential use by kit foxes were found within the BSA during the February 2010 reconnaissance survey, or during subsequent focused surveys for wetlands, rare plants, and red-legged frogs. The BSA offers suitable kit fox denning and foraging habitat. Given the extremely low population numbers for the closest known kit fox population and the lack of records elsewhere in the Project area, there is a low probability of occurrence of this species within the BSA. However, we cannot rule out the possibility that kit foxes could occasionally use the site for foraging (though denning is unlikely).

4.3.14.2. Avoidance and Minimization Efforts

We consider the likelihood of any kit foxes occurring in the BSA to be very low. Nevertheless, precautionary measures from the *U.S. Fish And Wildlife Service Standardized Recommendations For Protection Of The San Joaquin Kit Fox Prior To Or During Ground Disturbance* (USFWS 1999) will be undertaken in order to ensure that no kit foxes are impacted by Project activities. The Project meets the definition of a "small Project", which according to these recommendations specifically includes stand-alone bridge repair projects. Thus, the avoidance and minimization measures that will be implemented include the following:

- All surveys, den destructions, and monitoring related to the kit fox must be conducted by a qualified biologist.
- A qualified biologist will conduct pre-construction surveys no less than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities. This survey will identify kit fox habitat features on the project site and evaluate use by kit fox and, if possible, assess the potential impacts to the kit fox by the proposed activity. The status of all dens will be determined and mapped.
- Written results of the pre-construction survey will be submitted to Caltrans immediately; Caltrans will then notify the USFWS within 5 days after survey completion and prior to the start of ground disturbance and/or construction activities. If a natal/pupping den is discovered within the project area or within 200-feet of the project boundary, Caltrans shall be immediately notified, and shall in turn notify the USFWS and CDFG. If the pre-construction survey reveals an active natal or pupping den or new information, Caltrans will contact the USFWS and CDFG immediately to obtain the necessary take authorization/permit. If a den is found, measures to avoid impacts to the den (including buffers and seasonal restrictions on work near the den) will be implemented, and if necessary, the foxes will be evicted after the non-breeding season.

4.3.14.3. PROJECT IMPACTS

There is a very low probability of kit foxes occurring within the BSA. However if individuals do occur in the Project area during Project activities, impacts could occur. Individuals could be struck and suffer injury or mortality from construction machinery or from increased construction-related traffic on the road during the construction process. Occupied dens could be collapsed during earth moving, grading, and excavating activities, potentially causing injury or mortality as well as loss of denning habitat. However, the conservation measures described above are expected to result in avoidance of these effects on the species. The amount of potential kit fox habitat lost as a result of Project activities (0.68 ac of permanent and 2.11 ac of temporary impact to grassland) is minute compared with the amount of suitable habitat available regionally.

4.3.14.4. Compensatory Mitigation

The potential kit fox habitat available on the site is limited and marginal, and represents only a minute amount of habitat relative to the suitable habitat available in the areas surrounding the BSA. The only known kit fox population in the vicinity has continued to decline despite the availability of ostensibly suitable habitat, indicating that habitat availability is not limiting for kit foxes in the region. Therefore, no compensatory mitigation is necessary.

4.3.14.5. Cumulative Effects

Cumulative effects on San Joaquin kit foxes result from past, current, and reasonably foreseeable future projects in the region, including periodic maintenance and replacement of bridges throughout Monterey County. These projects will all undergo (or have undergone) separate environmental review, and will require separate environmental permitting from regulatory agencies, if needed. It is expected that any significant ecological impacts to the San Joaquin kit foxes and its habitat identified for these individual projects will be mitigated through the CEQA and/or permitting process. The Project will result in permanent loss of only a minute amount of potential kit fox habitat, and the only known kit fox population in the vicinity has continued to decline despite the availability of large tracts of ostensibly suitable habitat, indicating that habitat availability is not limiting for kit foxes in the region. Thus, provided that this Project successfully incorporates the conservation measures described in this NES to avoid impacts to individual kit foxes, the Project will not contribute to substantial cumulative effects on this species.

4.4. Migratory Birds

The MBTA and California Fish and Game Code protect migratory birds, including their eggs, nests, and young. Most of the migratory birds that have the potential to breed within the BSA are not special-status species and are regionally common. We have further determined that the Project will not substantially affect certain special-status avian species potentially present in the BSA (Section 4.3.10). Nevertheless, the Project will implement measures to avoid and minimize effects on active nests of migratory birds to comply with the MBTA and Fish and Game Code.

4.4.1. Survey Results

Several species of birds protected by the MBTA and the California Fish and Game Code may nest within or adjacent to the BSA. Bird species covered by the MBTA that were observed during the reconnaissance survey and likely nest in the area included acorn woodpeckers, red-shafted flickers, Bewick's wrens, black phoebes, song sparrows, and red-winged blackbirds. Intact nests from previous years, likely belonging to black phoebes, were observed at several places on the existing bridge structure. A number of other bird species, including Pacific-slope flycatchers, warbling vireos, and black-headed grosbeaks may also nest in trees, shrubs, and other habitats within and adjacent to the BSA.

4.4.2. Avoidance and Minimization Efforts

Because construction disturbance during the breeding season could result in the destruction of active nests, the incidental loss of fertile eggs or nestlings, or the abandonment of nests of protected bird species, measures will be implemented to reduce the risk of a violation of the MBTA and the CDFG Code.

Construction activities will be avoided during the nesting season to the extent feasible. The nesting season for most birds in this region of California extends from 1 February to 31 August.

If vegetation is to be removed by the Project, potential nesting substrate (e.g., bushes, trees, snags, grass, and suitable artificial surfaces) that will be disturbed should be removed during the non-breeding season (i.e., they should be removed between 1 September and 31 January), if feasible, to help preclude nesting. If it is not feasible to schedule vegetation removal during the non-breeding season, then pre-construction surveys for nesting birds will be conducted by a qualified ornithologist to ensure that no nests will be disturbed during Project implementation. This survey will be conducted no more than seven days prior to the initiation of construction activities. During this survey, the ornithologist will inspect all trees, shrubs, and other potential nesting habitats in and immediately adjacent to the BSA for nests. If an active nest is found sufficiently close to work areas to be disturbed by these activities, the ornithologist, in consultation with the CDFG, will determine the extent of a buffer zone to be established around the nest, typically 250 ft for raptors and 50 ft for other birds, to ensure that no nests of species protected by the MBTA or the California Fish and Game Code will be disturbed during Project implementation.

Alternatively, nest starts may be removed on a regular basis (e.g., every second or third day), starting in late January or early February, or measures such as exclusion netting may be placed over the existing bridge to prevent active nests from becoming established.

Because the BSA is already subject to disturbance by vehicles to some extent, activities that will be prohibited from occurring within the buffer zone around a nest will be determined on a case-by-case basis. In general, activities prohibited within such a buffer while a nest is active will be limited to new construction-related activities (i.e., activities that were not ongoing when the nest was constructed) involving significantly greater noise, human presence, or vibrations than were present prior to nest initiation.

4.4.3. Project Impacts

With implementation of the above avoidance and minimization measures, the Project has a low likelihood of resulting in the death or injury of migratory birds or their active nests, eggs, or young. The Project will affect a very small amount of potential nesting habitat for migratory birds, but such effects will have no measurable effect on regional populations of these species because the impacted habitat represents such a small proportion of regionally available habitat.

4.4.4. Compensatory Mitigation

Because of the limited nature of Project effects on migratory bird species and their habitats, no compensatory mitigation is warranted.

4.4.5. Cumulative Effects

With implementation of the avoidance and minimization measures described above, the Project will make no measurable contribution to cumulative effects on populations, or habitat, of migratory bird species.

4.5. Wildlife Movement

4.5.1. Survey Results

The BSA is not located within a particularly important corridor for terrestrial wildlife movement, as the Project vicinity contains extensive natural habitat suitable for use by terrestrial species and suitable for movement among areas of core habitat. However, the San Antonio River does represent an important movement pathway for fish and other aquatic species, such as western pond turtles.

4.5.2. Avoidance and Minimization Efforts

The Project is not expected to substantially affect wildlife movement, and thus no avoidance or minimization measures are necessary.

4.5.3. Project Impacts

Project activities may produce a temporary barrier to wildlife movement, particularly if any work occurs during the night, when many animals are more active. If animals try to avoid equipment and activity within the floodplain, they may attempt to move upslope and cross the road, increasing their risk of road mortality.

Temporary impediments to movement by aquatic species may result from the placement of temporary pads for falsework in the channel during bridge construction. However, a freely flowing portion of the channel will remain open during construction, and thus these pads represent a temporary and partial impediment to movement. Overall, the BSA will retain its value for wildlife movement, as it will continue to provide a bridge under which animals may move freely. Therefore, the Project will not substantially impact wildlife movement through the area.

4.5.4. Compensatory Mitigation

The Project is not expected to result in any substantial increase in barriers to wildlife movement, and thus no compensatory mitigation is necessary.

4.5.5. Cumulative Effects

Cumulative effects on wildlife movement result from past, current, and reasonably foreseeable future Projects in the region. Because regional/landscape-level movements of wildlife are most important for consideration, the Projects that contribute to cumulative effects include any development Projects that would reduce connectivity within and between the mountain ranges, streams, and riparian areas in southern Monterey County. Currently, the scarcity of urban development and other impediments to wildlife movement in the vicinity allows for relatively unimpeded movement within the region. We are not aware of reasonably foreseeable projects that would result in a significant impediment to wildlife movement, and therefore this Project will not contribute to a substantial impact to wildlife movement.

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

5.1. Federal Endangered Species Act Consultation Summary

Three federally listed species could potentially occur within the BSA: South-Central California Coast steelhead, least Bell's vireo, and San Joaquin kit fox. Because the reach of the San Antonio River within the BSA is of poor quality for spawning steelhead, steelhead have not been documented in the Project reach in some years, and Project activities will take place during the dry season, there is a very low probability that steelhead would be impacted by the Project, and thus the Project may affect but is not likely to adversely affect steelhead. Nevertheless, at least informal consultation with the NMFS may be necessary. The Project may affect, but is not likely to adversely affect, the least Bell's vireo and San Joaquin kit fox. Pre-construction surveys will be conducted for any least Bell's vireos and San Joaquin kit foxes or dens within the BSA; if any Bell's vireos or kit foxes are found, impacts will be avoided through implementation of avoidance measures, and/or Caltrans will consult with USFWS before any Project activities begin. Under NEPA delegation, Caltrans is the lead federal agency for Section 7 consultations and will initiate any and all required Project consultations with USFWS and NMFS.

5.2. California Endangered Species Act Consultation Summary

California tiger salamanders are not expected to occur the BSA. Therefore, the Project will not affect this CESA-protected species and no consultation with the CDFG regarding California tiger salamanders is necessary. A pair of bald eagles has been documented nesting adjacent to the BSA. Because this nest is within 660 ft (the typically recommended buffer for this species) from the Project area, measures will be implemented to ensure avoidance of impacts to nesting bald eagles. The conservation measures described above will be implemented in consultation with the CDFG, and the Project will thereby avoid or minimize effects on this species. Least Bell's vireos and San Joaquin kit foxes are unlikely to occur in the Project area, but we cannot rule out the possibility of their occurrence in low numbers. Therefore, the

Project could affect these CESA-protected species. The conservation measures described above will be implemented in consultation with the CDFG, and the Project will thereby avoid effects on least Bell's vireos and San Joaquin kit foxes.

5.3. Essential Fish Habitat Consultation Summary

No EFH exists within the BSA. Therefore consultation with NMFS for EFH is not warranted.

5.4. Wetlands and Other Waters and CDFG Riparian Jurisdictional Coordination Summary

All work within the San Antonio OHW marks, and all associated wetlands on-site, including construction access, will require permits from the USACE and the RWQCB.

Additionally, work within any native soil bank areas, including but not limited to vegetation removal, within the riparian corridor of the San Antonio River (within top of bank) will require a SAA from the CDFG under Section 1602 of the California Fish and Game Code. The Project proponent will apply for and obtain a 1602 SAA from the CDFG for all work associated with the installation of the proposed bridge, including the bent, abutments, fill, and RSP, as well as removal of the existing bridge, and impacts to the riparian canopy of the San Antonio River, including trimming-related impacts. Table 7 summarizes the extent of Project-related impacts occurring within USACE/RWQCB and CDFG riparian jurisdiction.

Table 7: Summary of Jurisdictional Impacts to Waters of the U.S./State and CDFG Riparian Jurisdiction.

Impact Type	USACE/RWQCB Jurisdiction	CDFG 1600 Jurisdiction
Permanent Impacts	0.05 ac (wetlands, and willow scrub below OHW)	0.68 ac (includes 0.27 ac of woody vegetation and riparian tree/scrub removal)
Temporary Impacts	0.08 ac (aquatic) 0.08 ac (wetland)	1.03 ac

The Issuance of NWPs, Water Quality Certification from the RWQCB, and issuance of a SAA usually requires some form of compensatory mitigation as a condition of permit approval at the discretion of the individual agency. Mitigation prescribed in this NES for impacts to wetlands (Section 4.1.1.4) and riparian habitats (Section 4.1.2.4) will compensate for effects on these habitats and should also satisfy permit conditions. The San Antonio River, where open water habitat is located and less than 5% cover of wetland vegetation was established, was mapped to the OHW marks as aquatic habitat and considered to be a water of the U.S./State (Figure 3). A Wetland Technical Assessment was conducted for this Project and is provided as Appendix B.

5.5. Invasive Species

Several invasive plant species were observed within or adjacent to the BSA (Table 8). These species included grassland and riparian understory invaders such as French broom and yellow star-thistle. Invasive plant species, particularly fast-growing herbaceous invaders, are often disturbance-adapted, and soil disturbance (an effect expected for this construction Project) will often be followed by an invasion of the disturbed area by these species. However, much of the areas that will be affected by Project activities will be covered under increased hardscape, or will be restored as part of compensatory mitigation for Project effects, both of which prevent weed growth. Upland areas disturbed during Project construction that will remain natural will be treated with a native seed mix. Additionally, BMPs intended to reduce the spread of invasive species, including vehicle washing before construction equipment is brought on-site, will be enacted. Therefore, Project-related effects are not expected to cause an increase in invasive species populations within the BSA.

Table 8: List of Invasive Plant Species Observed at the Project Site and the California Invasive Plant Council Ratings of Ecological Impact and Invasive Potential by Species.

Common Name	Scientific Name	Habitat Where Species Was Observed on Site	Ecological Impact*	Invasive Potential*
French broom	*Genista monspessulana*	Ruderal grassland along developed	A	A
Yellow star-thistle	*Centaurea solstitialis*	Ruderal grassland along developed	A	B

* A= Severe; B = Moderate; C = Limited. These ratings were derived from the California Invasive Plant Council website: http://www.cal-ipc.org/ip/inventory/weedlist.php. **Not on the IPC List, but occurs on the California Department of Food and Agriculture List of Invasive Species

Invasive animal species, including bullfrogs (*Lithobates catesbeianus*) and crayfish (*Procambarus clarkii*), were also observed within the BSA. These invasive animals prey on native aquatic species, and may play a role in local extirpations of native species. In addition, non-native bird species such as European starlings (*Sturnus vulgaris*), rock pigeons (*Columba livia*), and house sparrows (*Passer domesticus*) may occur in the Project vicinity. Although starlings could potentially compete with native birds for nesting cavities, these birds are not typically considered “invasive” in that they seem to have a limited impact on native species’ populations. The Project will not alter the habitats within the BSA in such a way as to increase populations of any of these non-native animal species. Therefore, Project-related effects are not expected to cause an increase in invasive animal species populations within or adjacent to the BSA.

Chapter 6. References

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6.2. Personal Communications

Joel Casagrande, National Oceanic and Atmospheric Administration; pers. comm. to Dr. Patrick Boursier, H. T. Harvey & Associates (10 May 2012).

Appendix A. USFWS Special-status Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

May 10, 2012

Document Number: 120510050844

Ginger Bolen, PhD
H. T. Harvey & Associates
983 University Avenue, Bldg D.
Los Gatos, CA

Subject: Species List for Nacimiento Lake Drive Bridge Replacement

Dear: Dr. Bolen

We are sending this official species list in response to your May 10, 2012 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be August 08, 2012.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found here.

Endangered Species Division

U.S. Fish & Wildlife Service

Sacramento Fish & Wildlife Office

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 120510050844

Database Last Updated: September 18, 2011

County Lists

Monterey County

Listed Species

Invertebrates

- Branchinecta conservatio
  - Conservancy fairy shrimp (E)

- Branchinecta lynchi
  - Critical habitat, vernal pool fairy shrimp (X)
  - vernal pool fairy shrimp (T)

- Desmocerus californicus dimorphus
  - valley elderberry longhorn beetle (T)

- Euphydryas editha bayensis
  - bay checkerspot butterfly (T)

Fish

- Eucyclogobius newberryi
  - critical habitat, tidewater goby (X)

- Hypomesus transpacificus
  - delta smelt (T)

- Oncorhynchus kisutch

  - coho salmon - central CA coast (E) (NMFS)

- Oncorhynchus mykiss
  - Central Valley steelhead (T) (NMFS)
  - Critical habitat, Central California coastal steelhead (X) (NMFS)
  - South Central California steelhead (T) (NMFS)

Amphibians

- Ambystoma californiense
  - California tiger salamander, central population (T)
  - Critical habitat, CA tiger salamander, central population (X)

- Rana draytonii
  - California red-legged frog (T)
  - Critical habitat, California red-legged frog (X)

Reptiles

- Gambelia (=Crotaphytus) sila
  - blunt-nosed leopard lizard (E)

Birds

- Brachyramphus marmoratus
  - marbled murrelet (T)

- Gymnogyps californianus
  - California condor (E)

- Rallus longirostris obsoletus
  - California clapper rail (E)

- Sternula antillarum (=Sterna, =albifrons) browni
  - California least tern (E)

- Vireo bellii pusillus
  - Least Bell's vireo (E)

Mammals

- Dipodomys ingens
  - giant kangaroo rat (E)

- Vulpes macrotis mutica
  - San Joaquin kit fox (E)

Plants

- Camissonia benitensis
    - San Benito evening-primrose (T)

- Caulanthus californicus
    - California jewelflower (E)

- Chorizanthe robusta var. robusta
    - robust spineflower (E)

- Erysimum menziesii (includes ssp. yadonii)
    - Menzies's wallflower (E)

- Holocarpha macradenia
    - Critical habitat, Santa Cruz tarplant (X)
    - Santa Cruz tarplant (T)

- Lasthenia conjugens
    - Contra Costa goldfields (E)

- Layia carnosa
    - beach layia (E)

- Lupinus tidestromii
    - clover lupine [Tidestrom's lupine] (E)

- Monolopia congdonii (=Lembertia congdonii)
    - San Joaquin woolly-threads (E)

- Potentilla hickmanii
    - Hickman's potentilla (=cinquefoil) (E)

Proposed Species

Amphibians

- Rana draytonii
    - Critical habitat, California red-legged frog (PX)

Key:

- (E) Endangered - Listed as being in danger of extinction.
- (T) Threatened - Listed as likely to become endangered within the foreseeable future.
- (P) Proposed - Officially proposed in the Federal Register for listing as endangered or threatened.
- (NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.

- Critical Habitat - Area essential to the conservation of a species.
- (PX) Proposed Critical Habitat - The species is already listed. Critical habitat is being proposed for it.
- (C) Candidate - Candidate to become a proposed species.
- (V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
- (X) Critical Habitat designated for this species

Appendix B. Preliminary Delineation of Wetlands and Other Waters

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

NACIMIENTO LAKE DRIVE BRIDGE REPLACEMENT PROJECT, SAN MATEO COUNTY, CALIFORNIA PRELIMINARY DELINEATION OF WETLANDS AND OTHER WATERS

Prepared by

H. T. Harvey & Associates

Patrick J. Boursier, Ph.D., Principal-in-charge
Kelly Hardwicke, Ph.D., Project Manager
Brian Cleary, M.S., Senior Plant Ecologist

Prepared for

David L. Powers & Associates
1871 The Alameda, Suite 200
San Jose, California 95126

21 September 2010 — Project Number 1212-10

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EXECUTIVE SUMMARY

H. T. Harvey & Associates surveyed the Nacimiento Lake Drive Bridge (Bridge #449) replacement Project site located in Monterey County, California for jurisdictional features that may be subject to regulation by the U.S. Army Corps of Engineers. Specifically, an approximately 12.24-acre study area that includes a reach of the San Antonio River was surveyed for wetlands and other waters.

As a result of our surveys we documented approximately 0.67 acres of potential jurisdictional waters within the study area. Such areas included freshwater emergent wetlands located within the channel bed and along the lower banks of the San Antonio River, and seasonal wetlands primarily within a small floodplain riverine backwater channel connected to the north bank of the San Antonio River. Approximately 1.21 acres of other waters situated below the ordinary high water mark of the San Antonio River were also identified within the study area. The remaining areas within the Project site (approximately 10.36 acres) met none of the regulatory definitions of jurisdictional waters.

Summary of Potential Jurisdictional Waters

Potential Jurisdictional Waters	**Acres**
Section 404 Wetlands	
Freshwater Emergent Wetlands and Seasonal Wetlands	0.67
Section 404 Other Waters	
San Antonio River	1.21
Total of Jurisdictional Waters	**1.88**
Upland	**10.36**
Total Area Surveyed	**12.24**

INTRODUCTION

PROJECT AREA DESCRIPTION

The Nacimiento Lake Drive Bridge (Bridge #449) replacement Project is located approximately five miles (mi) south southwest of the Town of Bradley on Nacimiento Lake Drive (County Road G19), Monterey County, California (Figure 1). The Project site is situated in the rolling foothills of south central Monterey County just east of the San Antonio and Nacimiento reservoirs. Surveys to determine the extent of potentially jurisdictional waters were performed in an approximately 12.24-acre (ac) study area that included the existing Nacimiento Lake Drive Bridge alignment, a proposed new bridge alignment located directly adjacent to the south side of the existing bridge alignment, and approximately two ac of riverine area and floodplain associated with the bed and banks of the San Antonio River located beneath the existing and bridge alignments.

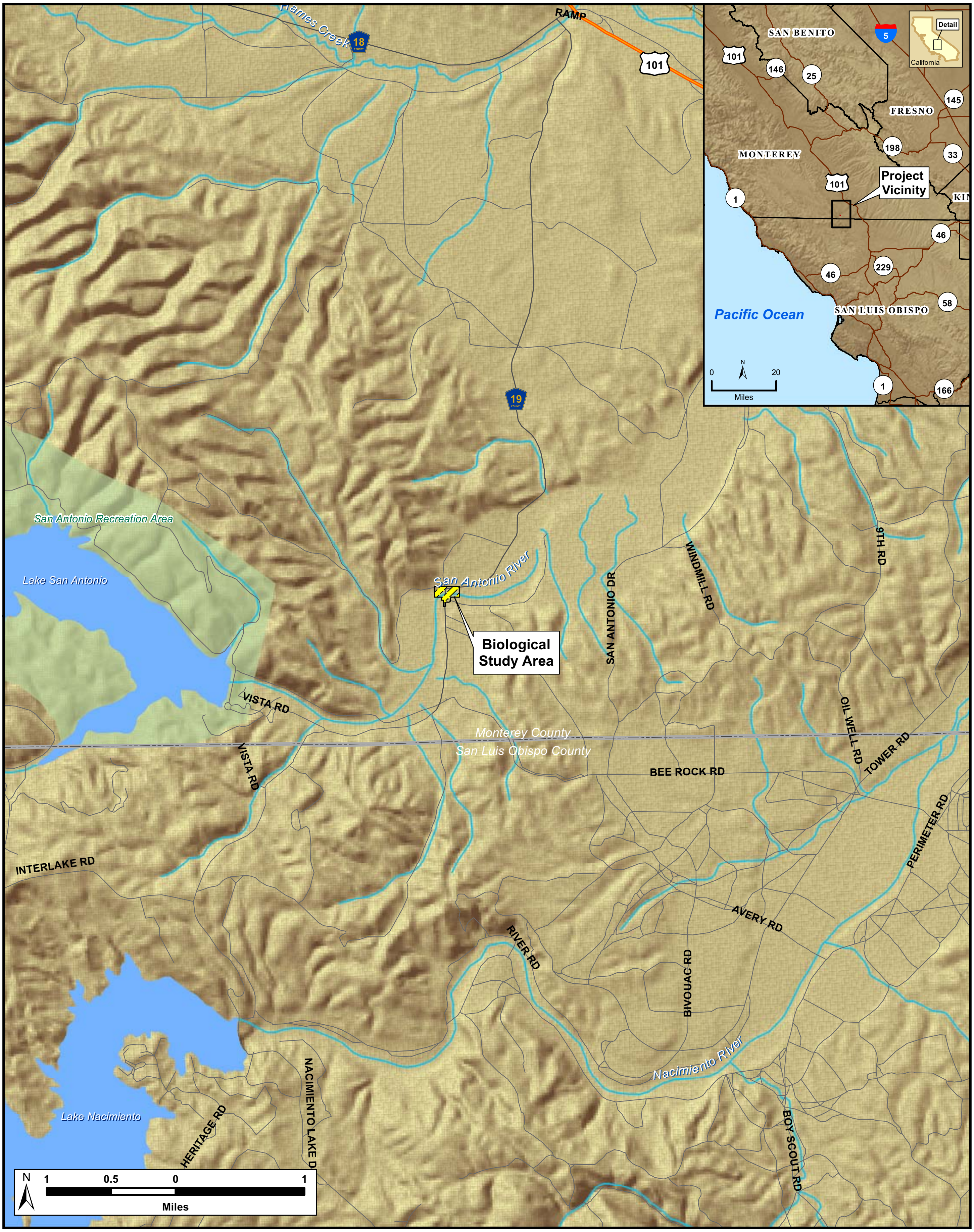
The Project site occurs on the Bradley U.S. Geological Survey (USGS) 7.5-minute quadrangle map (Figure 2). Elevation ranges from approximately 580 to 800 feet (ft) National Geodetic Vertical Datum (NGVD) (Figure 2). Natural topography and vegetation on the site consists primarily of a broad, riverine riparian floodplain associated with the San Antonio River surrounded by steep rolling foothill grassland, sage scrub and oak woodland situated along each side of the river corridor. Average annual precipitation is approximately 10 inches per year in this part of Monterey County, and average annual temperatures are between 55 to 55 degrees Fahrenheit (NRCS 1978). Most of the yearly precipitation occurs from November through March.

A total of five different soil types underlie the Project study area (Figure 3, Appendix A). These include Psamments and Fluvents, frequently flooded, Metz loamy sand, Lockwood shaly loam, 2 to 9 percent slopes, Shedd silt loam, 30 to 75 percent slopes, severely eroded, and Placentia sandy loam, 2 to 9 percent slopes (SCS 1978). The Psamments and Fluvents, frequently flooded soils are excessively drained soils with rapid permeability subject to flooding scouring and deposition every 3 to 5 years. These soils consist of sandy, gravelly and cobbly sediments on floodplains. Metz loamy sand soils consist of somewhat excessively drained soils that formed in alluvium derived mostly from sedimentary rocks on flood plains and sand dunes. Lockwood shaly loam, 2 to 9 percent slopes soils consist of well-drained soils that formed in alluvium derived from siliceous shale. These soils are on alluvial fans and inland and coastal terraces. Shedd silt loam, 30 to 75 percent slopes, severely eroded soils consist of well drained soils on uplands formed in material underlain by calcareous shale and sandstone. Placentia sandy loam, 2 to 9 percent slopes soils consist of well-drained soils that formed in alluvium that was derived from granitic and schistose rocks on old alluvial fans and terraces. None of these soil types are listed under the Monterey County hydric soils list (1992).

The U.S. Fish and Wildlife Service has classified a number of wetland resources of the Project site under the National Wetland Inventory (NWI) system. The reach of the San Antonio River within the Project site is classified as a palustrine scrub/shrub, temporarily flooded, palustrine scrub/shrub, seasonally flooded, palustrine scrub/shrub, emergent, seasonally flooded and riverine, intermittent, streambed, seasonally flooded, aquatic resources (Figure 4).

SURVEY PURPOSE

H. T. Harvey & Associates (HTH) senior plant ecologist Brian Cleary surveyed the study area for areas that may meet the physical criteria and regulatory definition of "Waters of the United States" (jurisdictional waters). The purpose of the field surveys was to identify the extent and distribution of potential jurisdictional waters such as wetlands and other waters occurring within the study area boundaries under conditions existing at the time of the survey.



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H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Figure 1: Vicinity Map

Nacimiento Lake Drive Bridge Replacement Project - ID of Waters (1212-10)

September 2010

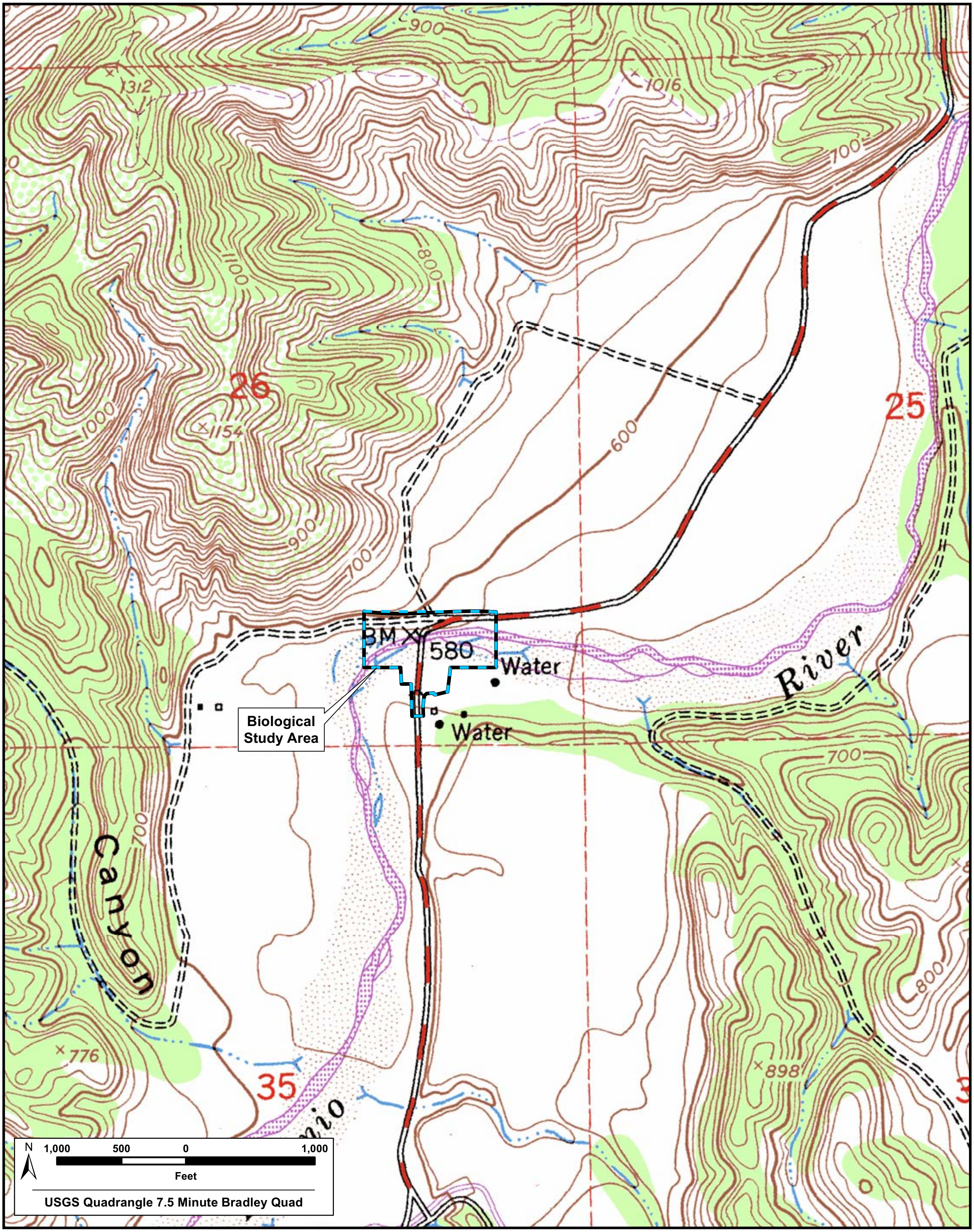

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Figure 2: USGS Map

Nacimiento Lake Drive Bridge Replacement Project - ID of Waters (1212-10)

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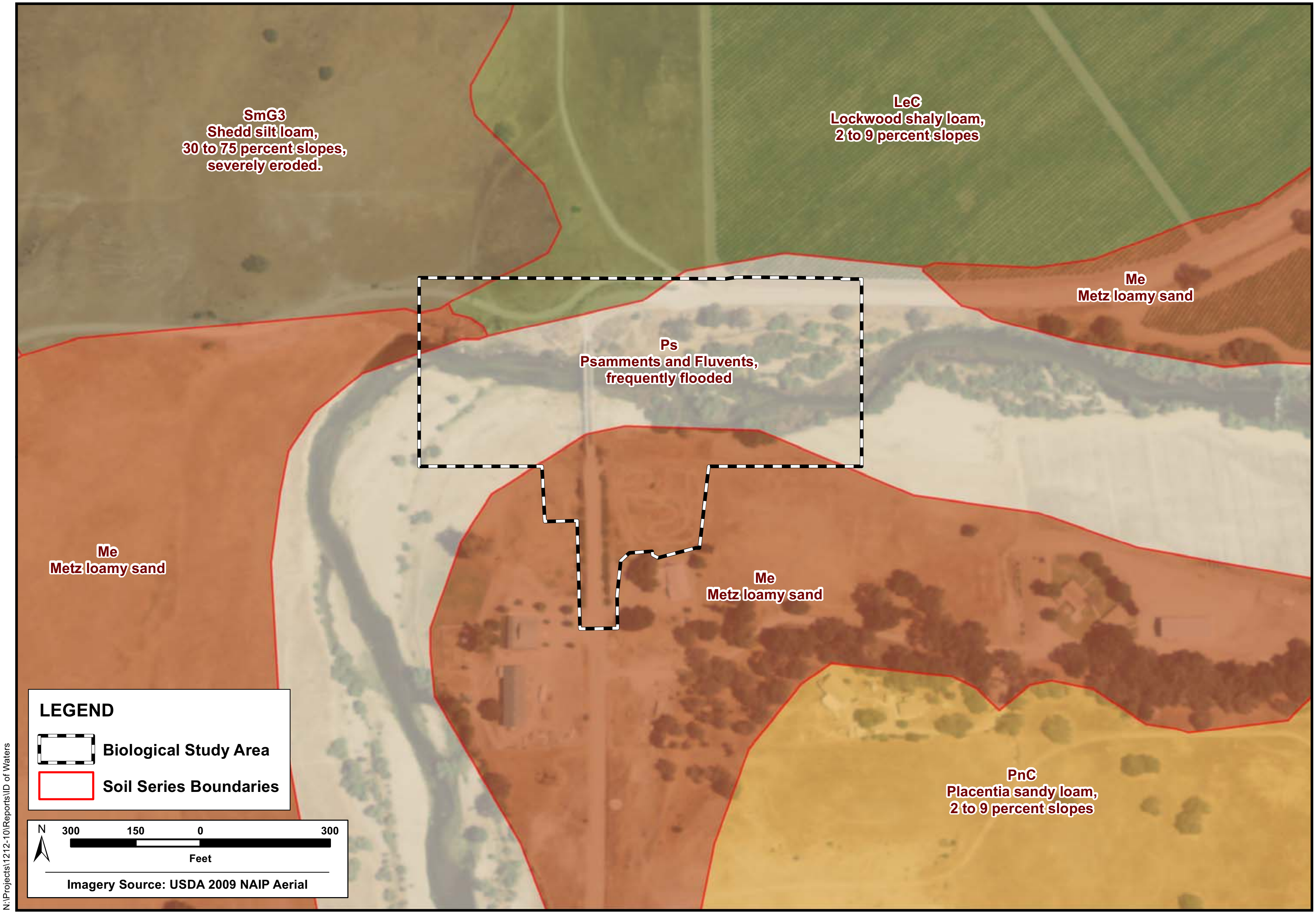

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Figure 3: Soils Map

Nacimiento Lake Drive Bridge Replacement Project - ID of Waters (1212-10)

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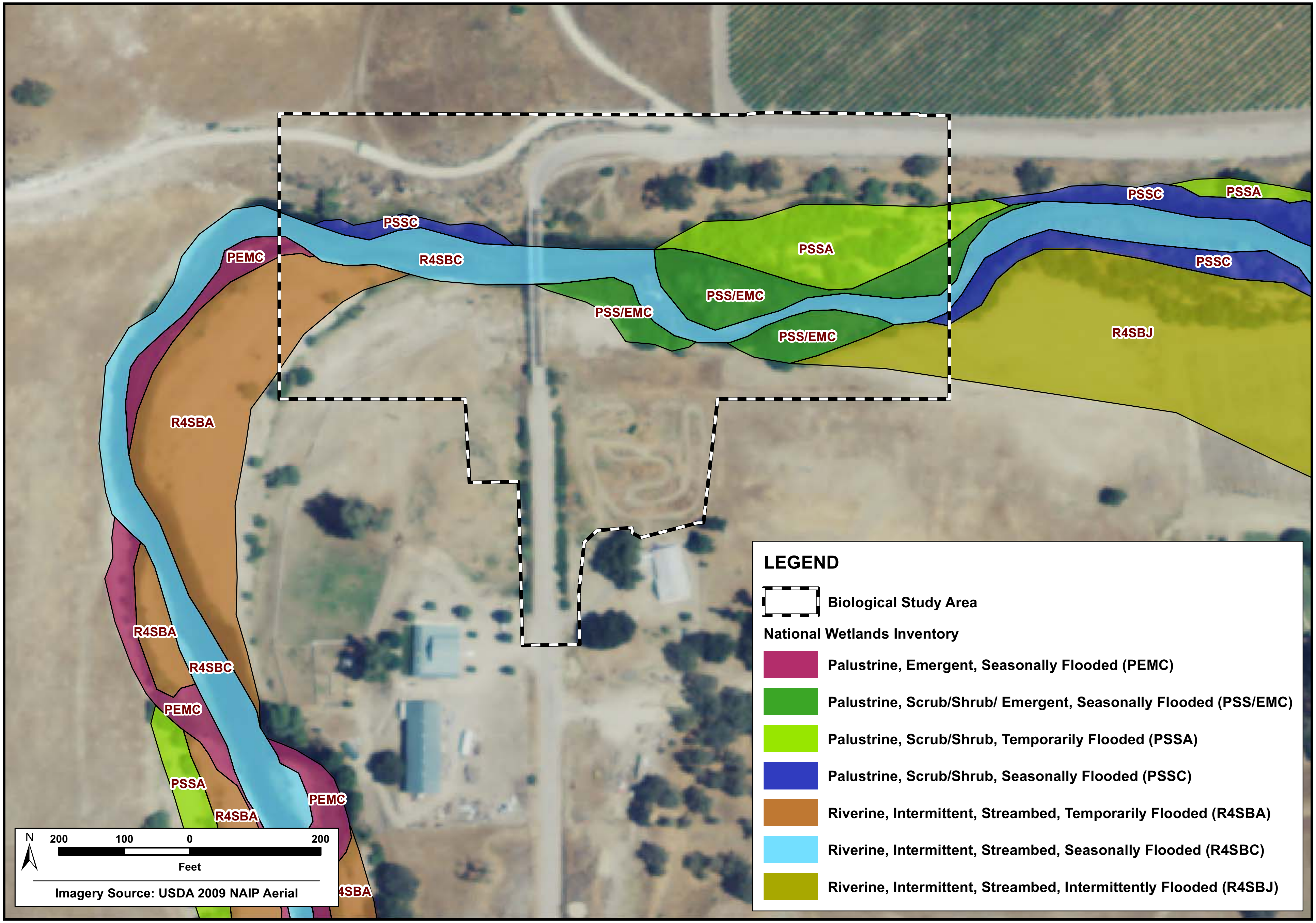

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Figure 4: National Wetlands Inventory Map

Nacimiento Lake Drive Bridge Replacement Project - ID of Waters (1212-10)

September 2010

SURVEY METHODS

Prior to site surveys, topographic maps, aerial photographs and engineering drawing plans were obtained from several sources and reviewed. These included a USGS quadrangle map and an NWI map for the Bradley quadrangle, project-related engineering drawing plans provided by Biggs Cardosa Associates Inc. and Bestor Engineers Inc., and aerial photographs of the Project area obtained from Google Earth, USGS (2008), and Microsoft Virtual Earth.

Two separate field survey efforts were conducted (5 February and 23 April 2010), in order to map the extent and distribution of potential jurisdictional waters in the 12.24-acre study area. As part of our field surveys we investigated the floristic, hydrologic, and edaphic characteristics of the wetlands and other waters habitats within the study area.

IDENTIFICATION OF JURISDICTIONAL WATERS

The vegetation, soils, and hydrology of the site were examined following the guidelines outlined in the *Routine Determination Method* in the Corps of Engineers 1987 Wetlands Delineation Manual (Environmental Laboratory 1987). In addition, the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (*Regional Supplement* USACE 2008) was followed to document site conditions relative to hydrophytic vegetation, hydric soils and wetland hydrology. As noted in the latter report, the *Regional Supplement* is designed for use with the current version of the *Corps 1987 Manual*, except where superseded by instruction issued in the more recent and location-specific *Regional Supplement* (USACE 2008).

This report was also compiled in accordance with guidance provided in *Information Needed for Verification of Corps Jurisdiction* (USACE San Francisco District 2000). That document lists the supporting documentation that must be submitted as part of a request for a Jurisdictional Determination. This information includes: locality map, USGS quad sheets, site map, aerial photo, data forms, written rationale for sample point choice, color photos, and copy of applicable sections of the current soil survey report. All subsequent mapping followed the protocols discussed during that initial field review.

The Project site was examined for topographic features, drainages, alterations to site hydrology or vegetation, and areas of significant recent disturbance. A determination was then made as to whether normal environmental conditions were present at the time of the field surveys. Data were used to document which portions of the site were wetlands. Generally, surveys examined the vegetation, soils, and hydrology using the "Routine Determination Method, On-Site Inspection Necessary (Section D)" outlined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), and using the updated data forms, vegetation sampling methods, and hydric soil and hydrology indicators developed for the *Regional Supplement* (USACE 2008). This three-parameter approach to identifying wetlands is based upon the presence of hydrophytic vegetation, hydric soils, and wetland hydrology. Overall, the approach used to identify wetlands included excavation of soil pits to sample soil from various depths, observing vegetation growing in proximity to the soil sample area, and determining current hydrologic features (surface and subsurface) present near the sample area.

The mapping effort to determine the extent of jurisdictional waters within the study area included the use of a hand-held sub-meter accuracy GPS (Global Positioning System) unit employed to delineate the boundaries between wetland and upland areas as well as areas that represent potential other waters including delineation of the ordinary high water (OHW) mark associated with the bed and banks of the San Antonio River on the Project site. These data were then digitized into a single map file using GIS (Geographic Information System) and then overlaid on an aerial photo (USGS 2008) of the area (Figure 5). A brief overview of the USACE methodology specifically applicable to the identification of jurisdictional waters on the site is summarized below.

IDENTIFICATION OF SECTION 404 WETLANDS

Vegetation

Plants observed at each of the sample sites were identified to species using *The Jepson Manual* (Hickman 1993) (Appendix B). The wetland indicator status of each species was obtained from the 1988 Wetland Plant List, California (Reed 1988). The names of plants were generally not taken from *The Jepson Manual* (Hickman 1993) as these names are not totally consistent with scientific names used in the 1988 Wetland Plant List, California (Reed 1988) and the National List of Scientific Plant Names (Smithsonian Institution 1982).

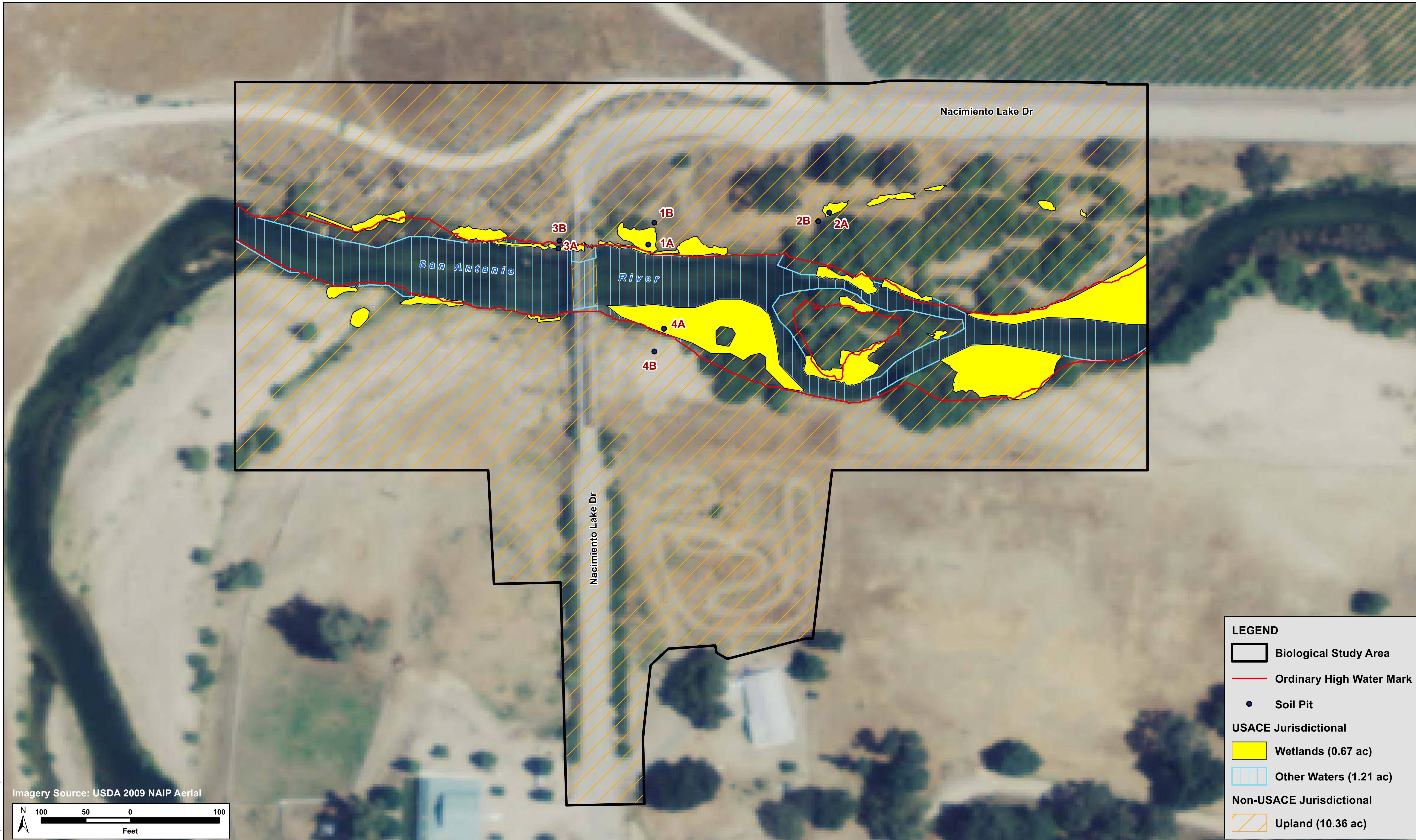
A list of species for each observation area was then compiled and a visual estimate of the percent cover of plant species was made following guidance provided in the *Regional Supplement*. It was then determined which of the observation areas supported wetland vegetation using the applicable Indicator (*i.e.*, 1-Dominance Test; 2-Prevalence Test; or, 3-Morphological Adaptations) as described in the *Regional Supplement*.

Wetland indicator species are designated according to their frequency of occurrence in wetlands. For instance, a species with a presumed frequency of occurrence of 67 to 99 percent in wetlands is designated a facultative wetland indicator species. The 5 basic levels of wetland indicator status described in the *Regional Supplement* do not include plus (+) or minus (-) indicators. The wetland indicator groups, indicator symbol, and the frequency of occurrence of species within them in wetlands are as follows:

Table 1. Wetland Indicator Status Categories for Vascular Plants.

INDICATOR CATEGORY	SYMBOL	FREQUENCY OF OCCURRENCE
OBLIGATE	OBL	greater than 99%
FACULTATIVE WETLAND	FACW	67 - 99%
FACULTATIVE	FAC	34 - 66%
FACULTATIVE UPLAND	FACU	1 - 33%
UPLAND	UPL	less than 1%

*Based upon information contained in *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). “NOL” = not on the list; “NI” = not an indicator.



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H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Figure 5: Potential Waters of the U.S.

Nacimiento Lake Drive Bridge Replacement Project - ID of Waters (1212-10)

September 2010

Obligate and facultative wetland indicator species are hydrophytes that occur "in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present" (Environmental Laboratory 1987). Facultative indicator species may be considered wetland indicator species when found growing in hydric soils that experience periodic saturation. A complete list of the vascular plants observed within the study area during surveys for the delineation, and their current indicator status, is provided in Appendix B. Plants species that are not on the regional list of wetland indicator species are upland species.

Soils

Where possible, the top 22 inches of the soil profile was examined for hydric soil indicators. Diagnostic features include numerous indicators defined and described by the National Technical Committee for Hydric Soils. These indicators include the presence of organic soils (Histosols, A1), histic epipedons (A2), depleted matrix (F3), redox depressions (F8), redox dark surface (F6), and mottling indicated by the presence of gleyed or bright spots of colors (in the former case, blue grays; in the latter case, orange red, or red brown) within the soil horizons observed, among other features. Mottling of soils usually indicates poor aeration and lack of good drainage. Munsell Soil Notations (Kollmorgen Instruments Corp. 1990) were recorded for the soil matrix for each soil sample. The last digit of the Munsell Soil Notation refers to the chroma of the sample. This notation consists of numbers beginning with 0 for neutral grays and increasing at equal intervals to a maximum of about 20. Chroma values of the soil matrix that are one (1) or less, or two (2) or less when mottling is present, are typical of soils which have developed under anaerobic conditions. The first digit of the Munsell Soil notation refers to the value of the sample, with numbers beginning from 2 for saturated colors to a maximum of about 8 for faded or light colors. Hydric soils often show low value colors when soils have accumulated sufficient organic material to indicate development under wetland conditions, but can show high value colors when iron depletion has occurred, removing color value from the soil matrix.

In sandy soils, such as alluvial deposits in the bottom of drainage channels, hydric soil indicators include high organic matter content in the surface horizon (Sandy Mucky Mineral, S1) and streaking of subsurface horizons by organic matter (A5). In some cases, as described in the *Regional Supplement*, coarse soils can be naturally problematic when recently deposited in floodplains or channels. These soils can lack certain features of hydric soils that require several years to develop, such as a low value and low chroma from a build-up of organic material coating the coarse grains. All soil colors indicated in this report were taken under clear, sunny skies using moistened soil samples.

The Soil Survey of Monterey County, California (SCS 1978) was consulted to determine which soil types have been mapped on the Project site. Descriptions of soil mapping units and the list of hydric soils in Monterey County are included in Appendix A (SCS 1992).

Hydrology

Each of the sample sites was examined for positive field indicators (primary and secondary) of wetland hydrology following the guidance provided in the *Regional Supplement*. Such indicators might include visual observation of inundation (A1) and/or soil saturation (A3), watermarks (B1), drift lines (B3), water-borne sediment deposits (B2), water-stained leaves (B9), and drainage patterns within wetlands (B10).

IDENTIFICATION OF SECTION 404 OTHER WATERS

In concert with the USACE's efforts to revise the wetland delineation manuals, making them more specific to different geographic regions of the United States, as described above, efforts have been initiated by the USACE to develop an "ordinary high water" (OHW) delineation manual. In particular, five relatively recent publications have attempted to further refine the definition of OHW and the delineation of the OHW mark in the arid west (including California):

- *Ordinary High Water Mark Identification*, Regulatory Guidance Letter 05-05 (USACE 2005);
- *Distribution of Ordinary High Water Mark (OHWM) Indicators and Their Reliability in Identifying the Limits of "Waters of the United States" in Arid Southwestern Channels* (USACE 2006);
- *Review and Synopsis of Natural and Human Controls on Fluvial Channel Processes in the Arid West* (USACE 2007);
- *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual* (USACE 2008); and,
- *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2010).

Historically, in non-tidal waters, USACE jurisdiction extends to the OHW mark which is defined in 33 CFR Part 328.3 as "the line on the shore 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 the soil, destruction of terrestrial vegetation or the presence of litter and debris." This guidance is based upon the identification of the OHW mark by examining physical evidence of surface flow in the stream channel; there is no hydrologic definition of the OHW mark.

In addition, *Regulatory Guidance Letter 05-05* (dated: 7 December 2005) deals specifically with the topic of ordinary high water mark identification. That publication lists the following physical characteristics that should be considered when making an OHW mark determination: (1) natural line impressed on the bank, (2) shelving, (3) changes in the character of the soil, (4) destruction of terrestrial vegetation, (5) wracking, (6) vegetation matted down, bent, or absent, (7) sediment sorting, (8) leaf litter disturbed or washed away, (9) scour, (10) deposition, (11) multiple observed flow events, (12) bed and banks, (13) water staining, (14) and change in plant community.

Just as with the *Corps 1987 Manual*, development of the definition of the OHW mark and description of the field indicators to be used were primarily based on environmental conditions present in more temperate climates of the United States. In these areas, rain distribution and amounts are more consistent from one year to the next and the channel geomorphology has responded to develop field characteristics that reflect a system in relative equilibrium. Such "ordinary" precipitation events occurring in these temperate climates are more likely to cause the development of "ordinary" features commonly used by the USACE in identifying the OHW mark as defined under 33 CFR Part 328.3.

The difficulty with this approach is that the environmental conditions present in the arid west are very different than those encountered in temperate climates. In particular, the Mediterranean climate present throughout central California is characterized by a high degree of seasonal and interannual variability in precipitation. The occurrence of drought conditions followed by extreme discharges is more common in the arid west. Thus, much of what is observed in the field in terms of geomorphic features such as channel down-cutting, erosion, and channel formation, is not in response to "ordinary" precipitation events but to relatively high rainfall events.

In California annual grassland settings in particular, it is very common for hill slopes to develop broad, shallow drainage swales. Such low points on the landscape may only carry surface runoff once in a decade under very high rainfall events after the underlying soil (generally clays) has become saturated. More often the contributing watershed for such swales is relatively small and any runoff has insufficient volume or velocity to create field indicators of an OHW mark.

For purposes of the current study, the identification of the OHW mark in the field was based upon observation of a suite of natural geomorphic field indicators that have formed during channel forming events. These features included: bank shelving, sediment deposition, scour holes, staining of rocks and culverts, change in soil particle size distribution, exposed roots, flattened vegetation, and stepped channel bed morphology.

The presence of one or more of the natural geomorphic field indicators listed above, taking into consideration such factors as size of watershed, channel slope, landscape setting, elevation, gradient, land use practices, and soil type, were taken as direct evidence of an OHW mark and such channels were identified as other waters.

SURVEY RESULTS

Approximately 1.88 acres of potential jurisdictional waters were identified within the boundaries of the Project site (Table 2). This included 0.67 acres of freshwater emergent wetlands and seasonal wetlands, and 1.21 acres of other waters situated below the OHW mark of the San Antonio River. A total of eight sample points were taken throughout the study area (Figure 5; Appendix C and D).

Table 2. Summary of Potential Jurisdictional Waters within the Project Site

Potential Jurisdictional Waters	Acres
Section 404 Wetlands	
Freshwater Emergent Wetlands and Seasonal Wetlands	0.67
Section 404 Other Waters	
San Antonio River	1.21
Total of Jurisdictional Waters	**1.88**
Upland	**10.36**
Total Area Surveyed	**12.24**

Information pertinent to the identification of jurisdictional waters assembled during this investigation is presented in four appendices attached to this report.

- Appendix A — Soil Descriptions
- Appendix B — Plant List
- Appendix C — USACE Arid West Data Forms
- Appendix D — Photographs of Project Site Conditions

OBSERVATIONS / RATIONALE / ASSUMPTIONS

- This on-site determination assumed normal circumstances and results are based upon existing conditions present at the time of the 2010 delineation surveys. Surveys were performed using the "Routine Method of Determination" utilizing three parameters as outlined in the *1987 Corps of Engineers Wetland Delineation Manual*.
- Water in the San Antonio River supporting wetlands in the study area is released upstream of the site from the San Antonio Reservoir located approximately two miles southwest of the study area. Controlled flows are released from the reservoir dam into the San Antonio River with flows becoming seasonal or intermittent just downstream of the study area. Water flowing in the San Antonio River connects to the Salinas River approximately 6 miles north of the Project site. Water in the Salinas River is conveyed northwest for over 150 miles before draining into the Monterey Bay just south of the Town of Moss Landing in Monterey County.
- Approximately 0.02 acres of moderate to low quality seasonal wetlands dominated by dotted smartweed (*Polygonum punctatum*) were delineated as five discrete wetland polygons within the study area in a small floodplain riverine backwater channel connected to the north bank

of the San Antonio River (Figure 5, Appendix D, Photograph 3). The backwater channel was dry at the soil surface during the April 2010 delineation however a localized high groundwater table that is likely associated with the adjacent San Antonio River was encountered at approximately 22 inches beneath the soil surface (Appendix C, Sample Point 2A, and Appendix D, Photograph 4). A combination of backwater channel flooding during the winter rainfall season and a localized high ground water table during the summer dry season appears to support the seasonal wetlands located within the study area.

- Due to the presence of wetlands throughout the study area, we did not complete OHW mark datasheets. Information relative to vegetation, soils and hydrology was compiled onto wetland datasheets.

AREAS MEETING THE REGULATORY DEFINITION OF JURISDICTIONAL WATERS

Identification of Section 404 Potential Jurisdictional Wetlands (Special Aquatic Sites)

Freshwater Emergent and Seasonal Wetlands

Vegetation. Approximately 0.65 acres of moderate to high quality freshwater emergent wetlands and 0.02 acres of seasonal wetlands were identified within the study area (Figure 5). The freshwater emergent wetland features are comprised of a number of linear patches of wetlands positioned within the bed, and adjacent to the lower banks of the San Antonio River, the majority of which are located at and/or below the OHW mark of the river channel (Figure 5, Appendix D, Photographs 1, 6, 8 and 9). Freshwater emergent wetlands identified at Sample Points 1A, 3A and 4A (Appendix C) were characterized by hydrophytic vegetation dominated by broad-leaved cattail (*Typha latifolia*, OBL), Mexican rush (*Juncus mexicanus*, OBL) and stinging nettle (*Urtica dioica*, FACW) (Appendix D, Photographs 1, 6, 8 and 9). The seasonal wetland features are comprised of five discrete wetland polygons located within in a small floodplain riverine backwater channel connected to the north bank of the San Antonio River (Figure 5, Appendix D, Photograph 3). Sample Point 2A was recorded within the seasonal wetlands. Wetlands identified at Sample Point 2A (Appendix C) were characterized by hydrophytic vegetation dominated by dotted smartweed (*Polygonum punctatum*, OBL).

Hydrology. A High Water Table (A2), Saturation (A3), Hydrogen Sulfide Odor (C1), Oxidized Rhizospheres along living roots (C3), and Sediment Deposits (B2) were observed at Sample Points 1A, 2A, 3A and 4A (Figure 5, Appendix C). The soils were very moist to saturated and inundated with increasing depth (Appendix D, Photographs 1, 3, 4, 6 and 8). Approximately 1 to 2 inches of standing water accumulated in the bottom of both Sample Point 2A after 5 minutes following excavation. The San Antonio River on site likely provides the existing subsurface hydrology associated with the standing water that filled the bottom of Sample Point 2A.

Soils. Soils inspected at Sample Points 1A, 2A, 3A and 4A exhibited a Sandy Redox (S5), and were moist to saturated and inundated indicating direct observation of an aquic moisture regime associated with the adjacent San Antonio River. Additional hydric soil characteristics within the Psamments and Fluvents, frequently flooded soils included soils of low chroma (soils with a matrix color 10YR 2/2 and 10 YR 2/1) and the presence of two percent pore linings (Appendix C).

Identification of Other Waters

Approximately 1.21 acres of other waters associated with the active channel of the San Antonio River occurs within the boundaries of the Project site (Figure 5, Appendix D, Photographs 6 and 9). The lateral extent of other waters was defined by the presence of standing water, shelving, water marks on bedrock, exposed roots, and direct observation of flowing water within the river during the wetland delineation surveys.

AREAS NOT MEETING THE REGULATORY DEFINITION OF JURISDICTIONAL WATERS

The remainder of the survey area including approximately 10.36 acres met none of the regulatory definitions of jurisdictional waters. Information relative to plants, soils and hydrology are summarized in data forms (see Appendix C) for Sample Points 1B, 2B, 3B and 4B. The majority of upland area on site included areas within the existing and proposed bridge alignments supporting developed area, non-native grassland and oak woodland located beyond the bed and banks of the San Antonio River channel, as well as riparian areas situated above and below the OHW mark of the river.

Vegetation. Vegetation within these areas was entirely comprised of upland species, including black mustard (*Brassica nigra*, UPL), ripgut brome (*Bromus diandrus*, UPL), soft chess (*Bromus hordeaceus*, (UPL), yellow star-thistle (*Centaurea solstitialis*, UPL) and yellow clover (*Melilotus indicus*, UPL).

Soils. Soils were observed to be sandy loam with a matrix color of 10 YR 3/2, with no mottles and no other indicators of regular inundation (i.e., organic buildup or streaking).

Hydrology. No evidence of hydrology, such as inundation, saturation, sediment deposits, or drainage patterns in wetlands, was observed in any of these locations.

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APPENDIX A.
SOILS

SOIL SURVEY OF

Monterey County, California

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with the
U.S. Forest Service and
University of California Agricultural Experiment Station

are used for dryland grain. Capability unit IVe–1(15); Clayey range site.

LcE—Linne-Shedd silty clay loams, 15 to 30 percent slopes. The soils in this complex are hilly. They formed in material that was derived from calcareous shale and sandstone. These soils were so intermingled that it was not feasible to map them separately at the scale used.

Linne soils make up about 40 percent of the complex and Shedd soils 30 percent. The rest is small areas of Diablo, Nacimiento, Ayar, and San Benito soils; areas where slopes are less than 15 percent; and some clay loams that are similar, but that are less than 24 inches or more than 40 inches deep to bedrock.

The Linne soil has an available water capacity of 4 to 8 inches, and roots can penetrate to a depth of 24 to 40 inches. The Shedd soil has an available water capacity of 4 to 7.5 inches, and roots can penetrate to a depth of 24 to 36 inches. Runoff is rapid, and the erosion hazard is moderate to high.

This complex is used mostly for range. Small areas are used for dryland grain. Capability unit IVe–1(15); Clayey range site.

LcF—Linne-Shedd silty clay loams, 30 to 50 percent slopes. The steep soils in this complex are on uplands. They formed in material that was derived from calcareous sandstone and shale. These soils were so intermingled that it was not feasible to map them separately at the scale used, although exposure is typically to the north on Linne soils and to the south on Shedd soils.

Linne soils make up about 40 percent of the complex and Shedd soils 25 percent. Diablo soils make up 15 percent. The rest of the complex consists of small areas of Nacimiento, San Benito, and Los Osos soils; some soils that are similar, but are less than 24 inches or more than 40 inches deep to bedrock; and areas of landslips.

Linne silty clay loam is 24 to 40 inches deep to bedrock, and the available water capacity is 4 to 8 inches. Shedd silty clay loam is 24 to 36 inches deep to bedrock, and the available water capacity is 4 to 7.5 inches.

Runoff is rapid, and the erosion hazard is high.

This complex is used for range. Capability unit VIe–1(15); Clayey range site.

LcF2—Linne-Shedd silty clay loams, 15 to 50 percent slopes, eroded. These are hilly and steep soils on uplands. They formed in material that was derived from calcareous sandstone and shale. Small rills and a few gullies are commonly at the heads of the major drainageways. Soil material has been deposited at the mouth of most drainageways. These soils were so intermingled that it was not feasible to map them separately at the scale used, although exposure is typically to the north on Linne soils and to the south on Shedd soils.

Linne and Shedd soils each make up about 35 percent of this complex. The rest consists of small areas of Diablo, Nacimiento, San Benito, and Los Osos soils; some severely eroded areas; areas that have exposed bedrock on ridges; some areas of clay loams that are less than 20 inches deep to bedrock; some small areas of landslips; and some areas that have slopes of more than 50 percent.

Linne silty clay loam has an available water capacity of 3.5 to 8 inches, and roots can penetrate to a depth of 20 to 40 inches. Shedd silty clay loam is 20 to 30 inches deep, and the available water capacity is 3.5 to 6 inches. Runoff is medium to rapid, and the erosion hazard is high. The erosion occurs mostly on Shedd soils, but some sheet erosion occurs on Linne soils.

This complex is used for range, wildlife habitat, and watershed. Capability unit VIe–1(15); Clayey range site.

LcG2—Linne-Shedd silty clay loams, 50 to 75 percent slopes, eroded. The soils in this complex are very steep and on uplands. They formed in material that was derived from calcareous sandstone and shale. These soils are so intermingled that it was not feasible to map them separately at the scale used, although exposure is typically to the north on Linne soils and to the south on Shedd soils.

Linne soils make up about 40 percent of the complex and Shedd soils 25 percent. Diablo soils make up about 15 percent of the complex and occur throughout the unit. The rest is small areas of Nacimiento, San Benito, and Los Osos soils; some soils that are very similar, but that are less than 20 inches or more than 40 inches deep to bedrock; and some small areas of landslips.

The Linne soil has an available water capacity of 4 to 8 inches and roots can penetrate to a depth of 20 to 40 inches. The Shedd soil has an available water capacity of 4 to 6 inches, and roots can penetrate to a depth of 20 to 30 inches. Runoff is very rapid, and the erosion hazard is very high. Shedd soils are more erodible than Linne soils.

This complex is used for range, watershed, and wildlife habitat. Capability unit VIIe–1(15); Clayey range site.

Lockwood Series

The Lockwood series consists of well drained soils that formed in alluvium that was derived from siliceous shale. These soils are on alluvial fans and inland and coastal terraces (fig. 5). Slopes are 0 to 15 percent. The vegetation is mainly annual grasses and a few thick stands of buckwheat and chamise and a few scattered oaks. The elevation is 70 to 1,200 feet. The mean annual precipitation is 12 to 35 inches, the mean annual air temperature is 57° to 60° F, and the frost-free season is 150 to 350 days. Summers are hot and dry inland; winters are generally cool and moist, but they are warm and foggy along the coast.

In a representative profile the surface layer is gray, very strongly acid to neutral shaly loam about 26 inches thick. The subsoil is gray, neutral shaly heavy loam and brown, mildly alkaline shaly clay loam that extends to a depth of 82 inches. The substratum is pale brown, mildly alkaline loam to a depth of 86 inches or more.

Permeability is moderately slow. Roots penetrate to a depth of more than 60 inches.

Lockwood soils are used mostly for irrigated field and row crops. Some areas are used for apricots, walnuts, and alfalfa and for dryland grain, irrigated pasture, and annual range as well as for recreation and wildlife habitat.

Representative profile of Lockwood shaly loam, 0 to 2 percent slopes, about 7 miles NW of King City on Central Avenue, 100 feet SW and 50 feet NW from the

Figure 5.—**Wave-cut coastal terraces at Pacific Valley. Fluvents, stony, are in the foreground and along the road. The rest of the terrace area is mainly Lockwood shaly loam, 2 to 9 percent slopes.**

corner of Teague and Central Avenues; about 30 feet from edge of road.

Ap1—0 to 3 inches; gray (10YR 5/1) shaly loam, very dark grayish brown (10YR 3/2) when moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine interstitial pores; 15 percent gravel-sized shale fragments; very strongly acid; low surface pH due to fertilizers or pesticides, low pH temporary; abrupt smooth boundary.

Ap2—3 to 16 inches; gray (10YR 5/1) shaly loam, very dark brown (10YR 2/2) when moist; weak very coarse angular blocky structure that parts to moderate medium granular; slightly hard, friable, slightly sticky and slightly plastic; few very fine and common fine roots; common very fine interstitial pores and very few fine tubular pores; 10 percent shale fragments; soil compacted by tillage; slightly acid; gradual smooth boundary.

A13—16 to 26 inches; gray (10YR 5/1) shaly loam, very dark brown (10YR 2/2) when moist; strong medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine interstitial pores and common fine and medium tubular pores; 10 percent shale fragments; neutral; gradual smooth boundary.

B1—26 to 40 inches; gray (10YR 5/1) shaly heavy loam, very dark grayish brown (10YR 3/2) when moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; few fine and medium roots; many very fine interstitial pores and common fine tubular pores; 25 percent shale fragments; neutral; clear irregular boundary.

B21t—40 to 57 inches; brown (10YR 5/3) shaly clay loam, dark yellowish brown (10YR 4/4) when moist; massive; slightly hard, very friable, sticky and plastic; many very fine interstitial pores; ½-inch thick dark brown horizontal clay band; continuous thin clay films, few moderately thick clay films bridging mineral grains; 30 percent shale fragments; mildly alkaline; gradual wavy boundary.

B22t—57 to 82 inches; brown (10YR 5/3) shaly clay loam, dark brown (10YR 4/3) when moist; massive; slightly hard, very friable, sticky and plastic; many very fine interstitial pores; continuous thin and few moderately thick clay films bridging grains; 30 percent shale fragments; mildly alkaline; clear smooth boundary.

IIC—82 to 86 inches; pale brown (10YR 6/3) heavy loam, dark brown (10YR 4/3) when moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few thin clay films in pores; mildly alkaline.

The A horizon commonly is gray, very dark grayish brown, dark grayish brown, dark gray, or grayish brown. Texture is loam or clay loam. Shale fragments 2 to 40 millimeters (0.08 to 1.6 inch) in diameter make up 5 to 25 percent of the A horizon. Reaction ranges from very strongly acid to mildly alkaline. The very strongly acid reaction in the Ap horizon is probably due to the presence of such agents as fertilizers.

Depth to the B2t horizon commonly is 36 to 45 inches in the Salinas Valley and 20 to 30 inches in the Lockwood, Hames, and Jolon Valleys. The B2t horizon ranges from brown to very pale brown, and texture ranges from heavy loam to heavy clay loam that is 30 to 35 percent shale fragments in places. Reaction ranges from neutral to moderately alkaline. Common thin to moderately thick clay films bridge mineral grains.

The IIC horizon is quite variable over short distances. Commonly it is pale brown, light yellowish brown, or very pale brown loam. The content of coarse fragments ranges from a few to 60 percent pebbles. Reaction ranges from medium acid to moderately alkaline and commonly becomes more alkaline with increasing depth.

Lime, clay bands, or weakly cemented layers are in the lower B2t horizon or in the IIC horizon in some places. A3, B1, B3t, and B3 horizons commonly occur in the soils.

LdA—Lockwood loam, 0 to 2 percent slopes. This is a nearly level soil on broad alluvial plains. It has a profile similar to the one described as representative of the series, but it has less than 5 to 10 percent siliceous shale fragments. The surface layer commonly is loam, but can be clay loam or light clay loam.

Included with this soil in mapping were small areas of Lockwood shaly loam, 0 to 2 percent slopes.

The available water capacity is 8 to 10 inches. Runoff is slow, and the erosion hazard is slight.

This soil is used mostly for irrigated row and field crops. It is also used for dryland grain and alfalfa hay. Capability units I(14), IIIc-1(15); range site not assigned.

LdC—Lockwood loam, 2 to 9 percent slopes. This is a gently sloping to moderately sloping soil on alluvial fans and terraces. It has a profile similar to the one described as representative of the series, but it has less than 10 percent shale fragments. The surface layer commonly is loam, but can be silt loam or light clay loam. Slopes are mostly 4 percent.

Included with this soil in mapping were areas of Lockwood shaly loam, 0 to 2 percent slopes. Small areas of sheet and rill erosion were also included.

Runoff is medium, and the erosion hazard is moderate. The available water capacity is 8 to 10 inches.

This soil is used mostly for dryland grain, field crops, walnuts, and apricots. Capability units IIe-1(14), IIIe-1(15); range site not assigned.

LeA—Lockwood shaly loam, 0 to 2 percent slopes. This is a nearly level soil on alluvial fans and terraces. It has the profile described as representative of the series.

Included with this soil in mapping were areas of Rincon, Cropley, Arbuckle, Salinas, Pinnacles, and Chamise soils. Also included were areas of a soil that has a subsoil of sandy loam or loam or a subsoil that has more than 35 percent coarse fragments. Some soils that have slopes of 2 to 9 percent were also included.

The available water capacity is 6 to 8 inches. Runoff is slow, and the erosion hazard is slight.

This soil is used mostly for irrigated row and field crops. It is also used for some dryland grain or irrigated alfalfa. Capability units IIs-4(14), IIIs-4(15); range site not assigned.

LeC—Lockwood shaly loam, 2 to 9 percent slopes. This is a gently sloping to moderately sloping soil on alluvial fans and terraces. It has a profile similar to the one described as representative of the series, but the surface layer is shaly clay loam in some places (fig. 6). Slopes are mostly 5 percent.

Included with this soil in mapping were small areas of Lockwood shaly loam, 0 to 2 percent slopes. Also included were areas of Fluvents, stony, and Elder, Gazos, and Pacheco soils; some rock outcrops; and areas where slopes are as steep as 30 percent. The included areas from Big Sur to the Pacific Valley have an intricate pattern. They are black, slightly acid, shaly and very shaly loams that are underlain by brown very gravelly sandy loam. They contain 45 to 50 percent gravel and 10 to 20 percent cobblestones.

The available water capacity is 6 to 8 inches. Runoff is slow or medium, and the erosion hazard is slight or moderate.

This soil is used mostly for field crops, walnuts, apricots, or alfalfa. Along the coast it is used mainly for annual range, dryland and some irrigated pasture, and recreation. Capability units IIe-4(14), IIIe-4(15); range site not assigned.

LeD—Lockwood shaly loam, 9 to 15 percent slopes.

Figure 6.—**Profile of Lockwood shaly loam, 2 to 9 percent slopes, at Pacific Valley.**

This is a strongly sloping soil on alluvial fans and terraces.

Included with this soil in mapping were small areas of Rincon, Chamise, Santa Lucia, Nacimiento, Arbuckle, and Pinnacles soils and Lockwood shaly loam, 2 to 9 percent slopes. The included areas along the coast have an intricate pattern. They are black, slightly acid shaly and very shaly loams that are underlain by brown, slightly acid very gravelly sandy loam. They contain 45 to 50 percent gravel and 10 to 20 percent cobblestones. Also included along the coast were areas of Gazos and Los Osos soils; a shaly loam that is less than 20 inches deep to bedrock; and a soil that is similar to this Lockwood soil, but that has more than 35 percent coarse fragments in the subsoil. Included near Pfeiffer Point and south of Cape San Martin, was about 200 acres of a grayish brown and dark grayish brown gravelly loam that has a subsoil of dark grayish brown and brown stony or gravelly clay loam that is underlain by hard metamorphosed sandstone and shale.

The available water capacity is 6 to 8 inches. Runoff is medium, and the erosion hazard is moderate.

This soil is used mostly for dryland grain and annual range. Along the coast it is also used for annual range, recreation, wildlife habitat, and building sites. Capability units IIIe–4(14), IIIe–4(15); range site not assigned.

LgA—Lockwood shaly loam, 0 to 2 percent slopes, wet. This soil is in swales on alluvial fans and on bottoms in small valleys. It has a water table at a depth of 28 to 48 inches during winter and spring or when overirrigated. Drainage is restricted by a slowly permeable layer that is typically below a depth of 60 inches. The subsoil is generally grayish brown.

Included with this soil in mapping were small areas of Lockwood shaly loam, 0 to 2 percent slopes, and Cropley and Clear Lake soils. Also included were small areas that have 3 percent slopes, have more than 35 percent gravel, or have a clay subsoil.

Runoff is commonly very slow, and a few areas are ponded during winter. The erosion hazard is slight. Roots generally can penetrate to a depth of more than 60 inches, but can be restricted to a depth of 28 to 48 inches by an intermittently high water table in undrained areas. The available water capacity is 6 to 8 inches.

This soil is used for irrigated pasture, field crops, and native pasture and dryland grain. Capability unit IIw–2(14); range site not assigned.

Lopez Series

The Lopez series consists of somewhat excessively drained soils on hilly uplands. These soils formed in material underlain by hard siliceous shale of the Monterey Formation. Slopes are 15 to 30 percent. The vegetation is mainly annual grasses and a few scattered thickets of scrub oak, chamise, and buckwheat. The elevation is 450 to 3,300 feet. The mean annual precipitation is 12 to 25 inches, the mean annual air temperature is about 60° F, and the frost-free season is about 250 days. Summers are hot and dry, and winters are cool and moist.

In a representative profile the surface layer is gray and grayish brown, medium acid shaly loam and shaly silt loam. It is underlain by strongly acid hard shale at a depth of 11 inches.

Permeability is moderate, and the available water capacity is about 1 inch. Roots penetrate to a depth of 10 to 20 inches.

Lopez soils are used mostly for watershed and wildlife habitat, and some areas are in annual range.

Representative profile of Lopez shaly loam, 15 to 30 percent slopes, about 1,600 feet NNW of Lockwood; on San Ardo Road in the center of NW¼NE¼ sec. 31, T. 22 S., R. 9 E.

A11—0 to 4 inches; gray (10YR 5/1) shaly loam, very dark grayish brown (10YR 3/2) when moist; moderate fine and medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial pores and few tubular pores; 35 percent angular shale; medium acid; clear wavy boundary.

A12—4 to 11 inches; grayish brown (10YR 5/2) shaly silt loam, dark grayish brown (10YR 3.5/2) when moist; moderate fine and medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine pores; 45 percent angular shale; medium acid; abrupt broken boundary.

R—11 to 15 inches; hard, fractured siliceous shale; strongly acid.

The A1 horizon is dark gray, gray, or grayish brown. The content of coarse fragments ranges from 35 to 50 percent. Reaction is strongly acid or medium acid. Depth to hard shale ranges from 10 to 20 inches.

LhE—Lopez shaly loam, 15 to 30 percent slopes. This is a hilly soil on uplands. Slopes are mostly 20 percent.

Included with this soil in mapping were small areas of Santa Lucia and Reliz soils, rock outcrops, and areas of moderate or severe erosion.

Runoff is medium, and the erosion hazard is high.

This soil is used for annual range, watershed, and wildlife habitat. Capability unit VIIe–1(15); Shallow Loamy range site.

Los Gatos Series

The Los Gatos series consists of well drained soils that formed on uplands in material that was derived from metamorphosed sandstone and shale of the Franciscan Formation. Slopes are 30 to 75 percent. The vegetation is mainly Douglas-fir, Coulter and ponderosa pine, madrone, coast redwood, tanoak, laurel, coast live oak, poison oak, bracken fern, and sedges. The elevation is 600 to 3,200 feet. The mean annual precipitation is 25 to 55 inches, the mean annual air temperature is 56° F, and the frost-free season is about 300 days. Summers are warm and dry, and winters are cool and moist.

In a representative profile the surface layer is brown, slightly acid gravelly loam about 18 inches thick. The subsoil is brown, slightly acid gravelly loam and gravelly sandy clay loam 18 inches thick. The underlying bedrock is fractured, hard, metamorphosed shale.

Permeability is moderately slow, and the available water capacity is 3 to 7 inches. Roots penetrate to a depth of 20 to 40 inches.

Los Gatos soils are used mostly for range, woodland, recreation, wildlife habitat, and watershed.

Representative profile of Los Gatos gravelly loam, 50 to 75 percent slopes, on Willow Creek Road, 1 mile feet. The mean annual precipitation is 30 to 70 inches, the mean annual air temperature is 51° to 57° F, and the frost-free season is 200 to 300 days. Summers are warm and dry, and winters are cool and moist.

In a representative profile the soil is about 15 inches thick. It is dark grayish brown, slightly acid gravelly loam and brown, medium acid gravelly loam. It is underlain by fractured fine grained sandstone.

Permeability is moderate, and the available water capacity is 1 to 3 inches. The depth to which roots can readily penetrate is 10 to 20 inches, although some roots follow fractures in the bedrock for many feet.

McMullin soils are used for wildlife habitat, watershed, and as a site for military maneuvers.

Representative profile of McMullin gravelly loam in an area of McMullin-Plaskett complex, about 0.1 mile east from the junction of Burma Road and Coast Ridge Road and about 300 feet north from Burma Road, in SW¼NW¼SE¼ sec. 19, T. 23 S., R. 6 E.

O—1½ inches to 0; litter of leaves and twigs, mainly from scrub interior live oak; slightly acid; abrupt wavy boundary.

A11—0 to 7 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) when moist; weak fine and medium crumb structure; soft, very friable, nonsticky and nonplastic; many very fine and few fine and medium roots; many very fine tubular and interstitial pores; 20 percent gravel; slightly acid; gradual wavy boundary.

A12—7 to 15 inches; brown (10YR 5/3) gravelly loam, dark brown (7.5YR 4/2) when moist; weak fine and medium crumb and granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine, few fine, many medium, and common coarse roots; many very fine tubular and interstitial pores; 25 percent gravel; medium acid; clear irregular boundary.

R—15 to 18 inches; light olive gray (5Y 6/2), fractured fine grained sandstone; few fine, medium and coarse roots in fractures; medium acid.

Texture of the A1 horizon is sandy loam, loam, gravelly sandy loam, gravelly loam, or stony loam. The A1 horizon is 7 to 20 inches thick. In some places a B2 horizon or C horizon overlies the fractured bedrock. Depth to bedrock ranges from 10 to 20 inches.

Md—McMullin-Plaskett complex. This mapping unit consists of steep and very steep soils on mountains. These soils were so intermingled that it was not feasible to map them separately at the scale used. Slopes are 30 to 75 percent.

McMullin and Plaskett soils each make up about 35 percent of this complex. The rest consists of small areas of Sur and Millsholm soils; a soil that has a subsoil of clay loam; similar soils that are less than 10 inches deep to bedrock; areas of rock outcrops; and areas of Gilroy soils on ridgetops on the Hunter Liggett military base east of the Nacimiento River.

Runoff is rapid and very rapid, and the erosion hazard is high or very high.

This complex is used mostly for watershed and wildlife habitat. The McMullin soil has moderately low productivity for ponderosa pine (site index averages about 60). The seedling mortality is moderate, and the windthrow hazard is slight. The equipment limitation is severe. The Plaskett soil has low productivity for ponderosa pine (site index about 50). The seedling mortality is moderate, and the windthrow hazard is moderate. The equipment limitation is severe.

Most areas of these soils are used for noncommercial trees such as interior live oak, madrone, and laurel. These species commonly are scrubs. There are a few scattered Coulter pine, knobcone pine, and digger pine. Capability unit VIIe-1 (15) ; range site not assigned.

Metz Series

The Metz series consists of somewhat excessively drained soils that formed in alluvium that was derived mostly from sedimentary rocks on flood plains and sand dunes. Slopes are 0 to 9 percent. The vegetation consists mainly of annual grasses, forbs, and a few scattered willows and cottonwoods. The elevation is 50 to 500 feet. The mean annual precipitation is 12 to 14 inches, the mean annual air temperature is 58° to 60° F, and the frost-free season is about 260 days. Summers are warm and dry, and winters are cool and moist.

In a representative profile the surface layer is light brownish gray, moderately alkaline fine sandy loam about 12 inches thick. The underlying material is light brownish gray, moderately alkaline, stratified fine sand, sand, and very fine sandy loam extending to a depth of more than 60 inches (fig. 7).

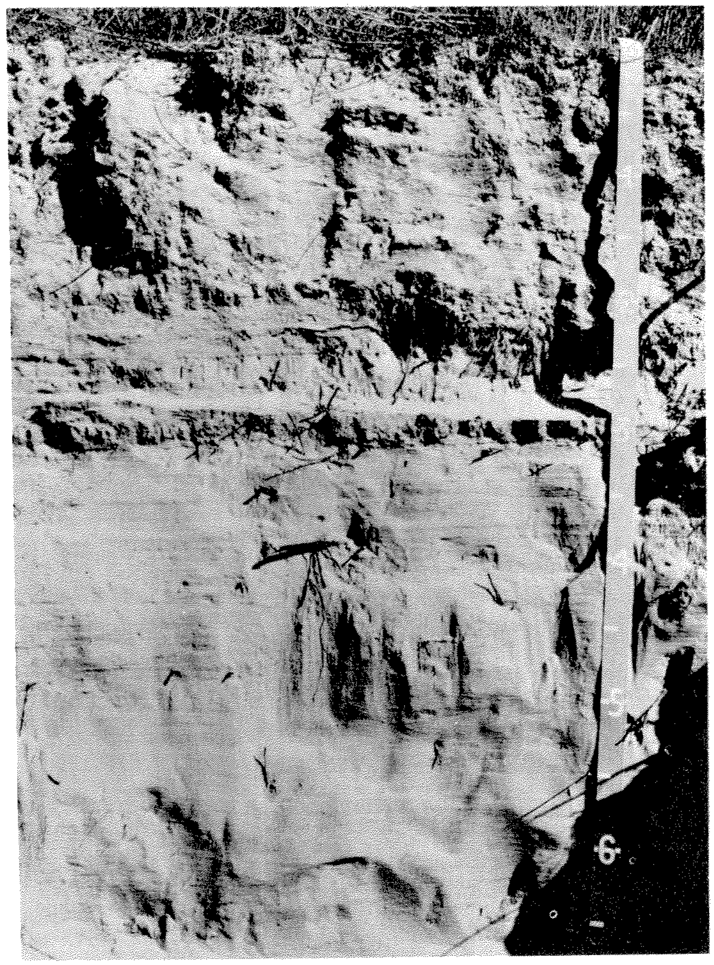

Figure 7.—**Profile of a Metz soil. A 2-inch layer of silt is at a depth of 3 feet.**

Permeability is moderate, but it becomes rapid at a depth of more than 48 inches in some places. The available water capacity is 4 to 6 inches, depending upon the amount of stratification. Roots penetrate to a depth of more than 60 inches.

Metz soils are mostly used for irrigated row crops, pasture, and range. They have a limited use for dryland grain.

Representative profile of Metz fine sandy loam, about 8 miles southeast of Salinas; from U.S. Highway 101 on Samovia Road, 1.15 miles to end of pavement, 0.65 mile SW on road continuation, 0.2 mile NW on farm road, then 30 feet west and 100 feet north in corner of field.

Ap—0 to 12 inches; light brownish gray (2.5Y 6/2) fine sandy loam, dark grayish brown (2.5Y 4/2) when moist; massive; hard, friable, nonsticky and nonplastic; common very fine roots in the upper 2 inches, few very fine roots below a depth of 2 inches; many very fine interstitial pores and very few fine tubular pores; compacted by tillage; moderately alkaline; abrupt wavy boundary.

C1—12 to 29 inches; light brownish gray (2.5Y 6/2) fine sand, dark grayish brown (2.5Y 4/2) when moist; massive; soft, very friable, nonsticky and nonplastic; very few very fine roots; many very fine interstitial pores; discontinuous sand lenses 1 to 2 inches thick in upper part of horizon; very slightly effervescent; moderately alkaline; clear smooth boundary.

C2—29 to 38 inches; light brownish gray (2.5Y 6/2) sand, grayish brown (2.5Y 5/2) when moist; single grained; loose (dry and moist), nonsticky and nonplastic; very few very fine roots; many very fine interstitial pores; some gravel and lenses of very dark gray silty clay 2 to 5 inches thick that have many very fine and few fine roots; very slightly effervescent; moderately alkaline; gradual smooth boundary.

IIC3—38 to 52 inches; light brownish gray (2.5Y 6/2) very fine sandy loam, olive brown (2.5Y 4/4) when moist; weak coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine interstitial pores and common very fine tubular pores; faint lenses of brown silt loam in the middle of horizon; strongly effervescent with disseminated lime; moderately alkaline; abrupt smooth boundary.

IIIC4—52 to 118 inches; light brownish gray (2.5Y 6/2) fine sand, dark grayish brown (2.5Y 4/2) when moist; single grained; loose (dry and moist), nonsticky and nonplastic; no roots observed; many very fine interstitial pores; very slightly effervescent; moderately alkaline.

The A horizon is grayish brown, brown, light brownish gray, pale brown, or light yellowish brown. Texture is sand, loamy sand, fine sandy loam, or silt loam and strata of loam, silt, and clay. Consistence is generally soft, but it is hard in places because of tillage. Reaction ranges from neutral to moderately alkaline. The horizon is weakly calcareous to moderately calcareous in places.

The C horizon is grayish brown, light brownish gray, pale brown, brown, or light gray. Texture is stratified sand, fine sand, very fine sandy loam, and loamy fine sand. The C2 and IIC3 horizons are commonly moderately calcareous to strongly calcareous.

Me—Metz loamy sand. This is a nearly level soil on flood plains, commonly adjacent to the Salinas and San Antonio Rivers. This soil has a profile similar to the one described as representative of the series, but the surface layer is loamy sand. Slopes are mostly about 1 percent.

Included with this soil in mapping were areas of Metz fine sandy loam.

Runoff is slow, and the erosion hazard is slight. If unprotected, this soil is subject to soil blowing.

This soil is used for some irrigated row crops and pasture. A few areas are used for dryland grain. Capability unit IIIs–4(14); range site not assigned.

Mf—Metz fine sandy loam. This is a nearly level soil on flood plains. It has the profile described as representative of the series.

Included with this soil in mapping were small areas of Tujunga, Pacheco, Mocho, and Pico soils, other Metz soils, and Psamments and Fluvents, occasionally flooded.

Runoff is slow, and the erosion hazard is slight. If unprotected, the soil is subject to soil blowing.

This Metz soil is used mainly for irrigated row crops. Capability unit IIs–4(14); range site not assigned.

Mg—Metz complex. This complex consists of undulating to gently rolling soils mainly along drainageways and on modified sand dunes. These soils were so intermingled that it was not feasible to map them separately at the scale used. They have profiles similar to the one described as representative of the series, but the texture of the surface layer is variable. Textures include sand, loamy sand, silt loam, and fine sandy loam that is gravelly or cobbly in places. Currently, this complex is rarely flooded, but before dams and other protection were provided, it was flooded every 2 or 3 years. Slopes are 2 to 9 percent.

Runoff is slow, and the erosion hazard is slight. If unprotected, these soils are subject to soil blowing.

This complex is used mostly for range. A few areas are used for dryland grain. Capability unit IVe–4(14); range site not assigned.

Millsholm Series

The Millsholm series consists of well drained soils that formed on uplands in material weathered from shale or sandstone. Slopes are 30 to 75 percent. The vegetation consists mainly of annual grasses. Scattered oaks and digger pine are in some areas. The elevation is 700 to 3,400 feet. The mean annual air temperature is 58° to 60° F, and the annual precipitation is 15 to 45 inches. The frost-free season is 200 to 300 days. Summers are hot and dry, and winters are cool and moist.

In a representative profile the surface layer is pale brown, slightly acid and neutral loam 17 inches thick. It is underlain by fractured shale.

Permeability is moderate to moderately slow, and the available water capacity is 2 to 4 inches. Roots penetrate to a depth of 10 to 20 inches.

Millsholm soils are used mostly for range. Some areas are used for watershed and wildlife habitat.

Representative profile of Millsholm loam, 30 to 75 percent slopes, approximately 12.2 miles south of Jamesburg along Tassajera Road, 0.2 mile SE along Horse Pasture Trail, and about 55 feet north of trail, in SE¼SE¼ sec. 29, T. 19 S., R. 4 E.

A1—0 to 6 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) when moist; moderate medium and fine granular and moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine interstitial pores; 10 percent gravel; slightly acid; clear wavy boundary.

B2—6 to 17 inches; pale brown (10YR 6/3) gravelly loam, The B2t horizon is very pale brown, pale brown, or light yellowish brown, and texture is gravelly sandy clay, gravelly clay, or very gravelly clay. Gravel content ranges from 35 to 60 percent. Reaction is very strongly acid or strongly acid.

The C horizon is very pale brown, light yellowish brown, yellow, or pale brown, and texture is gravelly sandy clay loam or very gravelly sandy clay loam. Gravel content ranges from 45 to 75 percent. Reaction is very strongly acid to strongly acid.

PkE—Pinnacles coarse sandy loam, very gravelly subsoil variant, 5 to 30 percent slopes. This is a gently rolling to hilly soil on dissected terraces. It has the profile described as representative of the Pinnacles variant. Slopes are mostly about 6 percent.

Included with this soil in mapping were small areas of Chamise, Placentia, Pinnacles, and Lockwood soils. Also included were areas that have less than 35 percent gravel in the subsoil, a few small areas that are moderately eroded, and areas of soils that are similar to this Pinnacles soil, but have a grayish brown and very dark grayish brown surface layer. Gullied areas were included where this soil is cultivated.

Runoff is medium to rapid, and the erosion hazard is moderate or high. Roots can generally penetrate to a depth of 60 inches or more, but some roots are restricted to a depth of 18 to 25 inches. The available water capacity is 2 to 2.5 inches.

This soil is used mostly for range. A few areas are used for dryland grain. Capability unit VIe–1(15); Claypan range site.

PkF—Pinnacles coarse sandy loam, very gravelly subsoil variant, 30 to 50 percent slopes. This is a steep soil on dissected terraces. It has a profile similar to the one described as representative of the variant, but the surface layer is only 12 to 18 inches thick because of sheet and rill erosion. A few gullies also occur. Slopes are 35 to 40 percent.

Included with this soil in mapping were areas of Chamise soils and Xerorthents, dissected, making up 10 percent of the acreage. Also included were areas of soils that are similar to this Pinnacles soil, but have a grayish brown and dark grayish brown surface layer.

Runoff is rapid, and the erosion hazard is high. Roots can generally penetrate to a depth of more than 60 inches, but some roots are restricted to a depth of 12 to 18 inches. The available water capacity is 1 or 2 inches.

This soil is used for range and wildlife habitat. Capability unit VIIe–1(15); Claypan range site.

Pits and Dumps

Pm—Pits and dumps. This land type consists of areas from which soil and underlying material have been removed and areas of uneven accumulation of waste material. These areas are rock quarries, sand and gravel pits, and excavations for refuse disposal and for fill material. The largest area is the dolomite quarry north of Salinas. Another area is the sand and gravel pit northeast of Greenfield near Metz Station. Drainage channels cut across some areas. Some sites are subject to seasonal flooding and ponding. The elevation is 100 to 1,500 feet. The vegetation is mainly sparse annual grasses and forbs.

Included in mapping were small areas of Rock outcrop-Xerorthents association, Badland, and Psamments and Fluvents.

Drainage, permeability, surface runoff, depth of the root zone, and available water capacity are all variable. The erosion hazard is high.

This land type has no value for farming. Capability unit VIIIe–1(15); range site not assigned.

Placentia Series

The Placentia series consists of well drained soils that formed in alluvium that was derived from granitic and schistose rocks on old alluvial fans and terraces. Slopes are 0 to 30 percent. The vegetation consists of annual grasses and forbs. The elevation is commonly about 50 to 1,400 feet, but ranges to 2,500 feet in Priest Valley. The mean annual precipitation is 12 to 20 inches, the mean annual air temperature is 57° to 60° F, and the frost-free season is generally about 250 days, but is about 150 days in Priest Valley. Summers are warm and dry, except in the northern Salinas Valley where they are often foggy, and winters are cool and moist.

In a representative profile the surface layer and subsurface layer are brown, medium acid sandy loam about 13 inches thick. The subsoil is 45 inches thick. It is dark reddish brown clay, reddish brown clay loam, and strong brown sandy clay loam and is moderately alkaline throughout. The substratum, at a depth of about 58 inches, is strong brown, moderately alkaline gravelly sandy loam that extends to a depth of more than 68 inches.

Permeability is very slow.

Placentia soils are used for grain, grain-hay pasture, and for irrigated field crops.

Representative profile of Placentia sandy loam, 2 to 9 percent slopes, 0.72 mile NW on Iverson Road from Johnson Canyon Road, 0.47 mile NE to the reservoir, 300 feet SW, 24 feet NW.

Ap1—0 to 5 inches; brown (7.5YR 5/4) sandy loam, dark brown (7.5YR 3/2) when moist; massive, compacted by tillage; hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine interstitial pores and few very fine and medium tubular pores; medium acid; clear smooth boundary.

Ap2—5 to 12½ inches; brown (7.5YR 5/4) sandy loam, dark brown (7.5YR 3/2) when moist; weak medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial pores and common very fine and fine tubular pores; medium acid; many gopher holes filled with granular soil material that contains many more roots than matrix; abrupt smooth boundary.

A2—12½ to 13 inches; brown (10YR 5/3) sandy loam, dark brown (7.5YR 4/4) when moist; weak medium platy structure; hard, very friable, slightly sticky and slightly plastic; many very fine interstitial pores and few very fine tubular pores; medium acid; abrupt smooth boundary.

B21t—13 to 20 inches; dark reddish brown (5YR 3/4, moist or dry) clay; moderate coarse prismatic structure, prisms slightly rounded at the top; extremely hard, very firm, very sticky and plastic; common very fine exped roots; few very fine interstitial and tubular pores; continuous moderately thick clay films on faces of peds; moderately alkaline; gradual smooth boundary.

B22t—20 to 29 inches; dark reddish brown (5YR 3/3) clay, dark brown (7.5YR 3/4) when moist; strong coarse angular blocky structure; extremely hard, very firm, very sticky and very plastic; common very fine exped roots; few very fine interstitial and tubular pores; continuous clay films bridging grains, continuous moderately thick clay films on faces of peds; few black stains on faces of peds; moderately alkaline; clear wavy boundary.

B23tca—29 to 36 inches; reddish brown (5YR 4/4, moist or dry) clay loam; moderate medium angular blocky structure; very hard, firm, sticky and plastic; few very fine exped roots; common very fine interstitial and tubular pores; many thin clay films bridging grains, continuous thin clay films on peds; strongly effervescent with lime segregated in medium-sized lime seams; moderately alkaline; gradual smooth boundary.

B24t—36 to 42 inches; strong brown (7.5YR 5/6) heavy sandy clay loam, dark reddish brown (5YR 3/4) when moist; moderate medium angular blocky structure; very hard, firm, sticky and plastic; few very fine roots; many very fine interstitial pores; many thin clay films bridging grains, continuous thin clay films on faces of peds; few lime seams trailing down from above horizon; moderately alkaline; clear smooth boundary.

B3t—42 to 58 inches; strong brown (7.5YR 5/6) light sandy clay loam, brown (7.5YR 4/4) when moist; massive; very hard, friable, sticky and plastic; very few very fine roots; many very fine interstitial pores and few very fine and medium tubular pores; common thin clay films bridging grains; horizon is weakly cemented; moderately alkaline; gradual smooth boundary.

C—58 to 68 inches; strong brown (7.5YR 5/6) gravelly sandy loam, brown (7.5YR 4/4) when moist; massive; hard, very friable, slightly sticky and slightly plastic; no roots observed; many very fine interstitial pores and few fine tubular pores; common very thin clay films bridging grains; 20 percent gravel; moderately alkaline.

The Ap or A1 horizon ranges from dark grayish brown and grayish brown to yellowish brown when dry and is dark grayish brown or dark brown when moist. Texture commonly is sandy loam, but ranges to light clay loam and is gravelly in places. Reaction ranges from medium acid to mildly alkaline. Thickness of the Ap or A1 horizon is 10 to 36 inches. The A2 horizon is discontinuous, but where present is brown to pinkish gray. Reaction is slightly acid or medium acid. This horizon is up to 4 inches thick.

The B2t horizon ranges from dark reddish brown to yellowish brown. Texture is clay, gravelly clay, gravelly sandy clay, sandy clay, and sandy clay loam; in many places it becomes coarser with increasing depth. Reaction ranges from neutral to moderately alkaline. Although this horizon is typically effervescent in the lower part, it has no lime in some places. Some places have more than 15 percent exchangeable sodium. The B3 or B3t horizon is brown or strong brown, and texture is sandy clay loam or clay loam that is gravelly in places. Reaction ranges from neutral to moderately alkaline.

The C horizon ranges from dark grayish brown to strong brown, and texture ranges from coarse sandy loam to light sandy clay loam that is gravelly in places. Reaction ranges from neutral to moderately alkaline.

PnA—Placentia sandy loam, 0 to 2 percent slopes. This soil is on old alluvial fans and terraces. It has a profile similar to the one described as representative of the series, but it has a grayish brown surface layer that is about 24 inches thick and ranges to 36 inches thick.

Included with this soil in mapping were small areas of Danville, Gloria, and Chualar soils and Placentia soils that have some slopes of more than 2 percent. Also included were some areas that have an overwash of dark brown clay loam 8 to 12 inches thick and a few small depressions that pond during intensive storms. Included north of Salinas to the county line near U.S. Highway 101 were some areas of soils that have a surface layer of sandy loam or loam underlain by dark grayish brown clay at a depth of 16 to 36 inches.

Runoff is slow, and the erosion hazard is slight. Roots can generally penetrate to a depth of more than 60 inches, but some roots are restricted to a depth of 20 to 36 inches. The available water capacity is 3.5 to 7 inches; a limited amount of moisture is available from the clay subsoil.

This soil is used mainly for irrigated row and field crops. Some areas are used for irrigated pasture or hay. Capability unit IIIs–3 (14) ; Claypan range site.

PnC—Placentia sandy loam, 2 to 9 percent slopes. This is a gently sloping and moderately sloping soil on old alluvial fans and terraces. It has the profile described as representative of the series. Slopes are mostly 4 to 6 percent.

Included with this soil in mapping were small areas of Gloria, Antioch, Chualar, Danville, and Pinnacles soils and small areas of Placentia soils that have slopes of more than 9 percent and less than 2 percent. Included in Indian Valley and Vineyard Canyon were small areas of Rincon and Cropley soils; small areas that have granitic cobbles on the surface; and small areas that have a surface layer of dark gray clay loam, a slightly acid subsoil, and a substratum of calcareous sandy loam that has siliceous shale and granitic rock fragments. Some soils included in mapping have more than 35 percent coarse fragments in the subsoil. On the Hunter Liggett Military Reservation, mostly in the valleys along the San Antonio River and in Stony Valley, small areas of Santa Ynez, Lockwood, and Chamise soils and Cropley soils in swales were also included.

Runoff is slow or medium, and the erosion hazard is slight or moderate. Roots can generally penetrate to a depth of more than 60 inches, but some roots are restricted to a depth of 12 to 26 inches. The available water capacity is 2 to 5 inches; some water is slowly available from the clay subsoil.

This soil is used mainly for grain, grain-hay, and pasture. Some areas are used for irrigated row and field crops and some strawberries. Capability units IVe–3 (14), IVe–3 (15) ; Claypan range site.

PnD—Placentia sandy loam, 9 to 15 percent slopes. This is a strongly sloping soil on terraces. It has a profile similar to the one described as representative of the series, but the surface layer is 10 to 20 inches thick. Slopes are mostly about 11 percent.

Included with this soil in mapping were small areas of Gloria and McCoy soils and small areas of Placentia soils that have slopes of less than 9 percent and more than 15 percent. Included in Vineyard Canyon and Indian Valley were small areas of Rincon, Chualar, Linne, and Nacimiento soils and soils that have rounded gravel and cobbles in the surface layer and have a medium acid subsoil. Soils that have a surface layer of dark brown sandy loam and a subsoil of light reddish brown and brown clay underlain by granitic bedrock were included on foot slopes near Natividad.

Runoff is medium, and the erosion hazard is moderate. Roots can generally penetrate to a depth of more than 60 inches, but some roots are restricted to a depth of 10 to 20 inches. The available water capacity is 2 to 4 inches; some water is slowly available from the clay subsoil.

This soil is used for annual pasture, grain, and some hay. Some small areas are irrigated. Capability units IVe–3(14), IVe–3(15); Claypan range site.

PnE—Placentia sandy loam, 15 to 30 percent slopes. This is a moderately steep soil on terraces. It has a profile similar to the one described as representative of the series, but the surface layer is 10 to 20 inches thick. Slopes are mostly 20 to 25 percent.

Included with this soil in mapping were small areas of Gloria, Chamise, and Pinnacles soils; Placentia soils that have slopes of less than 15 percent; and soils that have rounded granitic cobbles in the surface layer. Included in Vineyard Canyon and Indian Valley were small areas of Chualar, Rincon, Nacimiento, and Diablo soils and soils that have a surface layer of dark gray fine gravelly heavy loam and sandy clay loam and a substratum of very pale brown to yellowish brown. Small areas of Santa Ynez and Arnold soils were included in the northern part of Monterey County. Small, severely eroded areas that have some gullies were also included.

Runoff is rapid, and the erosion hazard is high. Roots can generally penetrate to a depth of more than 60 inches, but some roots are restricted to a depth of 10 to 20 inches. The available water capacity is 2 to 4 inches.

This soil is used mostly for range. Capability unit VIe–1(15); Claypan range site.

PoE—Placentia-Arbuckle complex, 15 to 30 percent slopes. This complex consists of moderately steep soils on high terraces. They formed in mixed alluvium. These soils were so intermingled that it was not feasible to map them separately at the scale used.

Placentia soils make up about 45 percent of this complex and Arbuckle soils 30 percent. Placentia soils generally have a southern exposure, and Arbuckle soils have a northern exposure. The rest of the complex is made up of areas of Lockwood, Los Osos, Pinnacles, Rincon, and Santa Lucia soils; Xerorthents, dissected; a light brownish gray gravelly coarse sandy loam; and a soil that has a surface layer of gravelly coarse sandy loam and a subsoil of acid clay.

Roots can generally penetrate the Placentia soil to a depth of more than 60 inches, but some roots are restricted to a depth of 12 to 26 inches. The available water capacity is 2 to 5 inches; some water is slowly available from the clay subsoil.

Runoff is medium and rapid. The erosion hazard is moderate on the Arbuckle soil and high on the Placentia soil.

This complex is used mainly for range, watershed, and wildlife habitat. Capability unit VIe–1(15); Placentia soil in Claypan range site, Arbuckle soil in Loamy range site.

Plaskett Series

The Plaskett series consists of excessively drained soils on hills and mountains. These soils formed in material underlain by fractured sandstone, shale, and schist. Slopes are 30 to 75 percent. The vegetation consists of mixed hardwoods, brush, bracken, grasses, and scattered pines. The elevation is 600 to 3,500 feet. The mean annual precipitation is 25 to 70 inches, the mean annual air temperature is 54° to 57° F, and the frost-free season is 200 to 300 days. Summers are warm and dry, and winters are cool and moist.

In a representative profile the surface layer is 10 inches thick. It is dark grayish brown, medium acid gravelly loam and dark brown, slightly acid very shaly loam. It is underlain by fractured, hard, fine grained sandstone.

Permeability is moderately rapid, and the available water capacity is 1 to 2 inches. Roots penetrate to a depth of 10 to 20 inches.

Plaskett soils are used for watershed, wildlife habitat, and a site for military maneuvers.

Representative profile of Plaskett gravelly loam, in an area of McMullin-Plaskett complex, about 100 feet north of Burma Road opposite the junction with the jeep trail to Los Burros Creek (Hunter Liggett Military Reservation); about 1/4 mile east and 100 feet north of SW corner of sec. 20, T. 23 S., R, 6 E.

O1—1 inch to 0; litter of oak leaves and twigs in various stages of decomposition; medium acid; abrupt wavy boundary.

A11—0 to 3 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) when moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine interstitial pores; 30 percent angular shale fragments; medium acid; clear wavy boundary.

A12—3 to 10 inches; dark brown (10YR 4/3) very shaly loam, dark brown (10YR 3/3) when moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and common medium roots; many very fine interstitial pores; 75 percent shale fragments; slightly acid; clear wavy boundary.

IIR—10 to 24 inches; pale brown (10YR 6/3), fractured, hard, fine grained sandstone, brown (10YR 4/3) when moist; some roots extend into the fractured rock for several feet; slightly acid.

The A horizon is 6 to 20 inches thick. The A1 horizon is dark grayish brown, grayish brown, dark brown, or brown; moist hue commonly is 7.5YR or 10YR. It is loam, fine sandy loam, or sandy loam and, in places, it has 5 to 25 percent gravel or stones in the upper part. The lower part is more than 35 percent rock fragments and ranges to 70 or 80 percent. Rock outcrops occur in some areas. Reaction ranges from medium acid to neutral. In places there is a C horizon or, less commonly, a B2 horizon. Depth to bedrock ranges from 10 to 20 inches. The bedrock is fractured sandstone, shale, or schist.

Pp—Plaskett-Reliz complex. This mapping unit consists of steep and very steep soils on mountains, mostly in the Los Padres National Forest and on the Hunter Liggett Military Reservation. These soils are so intermingled that it was not feasible to map them separately at the scale used. Slopes are 30 to 75 percent.

Plaskett soils make up about 35 percent of this complex and Reliz soils 30 percent. Plaskett soils typically are along drainageways in areas that have a western exposure, and Reliz soils are on ridgetops in areas that have a southern exposure. The rest of the complex consists of McMullin, Sur, Henneke, Lopez, and Los Gatos soils which make up about 20 percent of the acreage; rock outcrops which make up 10 percent; and soils that are similar to Plaskett soils, but have slopes of more than 75 percent or are severely eroded, which make up 5 percent.

Runoff is very rapid, and the erosion hazard is very high.

This complex is used mostly for range, woodland, watershed, recreation, and wildlife habitat. Trees are mostly noncommercial varieties such as interior live oak, madrone, and laurel. These species commonly are scrubs. There are a few scattered Coulter pine, knobcone pine, and digger pine.

The Plaskett soil has low productivity for Coulter pine (site index averages about 50). The seedling mortality and windthrow hazard are moderate. The equipment limitation is severe. Reliz soils are not used for woodland. Capability unit VIIe–1(15); Plaskett soil not assigned a range site, Reliz soil in Shallow Loamy range site.

Psamments and Fluvents

Pr—Psamments and Fluvents, occasionally flooded. This mapping unit consists of undulating areas of stratified sandy, gravelly, and cobbly sediments on flood plains. These areas are subject to flooding, scouring, and deposition every 3 to 5 years. Typical areas are along the San Antonio, Nacimiento, Salinas, and Arroyo Seco Rivers and adjacent to perennial and intermittent streams. The elevation ranges from 20 to 2,000 feet. The vegetation is mostly scattered sagebrush, some willow and sycamore trees, and a sparse cover of annual grass and forbs.

Small areas of Aquic Xerofluvents and Metz, Tujunga, and Mocho soils were included in mapping.

Drainage is excessive, and permeability is very rapid. Runoff is slow or very slow, and the erosion hazard is moderate. Roots can penetrate to a depth of 60 inches, and the available water capacity is 2 to 3 inches.

This land has very little value for farming. It is used for recreation and for very limited range. Capability unit VIw–1(15); Sandy range site.

Ps—Psamments and Fluvents, frequently flooded. This mapping unit consists of undulating areas of stratified sandy, gravelly, and cobbly sediments on flood plains. These areas are subject to annual flooding, scouring, and deposition. Typical areas are along the San Antonio, Nacimiento, Salinas, and Arroyo Seco Rivers and adjacent to perennial and intermittent streams. The elevation ranges from 20 to 2,000 feet. The vegetation is mostly scattered sagebrush, some willows and sycamores, and a sparse cover of annual grasses and forbs.

Small areas of Aquic Xerofluvents and Metz, Tujunga, and Mocho soils were included in mapping.

Drainage is excessive, and permeability is very rapid. Runoff is slow or very slow, and the erosion hazard is moderate. Roots can penetrate to a depth of 60 inches, and the available water capacity is 2 to 3 inches.

This land has very little value for farming. It is used for recreation and for very limited range. Capability unit VIIIw–1(15); Sandy range site.

Reliz Series

The Reliz series consists of excessively drained soils on uplands. These soils formed in material underlain by shale and sandstone. Slopes are 30 to 75 percent. The vegetation consists of annual grasses, forbs, scrub oaks, chamise, and manzanita. The elevation is 500 to 3,400 feet. The mean annual precipitation is 10 to 55 inches, the mean annual air temperature is 58° to 62° F, and the frost-free season is 200 to 250 days. Summers are hot and dry, and winters are cool and moist.

In a representative profile the surface layer is light gray, slightly acid shaly clay loam 12 inches thick. It is underlain by fractured hard shale.

Permeability is moderate, and the available water capacity is 1 to 2 inches. Roots penetrate to a depth of 10 to 20 inches.

Reliz soils are used for range, watershed, and wildlife habitat.

Representative profile of Reliz shaly clay loam, in an area of Santa Lucia-Reliz association, south of Greenfield, 1 mile up Reliz Canyon Road from Herbert Ranch; in SE¼SE¼ sec. 35, T. 19 S., R. 6 E.

A11—0 to 5 inches; light gray (10YR 7/2) shaly clay loam, brown (10YR 4/3) when moist; moderate fine and medium granular structure; slightly hard, friable, sticky and plastic; common very fine and few fine roots; many very fine tubular pores and few fine interstitial pores; 35 percent ¼- to 1-inch shale fragments; slightly acid; clear wavy boundary.

A12—5 to 12 inches; light gray (10YR 7/2) very shaly clay loam, brown (10YR 4/3) when moist; massive; slightly hard, friable, sticky and plastic; common very fine and few fine roots; many very fine tubular pores and few very fine interstitial pores; 20 percent ¼- to 1-inch shale fragments and 30 percent 2- to 6-inch shale fragments; slightly acid; clear wavy boundary.

R—12 to 20 inches; hard, fractured siliceous shale of the Monterey Formation.

The A1 horizon is grayish brown, brownish gray, pale brown, light gray, very pale brown, and light brownish gray and is typically shaly clay loam, but ranges to very shaly clay loam and shaly loam. The content of shale fragments ranges from 25 percent in the upper part of the A1 horizon to 70 percent in the lower part. Reaction is strongly acid to neutral. Depth to hard shale ranges from 10 to 20 inches. Most of the shale is siliceous and occurs in the Monterey Formation. Where the soil has formed over sandstone and nonsiliceous shale, the lower part of the A1 horizon is yellowish brown, light yellowish brown, very pale brown, or brown, and reaction ranges to very strongly acid.

Reliz soils occur only with Plaskett or Santa Lucia soils.

Rincon Series

The Rincon series consists of well drained soils that formed in alluvium derived from sandstone and shale on alluvial fans and terraces. Slopes are 0 to 30 percent. The vegetation consists of annual grasses and forbs. The elevation is mostly 100 to 2,000 feet. Except in the Priest Valley area, the mean annual precipitation is 12 to 20 inches, the mean annual air temperature is 57° to 59° F, and the frost-free season is about 250 days. In the Priest Valley area, the elevation is about 2,500 feet, the annual precipitation is 20 inches, and the frost-free season is about 150 days.

In a representative profile the surface layer is dark grayish brown, slightly acid clay loam about 14 inches thick. The subsoil is dark grayish brown, brown, and light yellowish brown, neutral to moderately alkaline clay and heavy clay loam 35 inches thick. The substratum is pale yellow, moderately alkaline, calcareous clay loam that extends to a depth of more than 60 inches.

Permeability is slow.

Rincon soils are used mostly for irrigated field and areas of Antioch, Lockwood, Garey, San Andreas, and Los Osos soils. Included in areas throughout the county were some soils that are very similar to Santa Ynez soils, but have neutral to moderately alkaline subsoils.

Runoff is slow or medium, and the erosion hazard is slight or moderate. Roots can generally penetrate to a depth of 60 inches or more, but some roots are restricted to a depth of 15 to 36 inches by the clay subsoil. The available water capacity is 3 to 5 inches, and some water is slowly available from the subsoil.

North of Salinas this soil is used for irrigated row crops, strawberries, and pasture. It is also used for dryland grain and range throughout the area. Capability units IVe–3 (14), IVe–3 (15); Claypan range site.

ShD—Santa Ynez fine sandy loam, 9 to 15 percent slopes. This is a strongly sloping soil on terraces and low hills. It has a profile similar to the one described as representative of the series, but the surface layer commonly is 16 to 32 inches thick.

Included with this soil in mapping were small areas of Diablo, Elkhorn, Antioch, and Snelling soils. Included in the northern part of the county, and making up about 60 percent of the acreage, were areas of this Santa Ynez soil that are underlain by a cemented layer at a depth of 30 to 60 inches. Also included were some areas of Santa Ynez soils that have 2 to 9 percent slopes, some areas that have 5 to 15 percent slopes and are eroded, and a few small areas that have 15 to 30 percent slopes.

Runoff is medium, and the erosion hazard is moderate. Roots can generally penetrate to a depth of 60 inches or more, but some roots are restricted to a depth of 16 to 32 inches by the clay subsoil. The available water capacity is 2.5 to 4 inches.

This soil is used mostly for range or pasture. Some areas are used for dryland grain. Capability units IVe–3 (14), IVe–3 (15); Claypan range site.

ShD2—Santa Ynez fine sandy loam, 5 to 15 percent slopes, eroded. This is a gently rolling to rolling soil on low hills and terraces. It has a profile similar to the one described as representative of the series, but is eroded. This soil has many small rills and gullies after winter rains, especially where cultivated. Rill and sheet erosion have removed some of the original surface layer, exposing the subsoil on some hill crests or ridges, and there are some gullies in swales. Depth to the subsoil ranges from 16 to 24 inches.

Included with this soil in mapping were small areas of Antioch, Snelling, Garey, Dibble, and Placentia soils. Also included were small areas of Santa Ynez soils that have 2 to 9 percent slopes, some that have 9 to 15 percent slopes and no erosion, and some that have 15 to 30 percent slopes. Some soils that are underlain by an indurated layer at a depth of 30 to 60 inches and others that have a very strongly acid subsoil were also included.

Runoff is medium, and the erosion hazard is moderate. Roots can generally penetrate to a depth of 60 inches or more, but some roots are restricted to a depth of 16 to 24 inches by the clay subsoil. The available water capacity is 2.5 to 3.5 inches.

This soil is used for dryland grain and range. Capability unit IVe–3 (15); Claypan range site.

ShE—Santa Ynez fine sandy loam, 15 to 30 percent slopes. This is a hilly soil on dissected terraces. It has the profile described as representative of the series. Slopes are mostly about 25 percent.

Included with this soil in mapping were areas of San Andreas soils making up about 15 percent of the acreage; areas of a soil that is very similar to Santa Ynez soil, but is underlain by a cemented layer at a depth of 30 to 60 inches, making up about 35 percent; and small areas of Antioch, Snelling, Elkhorn, Arnold, and Haire soils. Also included were some soils that are very similar to Santa Ynez soils, but have a brown, light gray, or light brownish gray surface layer. Some areas of severe gully erosion were also included.

Runoff is rapid, and the erosion hazard is high. Roots can generally penetrate to a depth of 60 inches or more, but some roots are restricted to a depth of 15 to 30 inches by the clay subsoil. The available water capacity is 2.5 to 4 inches.

This soil is used mostly for range. Capability unit VIe–1 (15); Claypan range site.

Shedd Series

The Shedd series consists of well drained soils on uplands. These soils formed in material underlain by calcareous shale and sandstone. Slopes are 9 to 75 percent. The vegetation consists of annual grasses, forbs, and brush. The elevation is 300 to 2,000 feet. The mean annual precipitation is 10 to 16 inches, the mean annual air temperature is 58° to 60° F, and the frost-free season is about 250 days. Summers are hot and dry, and winters are cool and moist.

In a representative profile the surface layer is gray, moderately alkaline, calcareous silty clay loam about 23 inches thick. It is underlain by light gray, moderately alkaline, calcareous silty clay loam. Soft calcareous shale is at a depth of 30 inches.

Permeability is moderately slow.

Shedd soils are used for range and dryland grain.

Representative profile of Shedd silty clay loam, 15 to 30 percent slopes, about 9 miles east of King City up Wildhorse Canyon, about 30 feet down from the ridgetop, in the center of SE¼NW¼ sec. 11, T. 20 S., R. 9 E.

A11—0 to 5 inches; gray (5Y 6/1) silty clay loam, dark grayish brown (2.5Y 4/2) when moist; moderate medium angular blocky structure; hard, very friable, sticky and plastic; common very fine roots; common very fine interstitial and tubular pores; strongly effervescent with disseminated lime; moderately alkaline; clear smooth boundary.

A12—5 to 12 inches; gray (5Y 6/1) silty clay loam, very dark grayish brown (2.5Y 3/2) when moist; strong medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine interstitial pores and common very fine, fine, and medium tubular pores; strongly effervescent with disseminated lime; moderately alkaline; gradual smooth boundary.

A13—12 to 23 inches; gray (5Y 6/1) silty clay loam, very dark grayish brown (2.5Y 3/2) when moist; strong medium subangular blocky structure; slightly hard, very friable, sticky and plastic; few very fine roots; many very fine interstitial pores and common very fine, fine, and medium tubular pores; violently effervescent with disseminated lime; moderately alkaline; abrupt wavy boundary.

C1ca—23 to 30 inches; light gray (2.5Y 7/2) silty clay loam, very dark grayish brown (2.5Y 3/2) when moist; moderate medium subangular blocky structure;

slightly hard, very friable, sticky and plastic; very few very fine roots; many very fine interstitial pores and few fine and medium tubular pores; violently effervescent with disseminated lime; moderately alkaline; gradual smooth boundary.

C2r—30 to 36 inches; light gray (5Y 7/2) soft calcareous shale.

The A1 horizon commonly is gray or light gray, and chroma is generally 1 but approaches 2 in places. Segregated lime is in the lower part of the A horizon in places. The Cca horizon ranges from light gray to white and is silty clay loam, silt loam, or loam. Depth to calcareous shale or sandstone ranges from 20 to 40 inches.

SmG3—Shedd silt loam, 30 to 75 percent slopes, severely eroded. This is a steep and very steep soil on uplands that have mostly southern exposures. It has a profile similar to the one described as representative of the series, but it is severely eroded. The surface layer commonly is light gray strongly effervescent silt loam; depth to bedrock ranges from 20 to 30 inches; gully, rill, and sheet erosion have removed 30 to 50 percent of the original surface layer; and the soil on most ridges and in canyons or drainageways has been removed by water erosion.

Included with this soil in mapping were areas of Badland and Rock outcrop-Xerorthents association making up 15 to 20 percent of the acreage; areas of Shedd soil that is less than 20 inches deep to bedrock and is light brownish gray, pale brown, or very pale brown, making up 30 to 40 percent; and small areas of Gaviota, San Timoteo, San Andreas, and Arnold soils. Some Shedd soils that are slightly eroded or have 30 to 75 percent slopes and are moderately eroded were also included.

Runoff is very rapid, and the erosion hazard is very high. Roots can penetrate to a depth of 20 to 30 inches. The available water capacity is 3 to 4.5 inches. Because of the very high erosion hazard and very rapid runoff, this soil has a high potential to deposit silt and sediment downslope. At the mouth of some drainageways, deposition occurs once or twice a year.

This soil is used for limited range. Capability unit VIIe–1(15); Loamy range site.

SnD—Shedd silty clay loam, 9 to 15 percent slopes. This is a rolling soil on hills and ridgetops. Depth to bedrock is 30 to 40 inches.

Included with this soil in mapping were small areas of Docas, Linne, Nacimiento and Diablo soils. Also included were some areas of soils that have 5 to 9 percent slopes or are moderately eroded and some soils that are very similar to Shedd soils, but are more than 40 inches deep to bedrock.

Runoff is medium, and the erosion hazard is moderate. Roots can penetrate to a depth of 30 to 40 inches. The available water capacity is 5.5 to 8.5 inches. The surface layer seals over and becomes puddled very easily.

This soil is used for range and dryland grain. Capability unit IVe–1(15); Clayey range site.

SnE—Shedd silty clay loam, 15 to 30 percent slopes. This is a moderately steep soil on uplands that have dominantly southern exposures. It has the profile described as representative of the series. Depth to bedrock is 20 to 30 inches. Slopes are mostly about 20 percent.

Included with this soil in mapping were small areas of Linne, Nacimiento, San Benito, Gazos, and Los Osos soils; small areas of a soil that has a calcareous or noncalcareous, light brownish gray surface layer; a few areas of soils that have slopes of 30 to 40 percent; and some soils that are very similar to Shedd soils, but less than 20 inches or more than 30 inches deep to bedrock. Also included were some areas where erosion is moderate and an average of 25 to 30 percent of the original surface layer has been removed, mostly by sheet and rill erosion. Some gullies in the upper drainageways were also included.

Runoff is rapid, and the erosion hazard is high. Roots can penetrate to a depth of 20 to 30 inches. The available water capacity is 4 to 6 inches.

This soil is used mostly for range, but a few areas are used for dryland grain. Capability unit IVe–1(15); Clayey range site.

SnF2—Shedd silty clay loam, 30 to 50 percent slopes, eroded. This is a steep soil on rolling uplands. Most areas have lost 25 to 30 percent of the original surface layer through erosion. The soil has small rills, exposed bedrock along ridges, and raw or exposed bedrock at the head of most drainageways. Some sheet erosion occurs in most areas. Depth to bedrock is 30 to 40 inches.

Included with this soil in mapping were areas of Shedd silt loam, 30 to 75 percent slopes, severely eroded, making up about 15 percent of the acreage, and areas of this soil that have a hard cemented clay layer above the bedrock making up about 10 percent. Also included were small areas of Linne, Nacimiento, and San Benito soils; a soil that has a noncalcareous or calcareous light brownish gray surface layer; and a similar soil that is less than 20 inches deep to bedrock.

Runoff is rapid, and the erosion hazard is high. Roots can penetrate to a depth of 20 to 30 inches. The available water capacity is 4 to 6 inches. Severe erosion results from overgrazing.

This soil is used for range. Capability unit VIe–1(15); Clayey range site.

Sheridan Series

The Sheridan series consists of well drained soils on hills and mountains. These soils formed in material underlain by granitic and schistose rock. Slopes are 5 to 75 percent. The vegetation is the open grass or grass and oak type or it consists of madrone, scattered Coulter and ponderosa pine, and brush. The elevation is 1,000 to 5,000 feet. The mean annual precipitation is 16 to 50 inches, the mean annual air temperature is 57° to 63° F, and the frost-free season is 170 to 230 days. Summers are warm or hot and dry, and winters are cool and moist.

In a representative profile the surface layer is dark grayish brown, slightly acid coarse sandy loam 39 inches thick. It is underlain by brown and very dark gray, slightly acid weathered granite.

Permeability is moderately rapid, and the available water capacity is 3 to 6 inches. Roots penetrate to a depth of 20 to 40 inches.

Sheridan soils are used mostly for range. Some areas are used for recreation, homesites, wildlife habitat, or watershed.

Representative profile of Sheridan coarse sandy loam,

FIELD OFFICE OFFICIAL LIST OF HYDRIC SOIL MAP UNITS
FOR
MONTEREY COUNTY, CALIFORNIA

Map Units are listed in alpha-numeric order by map unit symbol. The 'HYDRIC CRITERIA' column refers to criteria defined in 'Hydric Soils of the United States' (USDA Miscellaneous Publication No. 1491 June, 1991.) The 'FSA ITEMS' column contains information needed for Food Security Act determinations required by Section 512.11(h)(4) of the National Food Security Act Manual (August 1991).

March 16, 1992

Soil Survey Area No.: CA053
Soil Survey Name: MONTEREY COUNTY, CALIFORNIA

Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Cri-teria	Hydric Landforms	FSA Items	Foot-notes
AF	AQUIC XEROFLUVENTS					
	(C) AQUIC XEROFLUVENTS	Y	4	Flood Plain	4,5	1
AaC	ALO SILTY CLAY, 2 TO 9 PERCENT SLOPES					
	(C) ALO	N				
AaD	ALO SILTY CLAY, 9 TO 15 PERCENT SLOPES					
	(C) ALO	N				
AaE	ALO SILTY CLAY, 15 TO 30 PERCENT SLOPES					
	(C) ALO	N				
AaF	ALO SILTY CLAY, 30 TO 50 PERCENT SLOPES					
	(C) ALO	N				
Ab	ALO-MILLSHOLM COMPLEX					
	(C) ALO	N				
	(C) MILLSHOLM	N				
Ac	ALVISO SILTY CLAY LOAM					
	(C) ALVISO	Y	2B3,4	Basin Floor	4,5	
Ad	ALVISO SILTY CLAY LOAM, DRAINED					
	(C) ALVISO	Y	2B3,4	Basin Floor	4,5	
AeA	ANTIOCH VERY FINE SANDY LOAM, 0 TO 2 PERCENT SLOPES					
	(C) ANTIOCH	N				

Soil Survey Area No.: CA053
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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Cri- teria	Hydric Landforms	FSA Items	Foot- notes
AeC	ANTIOCH VERY FINE SANDY LOAM, 2 TO 9 PERCENT SLOPES					
	(C) ANTIOCH	N				
AeD	ANTIOCH VERY FINE SANDY LOAM, 9 TO 15 PERCENT SLOPES					
	(C) ANTIOCH	N				
	(I) CLEAR LAKE	Y	2B3	Basin Floor	1,5	
AgC	ARBUCKLE GRAVELLY LOAM, 2 TO 9 PERCENT SLOPES					
	(C) ARBUCKLE	N				
AgD	ARBUCKLE GRAVELLY LOAM, 9 TO 15 PERCENT SLOPES					
	(C) ARBUCKLE	N				
AkD	ARNOLD LOAMY SAND 9 TO 15 PERCENT SLOPES					
	(C) ARNOLD	N				
AkF	ARNOLD LOAMY SAND, 15 TO 50 PERCENT SLOPES					
	(C) ARNOLD	N				
Am	ARNOLD-SAN ANDREAS COMPLEX					
	(C) ARNOLD	N				
	(C) SAN ANDREAS	N				
Ar	ARNOLD-SANTA YNEZ COMPLEX					
	(C) ARNOLD	N				
	(C) SANTA YNEZ	N				

Soil Survey Area No.: CA053
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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Cri-teria	Hydric Landforms	FSA Items	Foot-notes
AsA	ARROYO SECO GRAVELLY SANDY LOAM, 0 TO 2 PERCENT SLOPES					
	(C) ARROYO SECO	N				
AsB	ARROYO SECO GRAVELLY SANDY LOAM, 2 TO 5 PERCENT SLOPES					
	(C) ARROYO SECO	N				
AsC	ARROYO SECO GRAVELLY SANDY LOAM, 5 TO 9 PERCENT SLOPES					
	(C) ARROYO SECO	N				
AvA	ARROYO SECO GRAVELLY LOAM, 0 TO 2 PERCENT SLOPES					
	(C) ARROYO SECO	N				
AvB	ARROYO SECO GRAVELLY LOAM, 2 TO 5 PERCENT SLOPES					
	(C) ARROYO SECO	N				
AyD	AYAR SILTY CLAY, 5 TO 15 PERCENT SLOPES					
	(C) AYAR	N				
AyE	AYAR SILTY CLAY, 15 TO 30 PERCENT SLOPES					
	(C) AYAR	N				
AyF	AYAR SILTY CLAY, 30 TO 50 PERCENT SLOPES					
	(C) AYAR	N				
Ba	BADLAND					
	(C) BADLAND	N				
	(I) PSAMMENTS	Y	4	Alluvial Flat (plain)	4,5	
	(I) FLUVENTS	Y	4	Alluvial Flat (plain)	4,5	

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Criteria	Hydric Landforms	FSA Items	Footnotes
BbC	BAYWOOD SAND, 2 TO 15 PERCENT SLOPES					
	(C) BAYWOOD	N				
CaD	CHAMISE SHALY LOAM, 9 TO 15 PERCENT SLOPES					
	(C) CHAMISE	N				
CaE	CHAMISE SHALY LOAM, 15 TO 30 PERCENT SLOPES					
	(C) CHAMISE	N				
CaF	CHAMISE SHALY LOAM, 30 TO 50 PERCENT SLOPES					
	(C) CHAMISE	N				
CbA	CHUALAR LOAM, 0 TO 2 PERCENT SLOPES					
	(C) CHUALAR	N				
CbB	CHUALAR LOAM, 2 TO 5 PERCENT SLOPES					
	(C) CHUALAR	N				
CbC	CHUALAR LOAM, 5 TO 9 PERCENT SLOPES					
	(C) CHUALAR	N				
CcG	CIENEBA FINE GRAVELLY SANDY LOAM, 30 TO 75 PERCENT SLOPES					
	(C) CIENEBA	N				
Cd	CIENEBA-ROCK OUTCROP COMPLEX					
	(C) CIENEBA	N				
	(C) ROCK OUTCROP	N				

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Cri-teria	Hydric Landforms	FSA Items	Foot-notes
Ce	CIENEBA-SUR-ROCK OUTCROP COMPLEX					
	(C) CIENEBA	N				
	(C) ROCK OUTCROP	N				
	(C) SUR	N				
Cf	CLEAR LAKE CLAY					
	(C) CLEAR LAKE	Y	2B3,4	Basin Floor	4,5	
Cg	CLEAR LAKE CLAY, MODERATELY WET					
	(C) CLEAR LAKE	Y	2B3,4	Basin Floor	4,5	1
ChE	CLIMARA CLAY, 15 TO 30 PERCENT SLOPES					
	(C) CLIMARA	N				
	(I) UNNAMED	Y	4	Depression	4,5	
ChF	CLIMARA CLAY, 30 TO 50 PERCENT SLOPES					
	(C) CLIMARA	N				
	(I) UNNAMED	Y	4	Depression	4,5	
Ck	CLIMARA-MONTARA COMPLEX					
	(C) CLIMARA	N				
	(C) MONTARA	N				
Cm	COASTAL BEACHES					
	(C) COASTAL BEACHES	Y	4	Beach	4	
CnA	CROPLEY SILTY CLAY, 0 TO 2 PERCENT SLOPES					
	(C) CROPLEY	N				
	(I) CLEAR LAKE	Y	2B3	Basin Floor	1,5	
CnC	CROPLEY SILTY CLAY, 2 TO 9 PERCENT SLOPES					
	(C) CROPLEY	N				

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Cri-teria	Hydric Landforms	FSA Items	Foot-notes
DaA	DANVILLE SANDY CLAY LOAM, 0 TO 2 PERCENT SLOPES					
	(C) DANVILLE	N				
DaC	DANVILLE SANDY CLAY LOAM, 2 TO 9 PERCENT SLOPES					
	(C) DANVILLE	N				
DbD	DIABLO CLAY, 9 TO 15 PERCENT SLOPES					
	(C) DIABLO	N				
DbE	DIABLO CLAY, 15 TO 30 PERCENT SLOPES					
	(C) DIABLO	N				
	(I) AQUIC XEROFLUVENTS	Y	4	Flood Plain	4,5	
DbF	DIABLO CLAY, 30 TO 50 PERCENT SLOPES					
	(C) DIABLO	N				
DcC	DIBBLE LOAM, 2 TO 9 PERCENT SLOPES					
	(C) DIBBLE	N				
	(I) UNNAMED	Y	4	Swale	4,5	
DdB	DIBBLE SILT LOAM, 9 TO 15 PERCENT SLOPES					
	(C) DIBBLE	N				
DdE	DIBBLE SILT LOAM, 15 TO 30 PERCENT SLOPES					
	(C) DIBBLE	N				
DdF	DIBBLE SILT LOAM, 30 TO 50 PERCENT SLOPES					
	(C) DIBBLE	N				

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Cri-teria	Hydric Landforms	FSA Items	Foot-notes
DeA	DOCAS SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES					
	(C) DOCAS	N				
DeC	DOCAS SILTY CLAY LOAM, 2 TO 9 PERCENT SLOPES					
	(C) DOCAS	N				
Df	DUNE LAND					
	(C) DUNE LAND	N				
	(I) UNNAMED	Y	4	Depression	4,5	
	(I) COASTAL BEACHES	Y	4	Beach	4,5	
EaA	ELDER SANDY LOAM, 0 TO 2 PERCENT SLOPES					
	(C) ELDER	N				
EbC	ELDER VERY FINE SANDY LOAM, 2 TO 9 PERCENT SLOPES					
	(C) ELDER	N				
EcA	ELDER LOAM, GRAVELLY SUBSTRATUM, 0 TO 2 PERCENT SLOPES					
	(C) ELDER	N				
EdB	ELKHORN FINE SANDY LOAM, 2 TO 5 PERCENT SLOPES					
	(C) ELKHORN	N				
	(I) UNNAMED	Y	4	Depression	4,5	
EdC	ELKHORN FINE SANDY LOAM, 5 TO 9 PERCENT SLOPES					
	(C) ELKHORN	N				

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Cri-teria	Hydric Landforms	FSA Items	Foot-notes
EcD	ELKHORN FINE SANDY LOAM, 9 TO 15 PERCENT SLOPES					
	(C) ELKHORN	N				
EeD	ELKHORN FINE SANDY LOAM, THIN SURFACE VARIANT, 5 TO 15 PERCENT SLOPES					
	(C) ELKHORN VARIANT	N				
EeE	ELKHORN FINE SANDY LOAM, THIN SURFACE VARIANT, 15 TO 30 PERCENT SLOPES					
	(C) ELKHORN VARIANT	N				
Fa	FLUVENTS, STONY					
	(C) FLUVENTS	Y	4	Flood Plain	4,5	
Ga	GAMBOA-SUR COMPLEX					
	(C) GAMBOA	N				
	(C) SUR	N				
GbC	GAREY SANDY LOAM, 2 TO 9 PERCENT SLOPES					
	(C) GAREY	N				
GbE	GAREY SANDY LOAM, 9 TO 30 PERCENT SLOPES					
	(C) GAREY	N				
GbF2	GAREY SANDY LOAM, 30 TO 50 PERCENT SLOPES, ERODED					
	(C) GAREY	N				
Gc	GAREY-OCEANO COMPLEX					
	(C) GAREY	N				
	(C) OCEANO	N				

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Criteria	Hydric Landforms	FSA Items	Footnotes
GcE	GAVIOTA SANDY LOAM, 15 TO 30 PERCENT SLOPES					
	(C) GAVIOTA	N				
GdF	GAVIOTA SANDY LOAM, 30 TO 75 PERCENT SLOPES					
	(C) GAVIOTA	N				
GeE	GAVIOTA-SAN ANDREAS COMPLEX, 15 TO 30 PERCENT SLOPES					
	(C) GAVIOTA	N				
	(C) SAN ANDREAS	N				
GeG	GAVIOTA-SAN ANDREAS COMPLEX, 30 TO 75 PERCENT SLOPES					
	(C) GAVIOTA	N				
	(C) SAN ANDREAS	N				
GfE	GAZOS SILT LOAM, 15 TO 30 PERCENT SLOPES					
	(C) GAZOS	N				
GfF	GAZOS SILT LOAM, 30 TO 50 PERCENT SLOPES					
	(C) GAZOS	N				
GgD2	GILROY GRAVELLY LOAM, 30 TO 75 PERCENT SLOPES, ERODED					
	(C) GILROY	N				
GgE	GILROY GRAVELLY LOAM, 15 TO 50 PERCENT SLOPES					
	(C) GILROY	N				

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Cri-teria	Hydric Landforms	FSA Items	Foot-notes
GhC	GLORIA SANDY LOAM, 2 TO 9 PERCENT SLOPES					
	(C) GLORIA	N				
GhD	GLORIA SANDY LOAM, 9 TO 15 PERCENT SLOPES					
	(C) GLORIA	N				
GhF	GLORIA SANDY LOAM, 15 TO 50 PERCENT SLOPES					
	(C) GLORIA	N				
GkB	GORGONIO SANDY LOAM, 0 TO 5 PERCENT SLOPES					
	(C) GORGONIO	N				
	(I) FLUVENTS, STONY	Y	4	Flood Plain	4,5	
GmB	GREENFIELD FINE SANDY LOAM, 0 TO 5 PERCENT SLOPES					
	(C) GREENFIELD	N				
GmC	GREENFIELD FINE SANDY LOAM, 5 TO 9 PERCENT SLOPES					
	(C) GREENFIELD	N				
GmD	GREENFIELD FINE SANDY LOAM, 9 TO 15 PERCENT SLOPES					
	(C) GREENFIELD	N				
HaE	HAIRE LOAM, 15 TO 30 PERCENT SLOPES					
	(C) HAIRE	N				
HbB	HANFORD GRAVELLY SANDY LOAM, 0 TO 5 PERCENT SLOPES					
	(C) HANFORD	N				

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Criteria	Hydric Landforms	FSA Items	Foot-notes
HcF	HENNEKE EXTREMELY STONY CLAY LOAM, 15 TO 75 PERCENT SLOPES					
	(C) HENNEKE	N				
JaF	JUNIPERO LOAMY SAND, 30 TO 50 PERCENT SLOPES					
	(C) JUNIPERO	N				
JbG	JUNIPERO SANDY LOAM, 30 TO 75 PERCENT SLOPES					
	(C) JUNIPERO	N				
Jc	JUNIPERO-SUR COMPLEX					
	(C) JUNIPERO	N				
	(C) SUR	N				
LaD	LINNE SILTY CLAY LOAM 5 TO 15 PERCENT SLOPES					
	(C) LINNE	N				
LaE	LINNE SILTY CLAY LOAM, 15 TO 30 PERCENT SLOPES					
	(C) LINNE	N				
LaF	LINNE SILTY CLAY LOAM, 30 TO 50 PERCENT SLOPES					
	(C) LINNE	N				
LbD	LINNE-DIABLO COMPLEX, 9 TO 15 PERCENT SLOPES					
	(C) DIABLO	N				
	(C) LINNE	N				

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Cri-teria	Hydric Landforms	FSA Items	Foot-notes
LbE	LINNE-DIABLO COMPLEX, 15 TO 30 PERCENT SLOPES					
	(C) DIABLO	N				
	(C) LINNE	N				
LcE	LINNE-SHEDD SILTY CLAY LOAMS, 15 TO 30 PERCENT SLOPES					
	(C) LINNE	N				
	(C) SHEDD	N				
LcF	LINNE-SHEDD SILTY CLAY LOAMS, 30 TO 50 PERCENT SLOPES					
	(C) LINNE	N				
	(C) SHEDD	N				
LcF2	LINNE-SHEDD SILTY CLAY LOAMS, 15 TO 50 PERCENT SLOPES, ERODED					
	(C) LINNE	N				
	(C) SHEDD	N				
LcG2	LINNE-SHEDD SILTY CLAY LOAMS, 50 TO 75 PERCENT SLOPES, ERODED					
	(C) LINNE	N				
	(C) SHEDD	N				
LdA	LOCKWOOD LOAM, 0 TO 2 PERCENT SLOPES					
	(C) LOCKWOOD	N				
LdC	LOCKWOOD LOAM, 2 TO 9 PERCENT SLOPES					
	(C) LOCKWOOD	N				

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Cri-teria	Hydric Landforms	FSA Items	Foot-notes
LeA	LOCKWOOD SHALY LOAM, 0 TO 2 PERCENT SLOPES					
	(C) LOCKWOOD	N				
LeC	LOCKWOOD SHALY LOAM, 2 TO 9 PERCENT SLOPES					
	(C) LOCKWOOD	N				
	(I) PACHECO	Y	2A	Flood Plain	1,5	1
	(I) FLUVENTS,STONY	Y	4	Flood Plain	4,5	1
LeD	LOCKWOOD SHALY LOAM, 9 TO 15 PERCENT SLOPES					
	(C) LOCKWOOD	N				
LgA	LOCKWOOD SHALY LOAM, 0 TO 2 PERCENT SLOPES, WET					
	(C) LOCKWOOD	Y	2B3	Swale	1,5	1
LhE	LOPEZ SHALY LOAM, 15 TO 30 PERCENT SLOPES					
	(C) LOPEZ	N				
LkF	LOS GATOS GRAVELLY LOAM, 30 TO 50 PERCENT SLOPES					
	(C) LOS GATOS	N				
LkG	LOS GATOS GRAVELLY LOAM, 50 TO 75 PERCENT SLOPES					
	(C) LOS GATOS	N				
LmD	LOS OSOS CLAY LOAM, 9 TO 15 PERCENT SLOPES					
	(C) LOS OSOS	N				

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Cri-teria	Hydric Landforms	FSA Items	Foot-notes
LmE	LOS OSOS CLAY LOAM, 15 TO 30 PERCENT SLOPES					
	(C) LOS OSOS	N				
LmF	LOS OSOS CLAY LOAM, 30 TO 50 PERCENT SLOPES					
	(C) LOS OSOS	N				
LmG	LOS OSOS CLAY LOAM, 50 TO 75 PERCENT SLOPES					
	(C) LOS OSOS	N				
Ln	LOS OSOS-MILLSHOLM COMPLEX					
	(C) LOS OSOS	N				
	(C) MILLSHOLM	N				
MK	MILLSHOLM-ALO ASSOCIATION					
	(C) ALO	N				
	(C) MILLSHOLM	N				
MaE	MCCOY CLAY LOAM, 15 TO 30 PERCENT SLOPES					
	(C) MCCOY	N				
MaF	MCCOY CLAY LOAM, 30 TO 50 PERCENT SLOPES					
	(C) MCCOY	N				
MaG	MCCOY CLAY LOAM, 50 TO 75 PERCENT SLOPES					
	(C) MCCOY	N				
MbE	MCCOY-GILROY COMPLEX, 15 TO 30 PERCENT SLOPES					
	(C) GILROY	N				
	(C) MCCOY	N				

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Cri-teria	Hydric Landforms	FSA Items	Foot-notes
MbG	MCCOY-GILROY COMPLEX, 30 TO 75 PERCENT SLOPES					
	(C) GILROY	N				
	(C) MCCOY	N				
McG	MCCOY GRAVELLY LOAM, VERY STONY SUBSOIL VARIANT, 30 TO 75 PERCENT SLOPES					
	(C) MCCOY VARIANT	N				
Md	MCMULLIN-PLASKETT COMPLEX					
	(C) MCMULLIN	N				
	(C) PLASKETT	N				
Me	METZ LOAMY SAND					
	(C) METZ	N				
Mf	METZ FINE SANDY LOAM					
	(C) METZ	N				
	(I) FLUVENTS	Y	4	Flood Plain	4,5	
	(I) PACHECO	Y	2A	Flood Plain	1,5	1
	(I) PSAMMENTS	Y	4	Flood Plain	4,5	
Mg	METZ COMPLEX					
	(C) METZ	Y	4	Drainageways	4,5	1
	(C) METZ	N				
MhG	MILLSHOLM LOAM, 30 TO 75 PERCENT SLOPES					
	(C) MILLSHOLM	N				
Mm	MILLSHOLM-GAZOS COMPLEX					
	(C) GAZOS	N				
	(C) MILLSHOLM	N				
MnA	MOCHO SILT LOAM, 0 TO 2 PERCENT SLOPES					
	(C) MOCHO	N				
	(I) PACHECO	Y	2A	Flood Plain	1,5	1

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Cri-teria	Hydric Landforms	FSA Items	Foot-notes
MoA	MOCHO SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES					
	(C) MOCHO	N				
MoC	MOCHO SILTY CLAY LOAM, 2 TO 9 PERCENT SLOPES					
	(C) MOCHO	N				
Mp	MONTARA-ROCK OUTCROP COMPLEX					
	(C) MONTARA	N				
	(C) ROCK OUTCROP	N				
NaD	NACIMIENTO SILTY CLAY LOAM, 9 TO 15 PERCENT SLOPES					
	(C) NACIMIENTO	N				
NaE	NACIMIENTO SILTY CLAY LOAM, 15 TO 30 PERCENT SLOPES					
	(C) NACIMIENTO	N				
NaF	NACIMIENTO SILTY CLAY LOAM, 30 TO 50 PERCENT SLOPES					
	(C) NACIMIENTO	N				
NaG	NACIMIENTO SILTY CLAY LOAM, 50 TO 75 PERCENT SLOPES					
	(C) NACIMIENTO	N				
NbF	NACIMIENTO-LOS OSOS COMPLEX, 30 TO 50 PERCENT SLOPES					
	(C) LOS OSOS	N				
	(C) NACIMIENTO	N				
	(C) SAN BENITO	N				

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Cri-teria	Hydric Landforms	FSA Items	Foot-notes
NbG	NACIMIENTO-LOS OSOS COMPLEX, 50 TO 75 PERCENT SLOPES					
	(C) LOS OSOS	N				
	(C) NACIMIENTO	N				
	(C) SAN BENITO	N				
NcC	NARLON LOAMY FINE SAND, 2 TO 9 PERCENT SLOPES					
	(C) NARLON	Y	2A	Marine Terrace	1,5	
NcE	NARLON LOAMY FINE SAND, 15 TO 30 PERCENT SLOPES					
	(C) NARLON	Y	2A	Marine Terrace	1,5	
OaD	OCEANO LOAMY SAND, 2 TO 15 PERCENT SLOPES					
	(C) OCEANO	N				
PR	PSAMMENTS AND FLUVENTS, OCCASIONALLY FLOODED					
	(C) FLUVENTS	N				
	(C) PSAMMENTS	N				
PS	PSAMMENTS AND FLUVENTS, FREQUENTLY FLOODED					
	(C) FLUVENTS	Y	4	Flood Plain	4,5	
	(C) PSAMMENTS	Y	4	Flood Plain	4,5	
Pa	PACHECO CLAY LOAM					
	(C) PACHECO	Y	2A	Flood Plain	1,5	1
Pb	PACHECO SILTY CLAY LOAM, OCCASIONALLY FLOODED					
	(C) PACHECO	Y	2A,4	Flood Plain	4,5	1

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Criteria	Hydric Landforms	FSA Items	Foot-notes
PcC	PARKFIELD CLAY, 2 TO 9 PERCENT SLOPES					
	(C) PARKFIELD	N				
PcE	PARKFIELD CLAY, 15 TO 30 PERCENT SLOPES					
	(C) PARKFIELD	N				
	(I) FLUVENTS	Y	4	Flood Plain	4,5	
PdC	PFEIFFER FINE SANDY LOAM, 2 TO 9 PERCENT SLOPES					
	(C) PFEIFFER	N				
PdD	PFEIFFER FINE SANDY LOAM, 9 TO 15 PERCENT SLOPES					
	(C) PFEIFFER	N				
Pe	PFEIFFER-ROCK OUTCROP COMPLEX					
	(C) PFEIFFER	N				
	(C) ROCK OUTCROP	N				
Pf	PICO FINE SANDY LOAM					
	(C) PICO	N				
	(I) PACHECO	Y	2A	Flood Plain	1,5	
PgE	PINNACLES COARSE SANDY LOAM, 5 TO 30 PERCENT SLOPES					
	(C) PINNACLES	N				
PhG2	PINNACLES STONY SANDY LOAM, 30 TO 75 PERCENT SLOPES, ERODED					
	(C) PINNACLES	N				
PkE	PINNACLES COARSE SANDY LOAM, VERY GRAVELLY SUBSOIL VARIANT, 5 TO 30 PERCENT SLOPES					
	(C) PINNACLES VARIANT	N				

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Criteria	Hydric Landforms	FSA Items	Foot-notes
PkF	PINNACLES COARSE SANDY LOAM, VERY GRAVELLY SUBSOIL VARIANT, 30 TO 50 PERCENT SLOPES					
	(C) PINNACLES VARIANT	N				
Pm	PITS AND DUMPS					
	(C) DUMPS	N				
	(C) PITS	N				
	(I) UNNAMED	Y	3,4	Flood Plain	4,5	
PnA	PLACENTIA SANDY LOAM, 0 TO 2 PERCENT SLOPES					
	(C) PLACENTIA	N				
	(I) UNNAMED	Y	3	Depression	4,5	
PnC	PLACENTIA SANDY LOAM, 2 TO 9 PERCENT SLOPES					
	(C) PLACENTIA	N				
PnD	PLACENTIA SANDY LOAM, 9 TO 15 PERCENT SLOPES					
	(C) PLACENTIA	N				
PnE	PLACENTIA SANDY LOAM, 15 TO 30 PERCENT SLOPES					
	(C) PLACENTIA	N				
PoE	PLACENTIA-ARBUCKLE COMPLEX, 15 TO 30 PERCENT SLOPES					
	(C) ARBUCKLE	N				
	(C) PLACENTIA	N				
Pp	PLASKETT-RELIZ COMPLEX					
	(C) PLASKETT	N				
	(C) RELIZ	N				

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Cri-teria	Hydric Landforms	FSA Items	Foot-notes
RC	ROCK OUTCROP-XERORTHENT ASSOCIATION					
	(C) ROCK OUTCROP	N				
	(C) XERORTHENT	N				
RaA	RINCON CLAY LOAM, 0 TO 2 PERCENT SLOPES					
	(C) RINCON	N				
RaC	RINCON CLAY LOAM, 2 TO 9 PERCENT SLOPES					
	(C) RINCON	N				
RaD	RINCON CLAY LOAM, 9 TO 15 PERCENT SLOPES					
	(C) RINCON	N				
RaE	RINCON CLAY LOAM, 15 TO 30 PERCENT SLOPES					
	(C) RINCON	N				
Rb	RINDGE MUCK					
	(C) RINDGE	Y	1	Slough	1	
SG	SANTA LUCIA-RELIZ ASSOCIATION					
	(C) LOPEZ	N				
	(C) RELIZ	N				
	(C) SANTA LUCIA	N				
SaA	SALINAS LOAM, 0 TO 2 PERCENT SLOPES					
	(C) SALINAS	N				
SbA	SALINAS CLAY LOAM, 0 TO 2 PERCENT SLOPES					
	(C) SALINAS	N				
	(I) PACHECO	Y	2A	Flood Plain	1,5	
	(I) CLEAR LAKE	Y	2B3,4	Basin Floor	4,5	

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Criteria	Hydric Landforms	FSA Items	Foot-notes
SbC	SALINAS CLAY LOAM, 2 TO 9 PERCENT SLOPES					
	(C) SALINAS	N				
ScE	SAN ANDREAS FINE SANDY LOAM, 15 TO 30 PERCENT SLOPES					
	(C) SAN ANDREAS	N				
ScG	SAN ANDREAS FINE SANDY LOAM, 30 TO 75 PERCENT SLOPES					
	(C) SAN ANDREAS	N				
SdF	SAN BENITO CLAY LOAM, 30 TO 50 PERCENT SLOPES					
	(C) SAN BENITO	N				
SdG	SAN BENITO CLAY LOAM, 50 TO 75 PERCENT SLOPES					
	(C) SAN BENITO	N				
SeG	SAN TIMOTEO GRAVELLY LOAM, 30 TO 75 PERCENT SLOPES					
	(C) SAN TIMOTEO	N				
SfD	SANTA LUCIA SHALY CLAY LOAM, 2 TO 15 PERCENT SLOPES					
	(C) SANTA LUCIA	N				
SfE	SANTA LUCIA SHALY CLAY LOAM, 15 TO 30 PERCENT SLOPES					
	(C) SANTA LUCIA	N				
SfF	SANTA LUCIA SHALY CLAY LOAM, 30 TO 50 PERCENT SLOPES					
	(C) SANTA LUCIA	N				

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Cri-teria	Hydric Landforms	FSA Items	Foot-notes
ShC	SANTA YNEZ FINE SANDY LOAM, 2 TO 9 PERCENT SLOPES					
	(C) SANTA YNEZ	N				
	(I) ALVISO	Y	2B3,4	Slough	4,5	
ShD	SANTA YNEZ FINE SANDY LOAM, 9 TO 15 PERCENT SLOPES					
	(C) SANTA YNEZ	N				
ShD2	SANTA YNEZ FINE SANDY LOAM, 5 TO 15 PERCENT SLOPES, ERODED					
	(C) SANTA YNEZ	N				
ShE	SANTA YNEZ FINE SANDY LOAM, 15 TO 30 PERCENT SLOPES					
	(C) SANTA YNEZ	N				
SmG3	SHEDD SILT LOAM, 30 TO 75 PERCENT SLOPES, SEVERELY ERODED					
	(C) SHEDD	N				
SnD	SHEDD SILTY CLAY LOAM, 9 TO 15 PERCENT SLOPES					
	(C) SHEDD	N				
SnE	SHEDD SILTY CLAY LOAM, 15 TO 30 PERCENT SLOPES					
	(C) SHEDD	N				
SnF2	SHEDD SILTY CLAY LOAM, 30 TO 50 PERCENT SLOPES, ERODED					
	(C) SHEDD	N				

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Cri-teria	Hydric Landforms	FSA Items	Foot-notes
SoD	SHERIDAN COARSE SANDY LOAM, 5 TO 15 PERCENT SLOPES					
	(C) SHERIDAN	N				
	(I) NARLON	Y	2A	Marine Terrace	1,5	
SoE	SHERIDAN COARSE SANDY LOAM, 15 TO 30 PERCENT SLOPES					
	(C) SHERIDAN	N				
SoG	SHERIDAN COARSE SANDY LOAM, 30 TO 75 PERCENT SLOPES					
	(C) SHERIDAN	N				
SpD	SNELLING-GREENFIELD COMPLEX, 5 TO 15 PERCENT SLOPES					
	(C) GREENFIELD	N				
	(C) SNELLING	N				
SpE2	SNELLING-GREENFIELD COMPLEX, 9 TO 30 PERCENT SLOPES, ERODED					
	(C) GREENFIELD	N				
	(C) SNELLING	N				
SrA	SORRENTO CLAY LOAM, 0 TO 2 PERCENT SLOPES					
	(C) SORRENTO	N				
SrC	SORRENTO CLAY LOAM, 2 TO 9 PERCENT SLOPES					
	(C) SORRENTO	N				
Ss	SUR-JUNIPERO COMPLEX					
	(C) JUNIPERO	N				
	(C) SUR	N				

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Criteria	Hydric Landforms	FSA Items	Footnotes
St	SUR-PLASKETT COMPLEX					
	(C) PLASKETT	N				
	(C) SUR	N				
TaC	TANGAIR FINE SAND, 0 TO 5 PERCENT SLOPES					
	(C) TANGAIR	Y	2B2	Marine Terrace	1,5	1
TbB	TUJUNGA FINE SAND, 0 TO 5 PERCENT SLOPES					
	(C) TUJUNGA	N				
	(I) FLUVENTS	Y	4	Flood Plain	4,5	
	(I) PSAMMENTS	Y	4	Flood Plain	4,5	
VaD	VISTA COARSE SANDY LOAM, 5 TO 15 PERCENT SLOPES					
	(C) VISTA	N				
VaE	VISTA COARSE SANDY LOAM, 15 TO 30 PERCENT SLOPES					
	(C) VISTA	N				
VaG	VISTA COARSE SANDY LOAM, 30 TO 75 PERCENT SLOPES					
	(C) VISTA	N				
Vb	VISTA-ROCK OUTCROP COMPLEX					
	(C) ROCK OUTCROP	N				
	(C) VISTA	N				
XA	XERERTS-XEROLLS COMPLEX					
	(C) XERERTS	N				
	(C) XEROLLS	N				
	(I) UNNAMED	Y	4	Depression	4,5	

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Map Symbol	Map Unit Name (C) Component (I) Inclusion	Hyd?	Hydric Cri-teria	Hydric Landforms	FSA Items	Foot-notes
XB	XERORTHENTS, SANDY					
	(C) XERORTHENTS	N				
XC	XERORTHENTS, LOAMY					
	(C) XERORTHENTS	N				
XD	XERORTHENTS, DISSECTED					
	(C) XERORTHENTS	N				
	(C) XERORTHENTS	N				

Footnotes:

1. Hydrology has been altered in some or all areas of this map unit through drainage and/or protection from flooding. Soil characteristics indicate that hydric soil conditions existed prior to alteration of drainage.

APPENDIX B.
PLANTS OBSERVED

Appendix B. Plants Observed within the Nacimiento Lake Drive Bridge Replacement Project Site.			
FAMILY NAME	**SCIENTIFIC NAME**	**COMMON NAME**	**INDICATOR STATUS**
Anacardiaceae	*Toxicodendron diversilobum*	poison oak	UPL/NOL
Apiaceae	*Foeniculum vulgare*	fennel	FACU
	Torilis arvensis	hedgeparsley	UPL/NOL
Asclepiadaceae	*Asclepias fascicularis*	narrow leaf milkweed	FAC
Asteraceae	*Artemisia californica*	California sagebrush	UPL/NOL
	Artemisia douglasiana	mugwort	FACW
	Baccharis pilularis	coyote brush	UPL/NOL
	Baccharis salicifolia	mulefat	FACW
	Carduus pycnocephalus	Italian thistle	UPL/NOL
	Centaurea solstitialis	yellow starthistle	UPL/NOL
	Eriophyllum confertiflorum	golden yarrow	UPL/NOL
	Gnaphalium californicum	California everlasting	UPL/NOL
	Helenium puberulum	sneezeweed	FACW
	Heterotheca grandiflora	telegraph weed	UPL/NOL
	Hypochaeris glabra	smooth cat’s ear	UPL/NOL
	Lessingia glandulifera	valley lessingia	UPL/NOL
	Silybum marianum	milkthistle	UPL/NOL
Boraginaceae	*Amsinckia tessellata*	fiddleneck	UPL/NOL
	Cynoglossum grande	hound’s tongue	UPL/NOL
	Heliotropium curassavicum	heliotrope	OBL
	Plagiobothrys sp.	popcorn flower	---
Brassicaceae	*Brassica nigra*	black mustard	UPL/NOL
	Hirschfeldia incana	shortpod mustard	UPL/NOL
	Nasturtium officinale	watercress	OBL
Caprifoliaceae	*Sambucus mexicana*	blue elderberry	FAC
Caryophyllaceae	*Silene gallica*	windmill pink	UPL/NOL
	Spergularia rubra	red sandspurry	FAC
Chenopodiaceae	*Chenopodium album*	goosefoot	FAC
Cyperaceae	*Cyperus eragrostis*	tall umbrella sedge	FACW
Euphorbiaceae	*Croton setigerus*	dove weed	UPL/NOL
Fabaceae	*Genista monspessulana*	French broom	UPL/NOL
	Lotus corniculatus	bird’s foot trefoil	FAC
	Lupinus formosus	summer lupine	UPL/NOL
	Lupinus latifolius	bigleaf lupine	UPL/NOL
	Lupinus microcarpus var. *microcarpus*	chick lupine	UPL/NOL
	Melilotus indicus	yellow sweetclover	FAC
Fagaceae	*Quercus agrifolia*	coast live oak	UPL/NOL
	Quercus lobata	valley oak	FAC
Geraniaceae	*Erodium cicutarium*	redstem filaree	UPL/NOL
Juncaceae	*Juncus balticus*	wire rush	OBL
	Juncus mexicanus	Mexican rush	FACW
Lamiaceae	*Marrubium vulgare*	Common horehound	FAC

Appendix B. Plants Observed within the Nacimiento Lake Drive Bridge Replacement Project Site.			
FAMILY NAME	**SCIENTIFIC NAME**	**COMMON NAME**	**INDICATOR STATUS**
Lemnaceae	*Lemna* sp.	duckweed	---
Malvaceae	*Malacothamnus* sp.	bushmallow	---
Onageraceae	*Camissonia micrantha*	Spencer primrose	UPL/NOL
	Camissonia strigulosa	sandysoil suncup	UPL/NOL
	Clarkia unguiculata	elegant clarkia	UPL/NOL
	Epilobium brachycarpum	willowherb	UPL
Papaveraceae	*Eschscholzia californica*	California poppy	UPL/NOL
Plantaginaceae	*Plantago major*	common plantain	FACW
Poaceae	*Avena fatua*	wild oat	UPL/NOL
	Bromus diandrus	ripgut brome	UPL/NOL
	Bromus hordeaceus	soft chess	FACU
	Bromus madritensis	Madrid brome	UPL/NOL
	Distichlis spicata	saltgrass	FACW
	Hordeum murinum	foxtail	NI
	Vulpia microstachys	small fescue	UPL/NOL
Polygonaceae	*Eriogonum gracillimum*	rose and white buckwheat	UPL/NOL
	Eriogonum fasciculatum	California buckwheat	UPL/NOL
	Polygonum punctatum	swamp knotweed	OBL
	Rumex conglomeratus	clustered dock	FACW
	Rumex crispus	curly dock	FACW
Rosaceae	*Prunus ilicifolia*	holly leaved cherry	UPL/NOL
	Rosa sp.	rose	---
Salicaceae	*Populus fremontii*	Fremont cottonwood	FACW
	Salix exigua	narrowleaf willow	OBL
	Salix gooddingii	Goodding's willow	OBL
	Salix laevigata	red willow	FACW
Scrophulariaceae	*Mimulus guttatus*	sticky monkeyflower	OBL
	Veronica americana	American brooklime	OBL
Solanaceae	*Datura wrightii*	jimsonweed	UPL/NOL
	Solanum americanum	white nightshade	FAC
Typhaceae	*Typha latifolia*	cattail	OBL
Urticaceae	*Urtica dioica*	stinging nettle	FACW
Verbenaceae	*Phyla nodiflora*	common lippia	FACW
The species are arranged alphabetically by family name for all vascular plants encountered during the plant survey. Plants are also listed alphabetically within each family. Species nomenclature is from Hickman (1993) except where different nomenclature has been adopted by Reed (1988). NOL = Not on List			

APPENDIX C.
WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Nacimiento Lake Drive Bridge Replacement City/County: Monterey Sampling Date: 23 April 2010

Applicant/Owner: Caltrans, District 5 State: California Sampling Point: 1A

Investigator(s): B. Cleary Section/Township/Range: Township 25 South, Range 10 East

Landform (hillslope, terrace, etc.): Floodplain Local Relief (concave, convex, none): None Slope (%): 2

Subregion (LRR): LRRC Lat: 693769.206 Long: 3964865.703 Datum: NAD 83

Soil Map Unit Name: Psamments and Fluvents, frequently flooded NWI classification R4SBC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___ Soil ___ or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X 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.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?	X	
Wetland Hydrology Present?	X	

Is the Sampled Area within a Wetland? Yes X No ___

Remarks:

Freshwater wetlands supported by active flow of the San Antonio River. Wetlands occur directly adjacent to the ordinary high water mark of the channel.

VEGETATION

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: ___)			
1. *Juncus mexicanus*	30	X	FACW
2. *Urtica dioica*	40	X	FACW
3. *Artemisia douglasiana*	30	X	FACW
4.			
5.			
6.			
7.			
8.			
Total Cover:			
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (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:

X Dominance Text 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.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks:

Freshwater emergent wetland dominated by Juncus mexicanus located along the lower banks of the San Antonio River.

SOIL

Sampling Point: 1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-21	10 YR 2/2	98	5 YR 4/6	2		PL	sandy loam	moist to saturated; stratified with gravel
21-26	10 YR 2/1	98	5 YR 4/6	2		PL	sandy loam	saturated; localized grounwater table encountered at 25-26 inches

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- X 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)
- X 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 X No ____

Remarks:

Sample point located adjacent to the north bank of the San Antonio River. This area receives frequent flooding and sediment deposition of stratified, sandy materials.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X 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)
- X Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- X 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 X	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 26

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Localized groundwater tabke associated with the adjacent lower floodplain of the San Antonio River encountered at approximately 25-26 inched. Black organic material present.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Nacimiento Lake Drive Bridge Replacement City/County: Monterey Sampling Date: 23 April 2010
Applicant/Owner: Caltrans, District 5 State: California Sampling Point: 1B
Investigator(s): B. Cleary Section/Township/Range: Township 25 South, Range 10 East
Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): ____ Slope (%): 10
Subregion (LRR): LRRC Lat: 693771.309 Long: 3964873.164 Datum: NAD 83
Soil Map Unit Name: Psamments and Fluvents, frequently flooded NWI classification None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No X
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.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X
Is the Sampled Area within a Wetland?		X

Remarks:
Wetland vegetation, hydric soils, and hydrology absent. Sample point installed along the middle north bank of the San Antonio River channel.

VEGETATION

	Absolute Cover %	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: ___)			
1. *Brassica nigra*	50	X	NOL
2. *Bromus hordeaceus*	10		FACU-
3. *Bromus diandrus*	10		NI
4. *Centaurea solstitialis*	10		NOL
5. *Melilotus indicus*	20	X	FAC
6.			
7.			
8.			
Total Cover:	100		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
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:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50%	(A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species		x 1 =		
FACW species		x 2 =		
FAC species	20	x 3 =	60	
FACU species	10	x 4 =	40	
UPL Species	70	x 5 =	350	
Column totals	100	(A)	450	(B)

Prevalence Index = B/A = 4.5

Hydrophytic Vegetation Indicators:

___ Dominance Text 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.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks:
Ruderal, upland, non-native herbaceous vegetation.

SOIL

Sampling Point: 1B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10 YR 3/2	100					sand	sand with gravel and cobble

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, RC=Root Channel, 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 __X__

Remarks:

Sand with gravel and cobble. Riverbank/floodzone parent material.

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 Plowed 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 __X__	Depth (inches):____
Water Table Present?	Yes____	No __X__	Depth (inches):____
Saturation Present? (includes capillary fringe)	Yes____	No __X__	Depth (inches):____

Wetland Hydrology Present? Yes______ No __X__

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Hydrology absent. Sample site located above zone of prolonged soil saturation.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Nacimiento Lake Drive Bridge Replacement City/County: Monterey Sampling Date: 23 April 2010
Applicant/Owner: Caltrans, District 5 State: California Sampling Point: 2A
Investigator(s): B. Cleary Section/Township/Range: Township 25 South, Range 10 East
Landform (hillslope, terrace, etc.): Floodplain Local Relief (concave, convex, none): ____ Slope (%): 2
Subregion (LRR): LRRC Lat: 693831.154 Long: 3964876.686 Datum: NAD 83
Soil Map Unit Name: Psamments and Fluvents, frequently flooded NWI classification None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?	X	
Wetland Hydrology Present?	X	
Is the Sampled Area within a Wetland?	X	

Remarks:
Several patches of seasonal wetlands growing within a small backwater channel associated with the lower north bank of the San Antonio River.

VEGETATION

	Absolute Cover %	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: ___)			
1. *Polygonum punctatum*	75	X	OBL
2. *Cyperus eragrostis*	10		FACW
3. *Epilobium brachycarpum*	5		UPL
4. *Bromus hordeaceus*	5		FACU-
5. *Bromus diandrus*	5		NI
6.			
7.			
8.			
Total Cover:	100		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
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: 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:

X Dominance Text 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.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:
Vegetation supported by seasonal surface and subsurface hydrology.

SOIL

Sampling Point: 2A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 2/2	98	5 YR 4/6	2		PL	sandy loam w/gravel	
18-22	10 YR 2/2	98	5 YR 4/6	2		PL	sandy loam w/gravel	saturated at 20 inches; localized groundwater encountered at 22 inches

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, RC=Root Channel, 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)
_X_ 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 _X_ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)

___ Surface Water (A1)
_X_ High Water Table (A2)
_X_ 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)
_X_ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed 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 _X_	Depth (inches): ___
Water Table Present?	Yes _X_	No ___	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes _X_	No ___	Depth (inches): 22

Wetland Hydrology Present? Yes _X_ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Localized groundwater associated with the adjacent San Antonio River encountered at 22 inches into the soil profile. Approximately 2 inches of standing water accummulated in the bottom of the sample point in 5 minutes.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Nacimiento Lake Drive Bridge Replacement City/County: Monterey Sampling Date: 23 April 2010
Applicant/Owner: Caltrans, District 5 State: California Sampling Point: 2B
Investigator(s): B. Cleary Section/Township/Range: Township 25 South, Range 10 East
Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): ____ Slope (%): 5
Subregion (LRR): LRRC Lat: 693827.356 Long: 3964873.682 Datum: NAD 83
Soil Map Unit Name: Psamments and Fluvents, frequently flooded NWI classification None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:
Wetland vegetation, hydric soils, and hydrology absent. Sample Point within the active floodplain of the San Antonio River.

VEGETATION

	Absolute Cover %	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: ___)			
1. *Bromus diandrus*	75	X	NI
2. *Vulpia microstachys*	10		UPL
3. *Brassica nigra*	5		NOL
4.			
5.			
6.			
7.			
8.			
Total Cover:	90		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (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 Text 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.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks:
Ruderal, upland, non-native herbaceous vegetation.

SOIL

Sampling Point: 2B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/2	100					sand	sand with gravel and cobble

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, RC=Root Channel, 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__X__

Remarks:

Sand with gravel and cobble. Riverbank/floodzone parent material.

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 Plowed 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__X__ Depth (inches):________
Water Table Present? Yes________ No__X__ Depth (inches):________
Saturation Present? Yes________ No__X__ Depth (inches):________
(includes capillary fringe)

Wetland Hydrology Present? Yes______ No__X__

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sample point within the active floodplain above the ordinary high water mark of the San Antonio River.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Nacimiento Lake Drive Bridge Replacement City/County: Monterey Sampling Date: 23 April 2010
Applicant/Owner: Caltrans, District 5 State: California Sampling Point: 3A
Investigator(s): B. Cleary Section/Township/Range: Township 25 South, Range 10 East
Landform (hillslope, terrace, etc.): Floodplain Local Relief (concave, convex, none): ____ Slope (%): 2
Subregion (LRR): LRRC Lat: 693738.414 Long: 3964864.356 Datum: NAD 83
Soil Map Unit Name: Psamments and Fluvents, frequently flooded NWI classification PSSC
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No ____
Hydric Soil Present?	Yes X	No ____
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:
Freshwater wetlands supported by active flow of the San Antonio River. Wetlands occur directly adjacent to the ordinary high water mark of the channel.

VEGETATION

	Absolute Cover %	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: ___)			
1. *Typha latifolia*	30	X	OBL
2. *Urtica dioica*	10		FACW
3. *Juncus mexicanus*	30	X	FACW
4. *Cyperus eragrostis*	5		FACW
5.			
6.			
7.			
8.			
Total Cover:	75		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (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:

X Dominance Text 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.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:
Freshwater emergent wetland dominated by broad-leaved cattail and Mexican rush.

SOIL

Sampling Point: 3A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10 YR 2/2	98	5 YR 4/6	2		PL	sandy loam	saturated

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, RC=Root Channel, 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)
- X 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 X No ___

Remarks:

Sample point located adjacent to the south bank of the San Antonio River. This area receives frequent flooding and sediment deposition of stratified, sandy materials.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X 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)
- X Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- X 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 X	No ___	Depth (inches): 3
Water Table Present?	Yes X	No ___	Depth (inches): 3
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 3

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Approximately 3 inches of standing water within this Sample Point located along the lower south bank of the San Antonio River.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Nacimiento Lake Drive Bridge Replacement City/County: Monterey Sampling Date: 23 April 2010
Applicant/Owner: Caltrans, District 5 State: California Sampling Point: 3B
Investigator(s): B. Cleary Section/Township/Range: Township 25 South, Range 10 East
Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): ____ Slope (%): 10
Subregion (LRR): LRRC Lat: 393738.780 Long: 3964867.002 Datum: NAD 83
Soil Map Unit Name: Psamments and Fluvents, frequently flooded NWI classification None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X
Is the Sampled Area within a Wetland?		X

Remarks:
Wetland vegetation, hydric soils, and hydrology absent. Sample point installed along the middle south bank of the San Antonio River channel.

VEGETATION

	Absolute Cover %	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: ___)			
1. *Bromus diandrus*	90	X	NI
2. *Melilotus indicus*	5		FAC
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	95		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (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 Text 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.

Hydrophytic Vegetation Present? **Yes** ____ **No** ____

Remarks:
Ruderal, upland, non-native herbaceous vegetation.

SOIL

Sampling Point: 3B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10 YR 3/2	10					sand	sand with gravel and cobble

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, RC=Root Channel, 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 X

Remarks:

Sand with gravel and cobble. Riverbank/floodzone parent material.

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 Plowed 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 X	Depth (inches):___
Water Table Present?	Yes___	No X	Depth (inches):___
Saturation Present? (includes capillary fringe)	Yes___	No X	Depth (inches):___

Wetland Hydrology Present? Yes___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Hydrology absent. Sample site located above the zone of prolonged soil saturation.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Nacimiento Lake Drive Bridge Replacement City/County: Monterey Sampling Date: 23 April 2010
Applicant/Owner: Caltrans, District 5 State: California Sampling Point: 4A
Investigator(s): B. Cleary Section/Township/Range: Township 25 South, Range 10 East
Landform (hillslope, terrace, etc.): Floodplain Local Relief (concave, convex, none): None Slope (%): 2
Subregion (LRR): LRRC Lat: 693774.579 Long: 3964836.866 Datum: NAD 83
Soil Map Unit Name: Psamments and Fluvents, frequently flooded NWI classification PSS/EMC
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:
Freshwater wetlands supported by active flow of the San Antonio River. Wetlands occur directly adjacent to the ordinary high water mark of the channel.

VEGETATION

	Absolute Cover %	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: ___)			
1. *Typha latifolia*	40	X	OBL
2. *Urtica dioica*	20	X	FACW
3. *Juncus mexicanus*	10		FACW
4.			
5.			
6.			
7.			
8.			
Total Cover:	70		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (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:

X Dominance Text 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.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:
Freshwater emergent wetland dominated by Typha latifolia located along the lower banks of the San Antonio River.

SOIL

Sampling Point: 4A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 2/2	98	5 YR 4/6	2		PL	sandy loam	saturated

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, RC=Root Channel, 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)
- X 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 X No ___

Remarks:

Sample point located adjacent to the south bank of the San Antonio River. This area receives frequent flooding and sediment deposition of stratified, sandy materials.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X 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)
- X Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- X 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 X	No ___	Depth (inches): 3
Water Table Present?	Yes X	No ___	Depth (inches): 3
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 3

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Approximately 3 inches of standing water within this Sample Point located along the lower south bank of the San Antonio River.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Nacimiento Lake Drive Bridge Replacement City/County: Monterey Sampling Date: 23 April 2010
Applicant/Owner: Caltrans, District 5 State: California Sampling Point: 4B
Investigator(s): B. Cleary Section/Township/Range: Township 25 South, Range 10 East
Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): None Slope (%): 5
Subregion (LRR): LRRC Lat: 693771.306 Long: 6964829.072 Datum: NAD 83
Soil Map Unit Name: Psamments and Fluvents, frequently flooded NWI classification None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:
Wetland vegetation, hydric soils, and hydrology absent. Sample point installed along the middle south bank of the San Antonio River channel.

VEGETATION

	Absolute Cover %	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: ___)			
1. *Erodium cicutarium*	15	X	NOL
2. *Bromus rubens*	10	X	NI
3. *Brassica nigra*	10	X	NOL
4.			
5.			
6.			
7.			
8.			
Total Cover:	35		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 65 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (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 Text 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.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:
Area predominantly comprised of bare ground on floodplain deposit material supporting 35% cover of non-native herbaceous annual upland plant species.

SOIL

Sampling Point: 4B

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
0-16	10 YR 3/2						sand	sand with gravel and cobble

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, RC=Root Channel, 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** X

Remarks:

Sand with gravel and cobble. Riverbank/floodzone parent material.

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 Plowed 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 X Depth (inches): ______
Water Table Present? Yes ______ No X Depth (inches): ______
Saturation Present? Yes ______ No X Depth (inches): ______
(includes capillary fringe)

Wetland Hydrology Present? Yes ______ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Hydrology absent. Sample site located above zone of prolonged soil saturation.

APPENDIX D.
PHOTOGRAPHS OF SITE CONDITIONS

Photograph 1. Southwest view of freshwater wetlands in Sample Point 1A dominated by stinging nettle, Mexican rush, and mugwort growing along the lower north bank of the San Antonio River.

Photograph 2. Southwest view of Sample Point 1B in ruderal upland non-native vegetation along the north mid-bank of the San Antonio River.

Photograph 3. East view of seasonal wetlands in Sample Point 2A dominated by dotted smartweed. This species was growing within a shallow backwater channel hydrologically connected to the lower north bank of the San Antonio River.

Photograph 4. Approximately two inches of standing water accumulated in the bottom of Sample Point 2A after several minutes following excavation. The hydrology is a result of a high localized groundwater table associated with the adjacent San Antonio River.

Photograph 5. Sample Point 2B supporting non-native upland plant species adjacent to the active floodplain of the San Antonio River.

Photograph 6. West view of freshwater emergent wetland in Sample Point 3A dominated by broad-leaved cattail and Mexican rush growing along the lower north bank of the San Antonio River. Note the presence of other waters associated with the San Antonio River channel in the background.

Photograph 7. Sample Point 3B in upland, non-native grasslands along the middle north bank of the San Antonio River.

Photograph 8. Freshwater emergent wetlands in Sample Point 4A on the lower south bank of the San Antonio River.

Photograph 9. West view of Sample Point 4B in uplands within the seasonal floodplain of the San Antonio River. Note the presence of other waters associated with the San Antonio River channel in the background.

Appendix C. California Red-legged Frog Protocol Site Assessment

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

CALIFORNIA RED-LEGGED FROG
PROTOCOL SITE ASSESSMENT

NACIMIENTO BRIDGE 449
MONTEREY COUNTY, CALIFORNIA

Prepared by

H. T. HARVEY & ASSOCIATES

Patrick Boursier, Ph.D., Principal-in-Charge
Steve Rottenborn, Ph.D., Division Head
Kelly Hardwicke, Ph.D., Project Manager
Norman Sisk, M.S., Wildlife Ecologist

Prepared for

David J. Powers & Associates
John Hesler
1871 The Alameda, Suite 200
San Jose, California 95126

22 April 2010 Project Number 1212-10-02

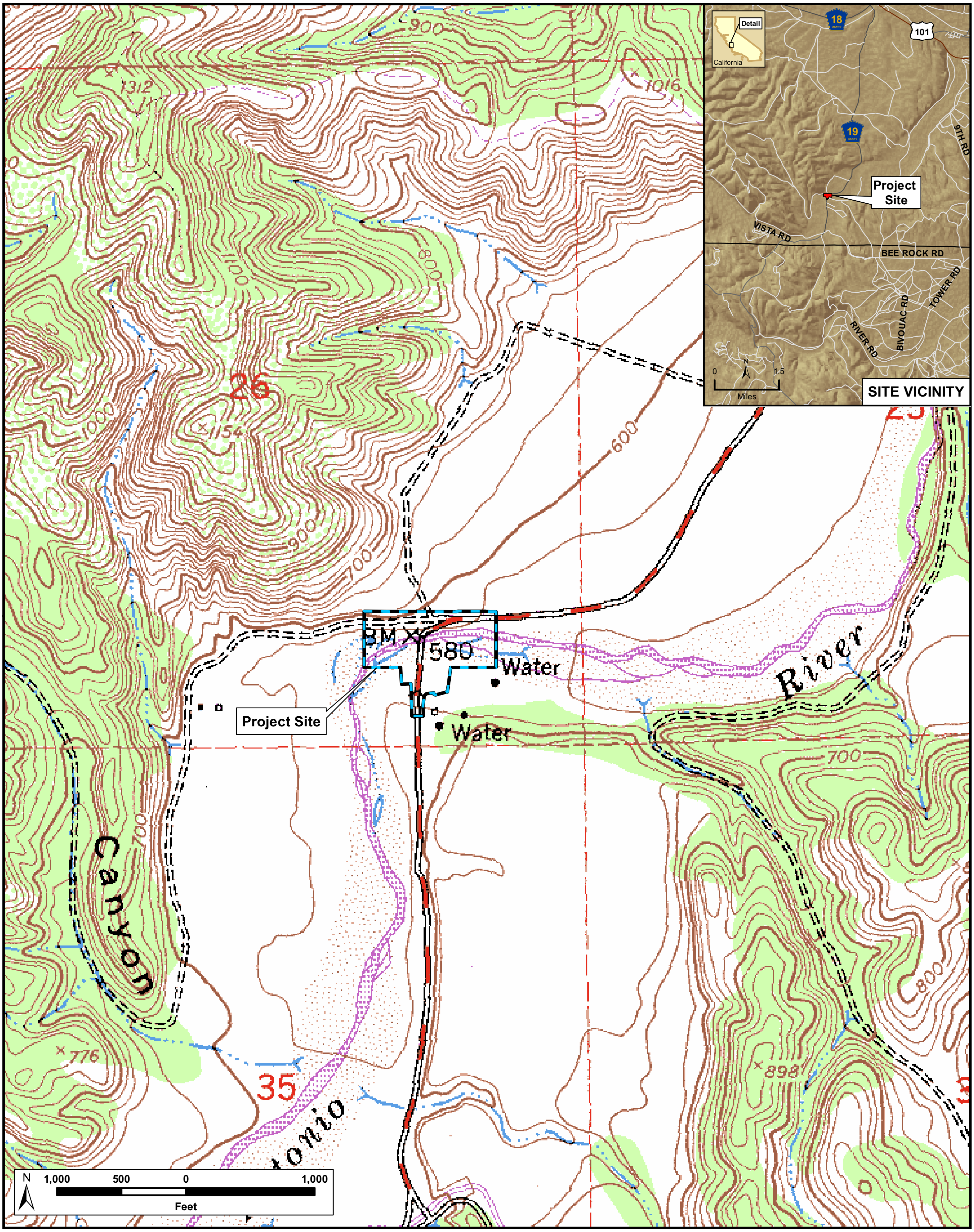
TABLE OF CONTENTS

FIGURES:

INTRODUCTION

The proposed project is the replacement of the existing Nacimiento Lake Drive Bridge over the San Antonio River in Monterey County, California (Figure 1). The existing bridge, which was constructed in 1921, is a single-lane structure that is approximately 240 ft in length and 20 ft in width. The bridge is a 4-span structure and the bridge type is known as a steel pratt through truss. The existing bridge does not meet current design or seismic safety standards.

The replacement bridge will be constructed adjacent to, and downstream of, the existing bridge. The new bridge, which will accommodate two lanes of traffic with shoulders, will be approximately 267 ft in length and 32 ft in width. The new bridge will have two spans with a center pier, all of which will be placed outside the low-flow channel of the river. The bridge type will be a cast-in-place, post-tensioned, concrete box girder structure. The existing bridge will remain open to traffic during the construction of the replacement bridge. Upon completion of construction of the new bridge, the existing bridge will be removed.



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H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Figure 1: Site Vicinity Map

Nacimiento Bridge 449 California Red-Legged Frog Site Assessment (1212-10)

April 2010

SITE ASSESSMENT METHODS

A California red-legged frog (CRLF; *Rana draytonii*) habitat assessment survey of the Nacimiento Bridge 449 site was conducted by H.T. Harvey & Associates' herpetologist Norman Sisk, M.S., on 1 April 2010 per the requirements of the August 2005 *Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog* issued by the U. S. Fish and Wildlife Service (USFWS). The survey was conducted by walking the Biological Study Area (BSA; Figure 2) plus an additional 0.25 mi upstream and downstream along the San Antonio River. The survey focused on assessing the project site's potential to support the CRLF through an evaluation of on-site habitat conditions. Biotic habitats within 1 mi of the project area were also assessed for potential suitability as habitat for this species. A review of background resources was conducted prior to and following the fieldwork. Background resources reviewed included:

- Aerial imagery of the Project Site and adjacent lands,
- U. S. Geological Survey (USGS) 7.5-minute topographic quadrangle maps, and
- California Natural Diversity Data Base (CNDDB) (02/28/2010 update).

SITE ASSESSMENT RESULTS

DESCRIPTION OF THE SITE

Nine biotic habitats occur on-site within the BSA. These include: 1) freshwater emergent wetlands, 2) seasonal wetlands, 3) aquatic, 4) willow riparian, 5) mule fat riparian, 6) valley oak riparian, 7) California sage scrub, 8) non-native/ruderal grassland, and 9) developed area (Figure 2).

The site is located on the Bradley U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map. The elevation within the project site ranges between 565 ft and 640 ft National Geodetic Vertical Datum (NGVD). Mean annual precipitation in nearby Paso Robles is 15.15 inches, and the average temperature is 58.8°F (WRCC 2010).

A large outcrop of limestone rock is located in the western portion the BSA on the north side of the river (Photo 1). Several cavities are present in the limestone that could be utilized as upland refugia for various species of wildlife, including CRLF. Similarly, granite rip-rap placed around a bridge pier on the south side of the bridge could also be used as upland refugia (Photo 2).

ASSESSMENT NOTES AND POTENTIAL FOR CALIFORNIA RED-LEGGED FROG OCCURRENCE ON THE SITE

The Nacimiento Lake Drive Bridge Replacement Project Site is within the range of the CRLF (CWHR 2010). However, no records for California red-legged frogs are known from within 1 mi of the site. The closest CNDDB record to the Project Site for which specific locality data were provided (occurrence no. 802, from 2004) is from Santa Rosa Creek in San Luis Obispo County, approximately 17.5 air miles southwest of the Project Site (Figure 3). CNDDB occurrence nos. 381 [2006], 461 [2007], and 498 [2005] are perhaps closer to the Project Site; however, these occurrences are considered "sensitive" by the California Department of Fish and Game, and consequently, specific locality data are not provided in the CNDDB (Figure 3). Other occurrences are clustered across an area spanning south to southwest of the Project Site, with another series of occurrences clustered east of the Project Site in the vicinity of Cholame (Figure 3).

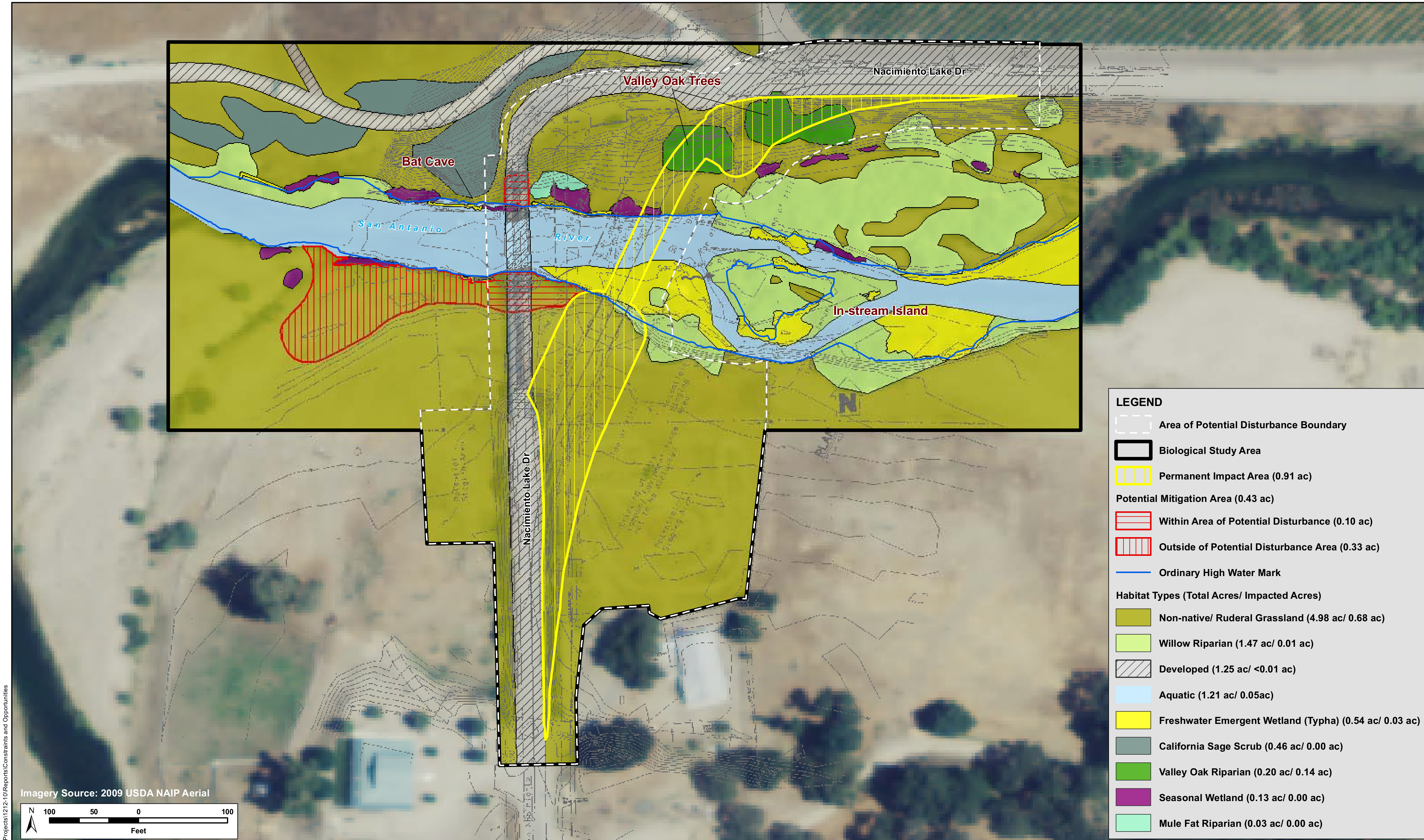
The aquatic habitat of the San Antonio River (Photos 3 and 4) is consistent with the general type of habitat known to support CRLF. Although the reach of the San Antonio River within the BSA does not contain the classic pool habitat known to be favored by California red-legged frogs, the water is relatively deep and slow-moving. Cattails (*Typha* sp.) are abundant along the margins of the active river channel, and overhanging willows (*Salix* sp.) are present in the BSA, particularly in the eastern portion (Figure 2; Photos 3 and 5). Overall, habitat conditions appear favorable to support foraging, overwintering, estivation, and breeding by CRLF. Maximum depth of the river within the BSA is estimated to be approximately 4.5 ft.

The overall fluvial structure of reaches of the San Antonio River upstream and downstream from the BSA differs little from those within the BSA. Areas with cattails along the river margins and overhanging willows exist at several locations within a 1-mi radius of the BSA. Steady, controlled releases from San Antonio Dam, located approximately 2.3 mi upstream from the BSA, probably reduces the frequency of scouring flows in reaches of the river downstream from the Dam, which may result in the gradual filling of pools with sediment and inhibit the formation of new pools.

No ponds suitable for CRLF are known to exist within 1 mi of the Project Site. However, 2 small irrigation ponds in vineyards approximately 0.55 mi northeast and 0.95 mi east of the bridge structure are visible in aerial imagery but were not accessible for direct observation during the site assessment. In aerial imagery, these ponds are surrounded by agricultural habitat and appear to be devoid of vegetation. Both appear unsuitable for CRLF.

Several intermittent tributary drainages to the San Antonio River, which could be used by CRLF during wet weather, occur within a 1-mi radius. Woodland and grassland habitats are the dominant upland habitat types in the 1-mi area surrounding the Project Site. These habitats could provide dispersal habitat in wet weather and estivation habitat during dry, hot periods. Agricultural and developed habitats also exist adjacent to the BSA.

The Willow Riparian and Freshwater Emergent habitats in the area of the in-stream island within the BSA provides potentially suitable habitat for the CRLF. The in-stream island may contain undercut banks that could provide particularly appropriate refugia for CRLF (Figure 2, Photo 3), and the remainder of the BSA and surrounding native habitats comprise suitable dispersal and/or foraging habitat for CRLF, if the species is present in the vicinity.



H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Figure 2: Site Detail and Habitat Map

Nacimiento Bridge 449 California Red-Legged Frog Site Assessment (1212-10)

April 2010

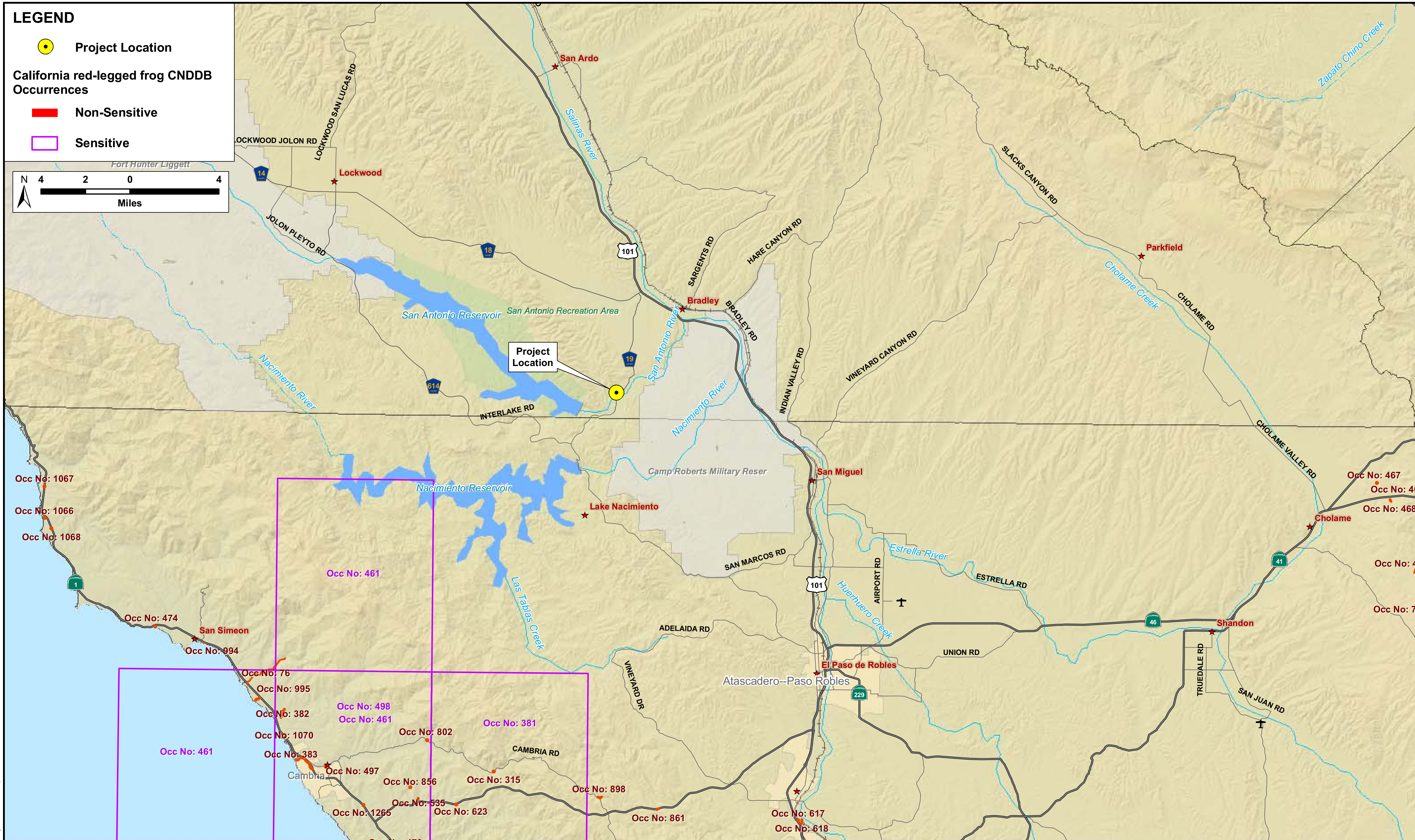


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Figure 3: CNDDB Map

Nacimiento Bridge 449 California Red-Legged Frog Site Assessment (1212-10)

April 2010

SITE ASSESSMENT DATA SHEETS

California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by:______________________________________
(FWS Field Office) **(date)** **(biologist)**

Date of Site Assessment: _____**04/01/2010**____
(mm/dd/yyyy)

Site Assessment Biologists: ______**Sisk,** ___ **Norman** ___ ________________________
(Last name) **(first name)** **(Last name)** **(first name)**

Site Location: **Monterey Co., Bridge 449 crossing San Antonio R. on Nacimiento Lake Dr.**
10S 693762mE 3964860mN (NAD83 datum)

(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: Nacimiento Lake Drive Bridge Replacement Project
Brief description of proposed action: The proposed project is the replacement of the existing Nacimiento Lake Drive Bridge over the San Antonio River in Monterey County, California (Figure 2). The existing bridge, which was constructed in 1921, is a single-lane structure that is approximately 240 ft in length and 20 ft in width. The bridge is a 4-span structure and the bridge type is known as a steel pratt through truss. The existing bridge does not meet current design or seismic safety standards.

The replacement bridge will be constructed adjacent to, and downstream of, the existing bridge. The new bridge, which will accommodate two lanes of traffic with shoulders, will be approximately 267 ft in length and 32 ft in width. The new bridge will have two spans with a center pier. The bridge type will be a cast-in-place, post-tensioned, concrete box girder structure.

The existing bridge will remain open to traffic during construction of the replacement bridge. Upon completion of construction of the new bridge, the existing bridge will be removed.

1) Is this site within the current or historic range of the CRF (circle one)? YES NO

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES NO
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:
Size: ____________ Maximum depth: ______________________

Vegetation: emergent, overhanging, dominant species:____________________________

Substrate:____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry:_______________________

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: Antelope Creek (historical channel)

Bank full width: ~20 ft________________

Depth at bank full: ~ 8 ft_________________

Stream gradient: ~0.66% _______________

Are there pools (circle one)? YES NO

If yes, Size of stream pools: ________________

Maximum depth of stream pools: ___________________

Characterize non-pool habitat: run, riffle, glide, other: Most of the drainage within the Biological Study Area (BSA) can be characterized as run habitat. Some riffle habitat exists in the eastern portion of the BSA in the vicinity of the in-stream island.

Vegetation: emergent, overhanging, dominant species: Cattails (*Typha* sp.) abundant along margins of drainage. Willows (*Salix* sp.) overhanging and forming a canopy over extensive portions of the eastern half of the BSA. Other dominant species include cheatgrass (*Bromus tectorum*), mulefat (*Baccharis salicifolia*) California sagebrush (*Artemesia californica*), and valley oak (*Quercus lobata*).

Substrate: Sand (~75%), gravel-sized rock (~22%), and exposed limestone bedrock (~3%)

Bank description: Portions of the banks are nearly vertical and scoured, interspersed with more gently sloping sections. The slopes are relatively steep outside of the banks to the top.

Perennial **or Ephemeral** *(circle one)*. If ephemeral, date it goes dry: _________________

Other aquatic habitat characteristics, species observations, drawings, or comments:
The river had a substantial flow volume at the time of the site assessment, and the site has suitable habitat for CRLF and western pond turtle. I conducted an informal CRLF survey within the BSA but observed no CRLF or egg masses. No fish of any kind, bullfrogs, or other exotic predators of CRLF were observed either. It should be noted that the survey was conducted early in the morning (start time 0830 h), and the air temperature was 45°F. Beaver activity (i.e., gnawing of trees) was noted in the eastern portion of the BSA, and in this area, a beaver dam has also been constructed across the river (Photo 5). In-stream island (Figure 2) may contain undercut banks that could provide refugia for CRLF.

SITE PHOTOS

Photo 1. Limestone outcrop on north side of San Antonio River (in upper left quadrant of photo).

Photo 2. Granite rip-rap around bridge pier.

Photo 3. San Antonio River, viewing east from deck of bridge.

Photo 4. San Antonio River, viewing east from deck of bridge.

Photo 5. Cattails, overhanging willows, and beaver dam in Willow Riparian habitat in eastern portion of BSA.

LITERATURE CITED

[CNDDB] California Natural Diversity Data Base. 2010. Rarefind (updated 02/28/2010). California Department of Fish and Game.

[CWHR] California Wildlife Habitat Relationships System. 2008. Red-legged Frog (*Rana aurora*) Range Map. Maintained by the California Department of Fish and Game and supported by the California Interagency Wildlife Task Group. Web page: nrm.dfg.ca.gov/FileHandler.ashx?DocumentVersionID=18298 . Viewed 2 April 2010.

[WRCC] Western Regional Climate Center. 2010. Website: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6730. Viewed 2 April 2010.

APPENDIX A
FIELD NOTES

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by ________ ________ ________
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 04/01/2010
(mm/dd/yyyy)

Site Assessment Biologists: Sisk Norman ________
(Last name) (first name) (Last name) (first name)

________ ________
(Last name) (first name) (Last name) (first name)

Site Location: ________
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)**

Proposed project name: ________
Brief description of proposed action:

1) Is this site within the current or historic range of the CRF (circle one)? YES NO

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES NO
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION
(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND: No pond
Size: ________ Maximum depth: ________

Vegetation: emergent, overhanging, dominant species: ________

Substrate: ________

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: ________

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM:

Bank full width: 20'
Depth at bank full: 8 ft
Stream gradient: < 1%

Are there pools (circle one)? YES NO
If yes,
Size of stream pools: ____
Maximum depth of stream pools: ____

Characterize non-pool habitat: run, riffle, glide, other: run – 150 ft upstream and downstream of bridge, riffles in area of in-stream island

Vegetation: emergent, overhanging, dominant species: cattails along stream margins. Willows alder overhanging ca 150 ft downstream. overhanging other spp. malefat, California sagebrush

Substrate: sand, gravel, limestone bedrock

Bank description: grass, stinging nettles dominant on bank (Bromus tectorum) mustard

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: probably perennial

Other aquatic habitat characteristics, species observations, drawings, or comments:

Max depth ~ 4.5 ft. beaver dam and beaver gnawings downstream
Range: 2½ - 4 ft

Good WPT habitat - basking rock present
No bullfrogs or fish obs. - however, cool (~45°F) at time of survey

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species location

Appendix D. Plants Identified on or adjacent to the Project Site

FAMILY NAME	SCIENTIFIC NAME	COMMON NAME
Anacardiaceae	*Toxicodendron diversilobum*	poison oak
Apiaceae	*Foeniculum vulgare*	fennel
	Torilis arvensis	hedgeparsley
Asclepiadaceae	*Asclepias fascicularis*	narrow leaf milkweed
Asteraceae	*Artemisia californica*	California sagebrush
	Artemisia douglasiana	mugwort
	Baccharis pilularis	coyote brush
	Baccharis salicifolia	mulefat
	Carduus pycnocephalus	Italian thistle
	Centaurea solstitialis	yellow starthistle
	Eriophyllum confertiflorum	golden yarrow
	Gnaphalium californicum	California everlasting
	Helenium puberulum	sneezeweed
	Heterotheca grandiflora	telegraph weed
	Hypochaeris glabra	smooth cat's ear
	Lessingia glandulifera	valley lessingia
	Silybum marianum	milkthistle
Boraginaceae	*Amsinckia tessellata*	fiddleneck
	Cynoglossum grande	hound's tongue
	Heliotropium curassavicum	heliotrope
	Plagiobothrys sp.	popcorn flower
Brassicaceae	*Brassica nigra*	black mustard
	Hirschfeldia incana	shortpod mustard
	Nasturtium officinale	watercress
Caprifoliaceae	*Sambucus mexicana*	blue elderberry
Caryophyllaceae	*Silene gallica*	windmill pink
	Spergularia rubra	red sandspurry
Chenopodiaceae	*Chenopodium album*	goosefoot
Cyperaceae	*Cyperus eragrostis*	tall umbrella sedge
Euphorbiaceae	*Croton setigerus*	dove weed
Fabaceae	*Genista monspessulana*	French broom
	Lotus corniculatus	bird's foot trefoil
	Lupinus formosus	summer lupine
	Lupinus latifolius	bigleaf lupine
	Lupinus microcarpus var. microcarpus	chick lupine
	Melilotus indicus	yellow sweetclover
Fagaceae	*Quercus agrifolia*	coast live oak
	Quercus lobata	valley oak
Geraniaceae	*Erodium cicutarium*	redstem filaree
Juncaceae	*Juncus balticus*	wire rush

FAMILY NAME	SCIENTIFIC NAME	COMMON NAME
	Juncus mexicanus	Mexican rush
Lamiaceae	*Marrubium vulgare*	Common horehound
Lemnaceae	*Lemna* sp.	duckweed
Malvaceae	*Malacothamnus sp.*	bushmallow
Onageraceae	*Camissonia micrantha*	Spencer primrose
	Camissonia strigulosa	sandysoil suncup
	Clarkia unguiculata	elegant clarkia
	Epilobium brachycarpum	willowherb
Papaveraceae	*Eschscholzia californica*	California poppy
Plantaginaceae	*Plantago major*	common plantain
Poaceae	*Avena fatua*	wild oat
	Bromus diandrus	ripgut brome
	Bromus hordeaceus	soft chess
	Bromus madritensis	Madrid brome
	Distichlis spicata	saltgrass
	Hordeum murinum	foxtail
	Vulpia microstachys	small fescue
Polygonaceae	*Eriogonum gracillimum*	rose and white buckwheat
	Eriogonum fasciculatum	California buckwheat
	Polygonum punctatum	swamp knotweed
	Rumex conglomeratus	clustered dock
	Rumex crispus	curly dock
Rosaceae	*Prunus ilicifolia*	holly leaved cherry
	Rosa sp.	rose
Salicaceae	*Populus fremontii*	Fremont cottonwood
	Salix exigua	narrowleaf willow
	Salix gooddingii	Gooding's willow
	Salix laevigata	red willow
Scrophulariaceae	*Mimulus guttatus*	sticky monkeyflower
	Veronica americana	American brooklime
Solanaceae	*Datura wrightii*	jimsonweed
	Solanum americanum	white nightshade
Typhaceae	*Typha latifolia*	cattail
Urticaceae	*Urtica dioica*	stinging nettle
Verbenaceae	*Phyla nodiflora*	common lippia

The species are arranged alphabetically by family name for all vascular plants encountered during the plant survey. Plants are also listed alphabetically within each family. Species nomenclature is from Hickman (1993).