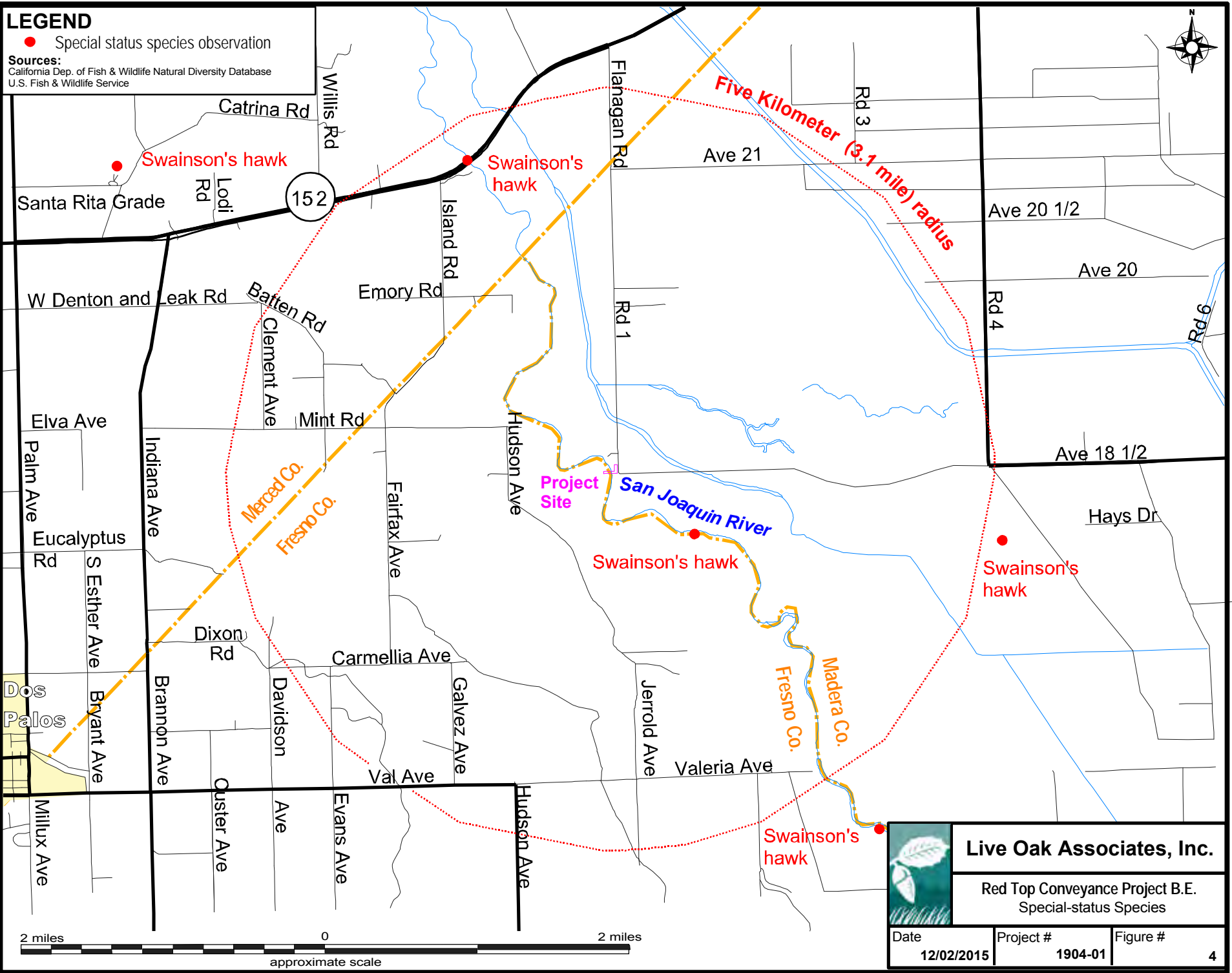


# LEGEND

- Special status species observation
- Sources:**  
 California Dep. of Fish & Wildlife Natural Diversity Database  
 U.S. Fish & Wildlife Service



**Live Oak Associates, Inc.**

Red Top Conveyance Project B.E.  
 Special-status Species

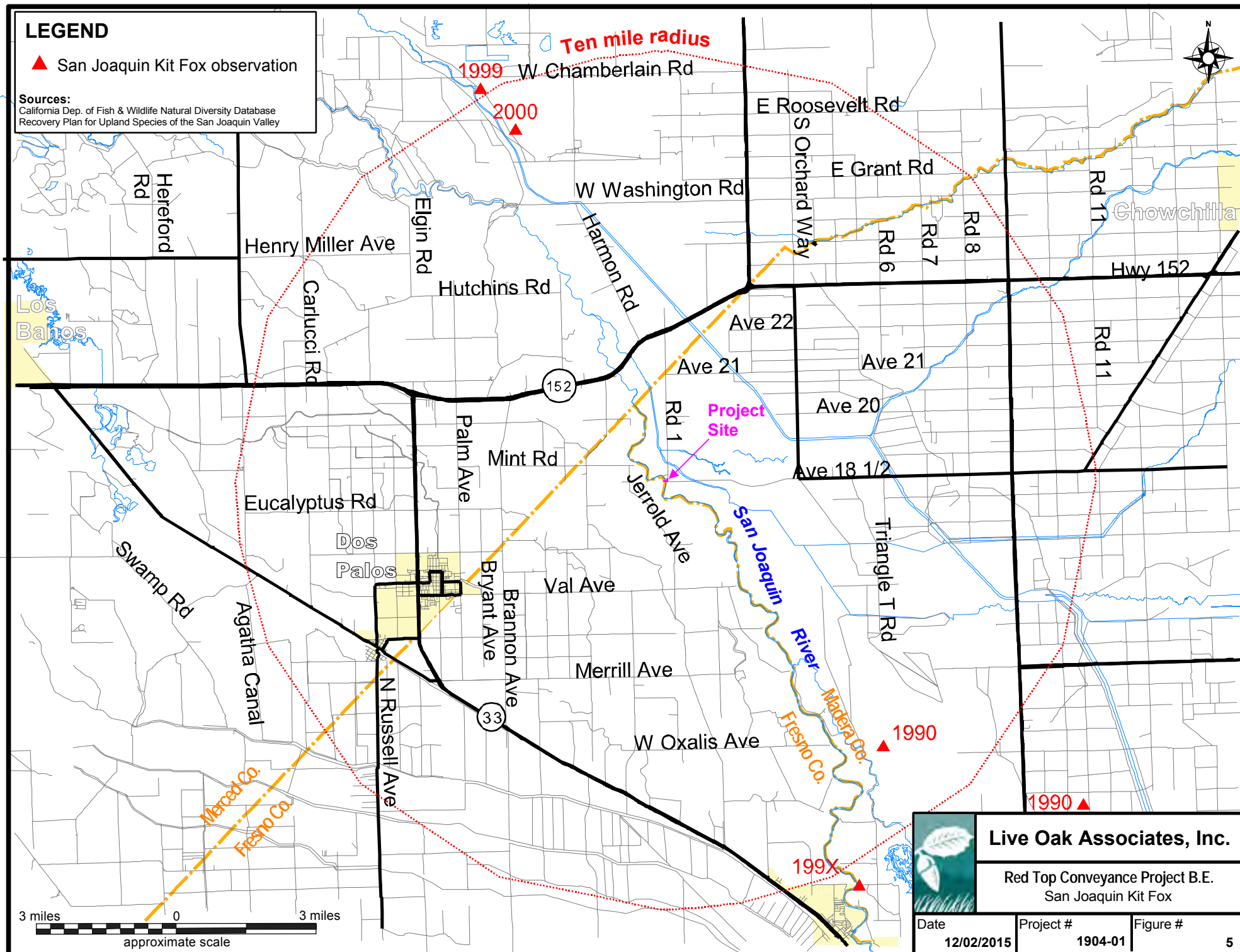
Date	Project #	Figure #
12/02/2015	1904-01	4

# LEGEND

▲ San Joaquin Kit Fox observation

## Sources:

California Dep. of Fish & Wildlife Natural Diversity Database  
Recovery Plan for Upland Species of the San Joaquin Valley



3 miles 0 3 miles  
approximate scale



**Live Oak Associates, Inc.**

Red Top Conveyance Project B.E.  
San Joaquin Kit Fox

Date	Project #	Figure #
12/02/2015	1904-01	5

**TABLE 2. LIST OF SPECIAL STATUS PLANT SPECIES THAT POTENTIALLY OCCUR WITHIN THE RED TOP CONVEYANCE PROJECT SITE.**

**PLANTS (adapted from CDFW 2015 and CNPS 2015)**

*Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act*

Species	Status <sup>1</sup>	Habitat	Potential for Occurrence in the Study Area
Palmate-bracted Bird's-beak ( <i>Cordylanthus palmatus</i> )	FE, CE, CNPS 1B	Occurs in alkaline grasslands or scrub; blooms May to October.	<b>Absent.</b> Suitable habitat for this species is absent from the project site. Furthermore, no recorded occurrences exist along the SJR corridor for this species.
Delta Button Celery ( <i>Eryngium racemosum</i> )	CE, CNPS 1B	Occurs in seasonally inundated floodplains on clay soils within riparian scrub habitat. Blooms June - October.	<b>Absent.</b> Clay soils required by this species are absent from the project site. Furthermore, this species is not known to occur in Fresno or Madera Counties.
Hoover's Spurge ( <i>Euphorbia hooveri</i> )	FT, CNPS 1B	Occurs in vernal pools on volcanic mudflow or clay substrate. Blooms July - Oct.	<b>Absent.</b> Suitable habitat in the form of vernal pools is absent from the project site.
Colusa Grass ( <i>Neostapfia colusana</i> )	FT, CE, CNPS 1B	Occurs in large clay bottomed vernal pools of California's Central Valley. Blooms May-Aug.	<b>Absent.</b> Suitable habitat in the form of vernal pools is absent from the project site.

*Species listed as Special Status by the California Native Plant Society*

Heartscale ( <i>Atriplex cordulata</i> )	1B.2	Occurs in alkaline and saline grasslands, scrub, sandy soils; blooms March to October.	<b>Absent.</b> Suitable habitat for this species is absent from the project site. Furthermore, no <i>Atriplex</i> species were observed during the site survey.
Brittlescale ( <i>Atriplex depressa</i> )	1B.2	Occurs in alkaline and saline grasslands, scrub, clay soils; blooms May to October.	<b>Absent.</b> Suitable habitat for this species is absent from the project site. Furthermore, no <i>Atriplex</i> species were observed during the site survey.
Lesser Saltscale ( <i>Atriplex miniscula</i> )	1B.1	Occurs in alkaline and saline grasslands, scrub, sandy soils; blooms May to October.	<b>Absent.</b> Suitable habitat for this species is absent from the project site. Furthermore, no <i>Atriplex</i> species were observed during the site survey.
Vernal Pool Smallscale ( <i>Atriplex persistens</i> )	1B.2	Occurs in alkaline vernal pools; blooms June - October.	<b>Absent.</b> Suitable habitat for this species is absent from the project site. Furthermore, no <i>Atriplex</i> species were observed during the site survey.
Subtle Orache ( <i>Atriplex subtilis</i> )	1B.2	Occurs in grasslands; blooms August to October.	<b>Absent.</b> Suitable habitat for this species is absent from the project site. Furthermore, no <i>Atriplex</i> species were observed during the site survey.
Lost Hills Crownscale ( <i>Atriplex vallicola</i> )	1B.2	Occurs in alkaline and saline grasslands, scrub; blooms April to August.	<b>Absent.</b> Suitable habitat for this species is absent from the project site. Furthermore, no <i>Atriplex</i> species were observed during the site survey.
Hispid Salty Bird's Beak ( <i>Chloropyron molle</i> ssp. <i>hispidum</i> )	1B.1	Occurs in damp alkaline soils, especially in alkaline meadows and alkali sinks with <i>Distichlis spicata</i> . Blooms June–Sept.	<b>Absent.</b> Suitable habitat for this species is absent from the study area.
Hoover Cryptantha ( <i>Cryptantha hooveri</i> )	1A	Possibly extinct, but known historically to occur in grasslands, sandy soil; blooms April to May	<b>Absent.</b> Suitable habitat for this species is absent from the study area. Furthermore, no recorded occurrences exist along the SJR corridor for this species.

**TABLE 2. LIST OF SPECIAL STATUS PLANT SPECIES THAT POTENTIALLY OCCUR WITHIN THE RED TOP CONVEYANCE PROJECT SITE.**

*Species listed as Special Status by the California Native Plant Society*

Species	Status <sup>1</sup>	Habitat	Potential for Occurrence in the Study Area
Recurved Larkspur ( <i>Delphinium recurvatum</i> )	1B.2	Occurs in alkaline and saline grasslands, scrub; blooms March to May.	<b>Absent.</b> Suitable habitat for this species is absent from the study area. Furthermore, no recorded occurrences exist along the SJR corridor for this species.
Prostrate Vernal Pool Navarretia ( <i>Navarretia prostrata</i> )	1B.1	Occurs in mesic and alkaline areas of grasslands or in vernal pools; blooms April - July.	<b>Absent.</b> Suitable habitat for this species is absent from the study area. Furthermore, no recorded occurrences exist along the SJR corridor for this species.
Sanford's Arrowhead ( <i>Sagittaria sanfordii</i> )	1B.2	Occurs in freshwater marsh, ditches, canals; blooms May to October.	<b>Absent.</b> Suitable habitat was largely absent for this species. No evidence of this species was observed within the site.
Wright's Trichocoronis ( <i>Trichocoronis wrightii</i> )	2B.1	Occurs in mud flats of vernal lakes, drying river beds and alkali meadows; blooms March to September.	<b>Unlikely.</b> The sandy soils associated with the SJR bed are marginal to unsuitable for this species. The nearest population of this species is approximately 12.5 miles northwest of the project site in the Merced National Wildlife Refuge. No documented occurrences of this species are known from Fresno or Madera Counties.

**STATUS CODES:**

CDFW listings under the Native Plant Protection Act, the California Endangered Species Act, and the federal Endangered Species Act (CDFW 2015c).

**CE** = California Endangered

**FE** = Federal Endangered

California Native Plant Society listings (CNPS 2015)

**1A** = presumed extinct in California

**1B** = rare and endangered in California and elsewhere

**2B** = Rare, Threatened, or Endangered in California, But More Common Elsewhere

**4** = plants of limited distribution in California – watchlist species

Threat Code extensions:

**.1** Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)

**.2** Fairly endangered in California (20-80% of occurrences threatened)

**.3** Not very endangered in California (< 20% of occurrences threatened or no current threats known).

**TABLE 3. LIST OF SPECIAL STATUS ANIMALS THAT OCCUR OR MAY OCCUR ON OR IN THE VICINITY OF THE RED TOP CONVEYANCE PROJECT SITE.**

**ANIMALS (adapted from CDFW 2015a)**

**Species Listed as Threatened or Endangered Under the Federal or State Endangered Species Acts**

<b>Species</b>	<b>Status</b>	<b>Habitat</b>	<b>*Occurrence in the Study Area</b>
Conservancy Fairy Shrimp ( <i>Branchinecta conservatio</i> )	FE	Found in vernal pools and ruderal pools of California's Central Valley that do not contain fish.	<b>Absent.</b> Vernal pools required by this species are absent from the project site.
Vernal Pool Fairy Shrimp ( <i>Branchinecta lynchi</i> )	FT	Found in vernal pools and ruderal pools of California's Central Valley that do not contain fish.	<b>Absent.</b> Vernal pools required by this species are absent from the project site.
Vernal Pool Tadpole Shrimp ( <i>Lepidurus packardii</i> )	FE	Occurs in vernal pools of California containing clear to highly turbid water.	<b>Absent.</b> Vernal pools required by this species are absent from the project site.
Valley Elderberry Longhorn Beetle ( <i>Desmocerus californicus dimorphus</i> )	FT	Lives in mature elderberry shrubs of California's Central Valley and Sierra Foothills.	<b>Absent.</b> Elderberry shrubs, the obligate habitat for the VELB, are absent from the project site and surrounding lands.
Delta Smelt ( <i>Hypomesus transpacificus</i> )	FT	This slender-bodied fish is endemic to the San Francisco Bay and Sacramento-San Joaquin Delta upstream through Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties.	<b>Absent.</b> The project site is situated well outside of the known distribution of this species.
Steelhead (Central Valley ESU) ( <i>Oncorhynchus mykiss irideus</i> )	FT, CSC	Winters in rivers of the Central Valley. Found in cool, clear, fast-flowing permanent streams and rivers.	<b>Unlikely.</b> The Central Valley steelhead is currently considered extirpated from the San Joaquin River above its confluence with the Merced River.
Chinook Salmon (Spring-run) ( <i>Oncorhynchus tshawytscha</i> )	FT, CSC	Historically spawned in the upper Sacramento and San Joaquin watersheds. This population was largely eliminated from the San Joaquin watershed with the construction of the Friant Dam in 1942, but reintroduction into the San Joaquin River upstream of its confluence with the Merced River was initiated in April 2014. Spawns in gravel beds in riffle areas, typically at the downstream end of pools.	<b>Possible.</b> This species historically occurred in the San Joaquin River. Restoration efforts are anticipated to regularly return this species to the reach of river passing through the project site. Spawning habitat is absent from the project site.
California Tiger Salamander ( <i>Ambystoma californiense</i> )	FT, CT	Found primarily in annual grasslands; requires vernal pools for breeding and rodent burrows for refuge.	<b>Absent.</b> Breeding and aestivation habitat for this species is absent within the project site and surrounding lands.
California Red-Legged Frog ( <i>Rana aurora draytonii</i> )	FT	Perennial rivers, creeks and stock ponds of the Coast Range and northern Sierra foothills with overhanging vegetation.	<b>Absent.</b> The project site and surrounding lands do not provide suitable habitat for this species and are outside of its current known range.
Blunt-nosed Leopard Lizard ( <i>Gambelia sila</i> )	FE, CE, CFP	Resident of sparsely vegetated alkali and desert scrub habitats in areas of low topographic relief. Seeks cover in small mammal burrows, under shrubs and structures.	<b>Absent.</b> Habitat required by this species is absent from the study area. The agricultural activities surrounding the project site have eliminated all habitats potentially suitable for this species.

**TABLE 3. LIST OF SPECIAL STATUS ANIMALS THAT OCCUR OR MAY OCCUR ON OR IN THE VICINITY OF THE RED TOP CONVEYANCE PROJECT SITE.**

ANIMALS (adapted from CDFW 2015a)

Species Listed as Threatened or Endangered Under the Federal or State Endangered Species Acts (cont.)

Species	Status	Habitat	*Occurrence in the Study Area
Giant Garter Snake ( <i>Thamnophis gigas</i> )	FT, CT	Found in freshwater marsh and low gradient streams.	<b>Absent.</b> Suitable aquatic habitat for this species in the form of freshwater marsh is absent from the project area.
Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	FD, CE, CFP	Found throughout most of California near lakes, reservoirs, rivers and coastal wetlands.	<b>Unlikely.</b> Foraging habitat is marginal on the project site due to the absence of deep open waters and the absence or paucity of fish expected on the site due to irregular river flows. Occurrences of this species in this part of the valley are rare.
Golden Eagle ( <i>Aquila chrysaetos</i> )	CFP	Forages in grasslands, oak savannah, and open rangelands. Nests on cliffs or large trees.	<b>Present.</b> A golden eagle was observed flying high over the site during the field survey. Foraging habitat is marginal on the site and nesting habitat is absent from the project site.
American Peregrine Falcon ( <i>Falco peregrinus anatum</i> )	CFP	Individuals breed on cliffs in the Sierra or in coastal habitats; occurs in many habitats of the state during migration and winter.	<b>Unlikely.</b> The site provides marginal foraging habitat for transients and migrating birds. This site is not within suitable breeding range.
Swainson's Hawk ( <i>Buteo swainsoni</i> )	CT	Uncommon resident and migrant in the Central Valley. Forages in grasslands and fields close to riparian areas.	<b>Possible.</b> Swainson's hawks may fly over the project site while foraging on surrounding lands. Nesting habitat is marginal due to the small size of trees. No evidence of raptor nesting in the form of stick nests was observed on site during the field study. A very small amount of foraging habitat occurs within upland areas of the SJR channel on the site.
Mountain Plover ( <i>Chardrius montanus</i> )	FPT	Forages in short grasslands and freshly plowed fields of the Central Valley during the winter. Breeds outside California.	<b>Absent.</b> Suitable habitat for this species is absent from the project area.
Nelson's antelope squirrel ( <i>Ammospermophilus nelsoni</i> )	CT	Occurs in the southwest portion of the San Joaquin Valley on dry, sparsely vegetated loamy soils.	<b>Absent.</b> Natural habitats suitable for this species are absent from the project site and surrounding lands.
Fresno Kangaroo Rat ( <i>Dipodomys nitratooides exilis</i> )	FE, CE	Occurs in alkali scrub and herbaceous habitats with scattered shrubs in the southwestern San Joaquin Valley.	<b>Absent.</b> Natural habitats suitable for this species are absent from the project site and surrounding lands.
San Joaquin Kit Fox ( <i>Vulpes macrotis mutica</i> )	FE, CT	Occurs in desert alkali scrub and annual grasslands and may forage in adjacent agricultural habitats.	<b>Possible.</b> Historical observations of this species are absent from the project site and vicinity. The nearest documented occurrences are approximately 8.0 miles to the north and south of the site (CDFW 2015a). The study area provides no suitable breeding habitat for this species and only marginal foraging habitat. Dispersing individuals may cross the site in route to more suitable habitat.

**TABLE 3. LIST OF SPECIAL STATUS ANIMALS THAT OCCUR OR MAY OCCUR ON OR IN THE VICINITY OF THE RED TOP CONVEYANCE PROJECT SITE.**

**ANIMALS (adapted from CDFW 2015a)**

**State Species of Special Concern**

<b>Species</b>	<b>Status</b>	<b>Habitat</b>	<b>*Occurrence in the Study Area</b>
Chinook Salmon - Central Valley Fall/Late Fall ( <i>Oncorhynchus tshawytscha</i> )	CSC	Historically spawned in the Sacramento and San Joaquin drainages in the valley floor and lower foothill reaches. Until recently was absent from the San Joaquin above its confluence with the Merced, but is now being reintroduced to this reach. Spawns in gravel beds in riffle areas, typically at the downstream end of pools. Juvenile fall-run Chinook salmon spend 3 to 6 months rearing in freshwater before migrating to the sea. Extant in a wide array of suitable river habitats during fall migrations. Requires rivers with gravely substrate to spawn.	<b>Possible.</b> This species historically occurred in the San Joaquin River. Restoration efforts are anticipated to regularly return this species to the reach of river passing through the project site. Spawning habitat is absent from the project site.
Hardhead ( <i>Mylopharodon conocephalus</i> )	CSC	Prefer clear, deep pools and runs with sand-gravel-boulder substrates in undisturbed areas of larger low to mid elevation streams.	<b>Absent.</b> This species is absent from valley reaches of the SJR.
Sacramento Splittail ( <i>Pogonichthys macrolepidotus</i> )	CSC	Inhabits slow-moving sections of rivers and sloughs in the Central Valley and San Francisco Bay.	<b>Unlikely.</b> Historically found in the SJR as far south as Friant. The current known range of the species in the SJR extends to Salt Slough 27 air miles northwest of the project site.
Western Spadefoot ( <i>Spea hammondi</i> )	CSC	Frequents annual grasslands and foothill hardwood woodlands; requires vernal pools or other temporary wetlands for breeding.	<b>Absent.</b> Suitable habitat for this species is absent from the study area.
Western Pond Turtle ( <i>Emys marmorata</i> )	CSC	Occurs in suitable aquatic habitats such as ponds and rivers throughout California.	<b>Unlikely.</b> The intermittent flows of the SJR on the project site result in only marginal habitat for this species.
Blainville's Horned Lizard ( <i>Phrynosoma blainvillii</i> )	CSC	Frequents sandy washes with scattered shrubs, grasslands, scrublands, and oak woodlands of Central California.	<b>Unlikely.</b> Although some habitat for this species occurs in the upland floodplain area of the site; no harvest ants, the main food source for the horned lizard, were observed anywhere on the study site.
Northern Harrier ( <i>Circus cyaneus</i> )	CSC	Frequents meadows, grasslands, open rangelands, freshwater emergent wetlands; uncommon in wooded habitats.	<b>Possible.</b> This species may forage over the site. Nesting habitat is absent.
White-tailed Kite ( <i>Elanus leucurus</i> )	CFP	Open grasslands and agricultural areas throughout central California.	<b>Possible.</b> This species may forage over the site. Nesting habitat is marginal due to the small size of trees. No evidence of raptor nesting in the form of stick nests was observed on site during the field study.

**TABLE 3. LIST OF SPECIAL STATUS ANIMALS THAT OCCUR OR MAY OCCUR ON OR IN THE VICINITY OF THE RED TOP CONVEYANCE PROJECT SITE.**

**ANIMALS (adapted from CDFW 2015a)**

**State Species of Special Concern (cont.)**

California Spotted Owl ( <i>Strix occidentalis occidentalis</i> )	CSC	Forest habitats of the western slope of the Sierra Nevada, in the southern Coast Ranges of Monterey County to Santa Barba County, and in the Transverse Ranges from Southern California to Baja California.	<b>Absent.</b> Habitats required by this species are absent from the project site.
Short-eared owl ( <i>Asio flammeus</i> )	CSC	Occurs in open grasslands and marshlands of North America, South America, and Eurasia, and on many oceanic islands.	<b>Absent.</b> Habitats required by this species are absent from the project site.
Burrowing Owl ( <i>Athene cunicularia</i> )	CSC	Frequents open, dry annual or perennial grasslands, deserts, and scrublands characterized by low growing vegetation. This species is dependent upon burrowing mammals, most notably the California ground squirrel, for nest burrows.	<b>Unlikely.</b> Suitably sized burrows were absent from the project site and surrounding lands. No evidence of this species occupying the site was observed during the field survey. Foraging habitat is limited on the site but somewhat more available on surrounding lands.
Loggerhead Shrike ( <i>Lanius ludovicianus</i> )	CSC	Frequents open habitats with sparse shrubs and trees, other suitable perches, bare ground, and low herbaceous cover. Can often be found in cropland.	<b>Present.</b> This species was observed foraging on the project site and surrounding lands during the field survey. Suitable nesting habitat is available on the project site.
Tricolored Blackbird ( <i>Agelaius tricolor</i> )	CSC	Breeds near fresh water, primarily emergent wetlands, with tall thickets. Forages in grassland and cropland habitats.	<b>Possible.</b> Marginal breeding habitat is present on the project site in California rose thickets along the east bank of the SJR. Foraging habitat is present throughout the site.
Yellow-headed Blackbird ( <i>Xanthocephalus xanthocephalus</i> )	CSC	Nests in emergent wetland with dense vegetation and deep water. Forages in open areas, including cropland and muddy shores.	<b>Possible.</b> Suitable breeding habitat is absent from the project site. However, potential foraging habitat is present.
American Badger ( <i>Taxidea taxus</i> )	CSC	Found in drier open stages of most shrub, forest and herbaceous habitats with friable soils.	<b>Unlikely.</b> Marginal habitat for this species is present onsite. Adjacent agricultural lands provide limited foraging and breeding opportunities.

**\* Explanation of Occurrence Designations and Status Codes**

**Present:** Species observed on the site at time of field surveys or during recent past.

**Likely:** Species not observed on the site, but it may reasonably be expected to occur there on a regular basis.

**Possible:** Species not observed on the site, but it could occur there from time to time.

**Unlikely:** Species not observed on the site, and would not be expected to occur there except, perhaps, as a transient

**Absent:** Species not observed on the site, and precluded from occurring there because habitat requirements were not met.



## STATUS CODES

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
FPT	Federally Proposed Threatened	CSC	California Species of Special Concern
FC	Federal Candidate	CNPS	California Native Plant Society Listing
FD	Federally Delisted	CFP	California Fully Protected

An expanded discussion is warranted for special status species that are known to occur in the project vicinity. Activities that could harm these species are regulated by the USFWS and/or the CDFW.

### **2.7.1 Chinook Salmon (*Oncorhynchus tshawytscha*); Central Valley Spring Run: Federally Threatened, State Threatened; Central Valley Fall Run: California Species of Special Concern**

*Ecology and conservation of the species.* Chinook salmon have an anadromous life history, meaning that they spend most of their lives in the ocean and migrate to freshwater to spawn. Races, or runs, of Chinook salmon are named according to the time of year that adults migrate into freshwater. Fall-run Chinook salmon return to their natal streams in the fall, and begin spawning within a few days or weeks. Spring-run Chinook salmon return to their natal streams in the spring and early summer, and spend the summer holding in deep pools before spawning in the late summer and fall. Spawning takes place in riffle areas, typically at the downstream end of pools. The resulting juveniles rear in slower-moving water along the stream margin before migrating to the ocean. Adult Chinook salmon typically spend 2 to 4 years at sea before returning to their natal streams to spawn.

Prior to the construction of the Friant Dam in 1942, the San Joaquin River supported one of the largest spring runs of Chinook salmon on the Pacific coast. In the late 1800s, runs in the San Joaquin River probably exceeded 200,000 fish (Moyle et al. 1995). Construction of the dam resulted in most of the San Joaquin River's water being diverted by the Friant-Kern and Madera Canals to the San Joaquin Valley for agricultural use. These diversions ceased flow for portions of approximately 153 miles of the river, resulting in the extirpation of salmon runs from the San Joaquin River above its confluence with the Merced River.

In 1988, a coalition of environmental and fishing groups filed a lawsuit to provide sufficient fish habitat in the San Joaquin River below Friant Dam. A settlement was reached in 2006, and implemented in 2009 in the form of the San Joaquin River Restoration Program (SJRRP). The SJRRP has as its central aim the restoration and maintenance of fish populations in the San Joaquin River between Friant Dam and the Merced River, including naturally reproducing and self-sustaining populations of Chinook salmon. Important SJRRP activities to date have included the restoration of sustainable flows in the river, and initial Chinook salmon reintroduction efforts. Interim flow water releases from the Friant Dam began in 2009, and restoration flow water releases in 2014. Transport of adult fall-run Chinook salmon from the San Joaquin River above the Hills Ferry Barrier to the San Joaquin River upstream of Highway 99 has been occurring each fall (October to December) since 2012. Reintroduction of spring-run Chinook salmon into the San Joaquin River below Friant Dam commenced in April 2014 with the release of 54,000 juveniles, and will continue to take place annually in the springtime for five years.

***Potential to occur onsite.*** Due to SJRRP reintroduction efforts, both spring-run and fall-run Chinook salmon have the potential to occur in the reach of the San Joaquin River passing through the project site. However, the Sack Dam located 3 air miles upstream of the project site and the Hills Ferry Barrier pose significant impediments to salmon passage through the project site. Their potential for occurrence would fluctuate throughout the year. Reintroduced salmon are currently transported around the stretch of river in which the project site is located. Therefore, the likelihood of the Chinook salmon occurring on the project site during periods of river flow is low. Furthermore, since project construction will occur at a time when the riverbed is dry, Chinook salmon would be absent from the site at the time of construction.

**2.7.2 Swainson's Hawk (*Buteo swainsoni*). Federal Listing Status: None; State Listing Status: Threatened.**

***Ecology of the species.*** The Swainson's hawk is designated as a California Threatened species. The loss of agricultural lands (i.e., foraging habitat) to urban development and additional threats such as riverbank protection projects have contributed to its decline. However, in recent years the Central Valley Swainson's hawk population has been increasing.

Swainson's hawks are large, broad-winged, broad-tailed hawks and have a high degree of mate and territorial fidelity. They arrive at their nesting sites in March or April. In the Central Valley, Swainson's hawks typically nest in large trees in or peripherally to riparian systems adjacent to suitable foraging habitats. The young hatch sometime between March and July and do not leave the nest until some 4 to 6 weeks later. Other suitable nest sites include lone trees, groves of trees such as oaks, other trees in agricultural fields, and mature roadside trees. Central Valley Swainson's hawks forage in large, open fields with abundant prey, including grasslands or lightly grazed pastures, alfalfa and other hay crops, and certain grain and row croplands. Their primary food source during the breeding season is voles; however, they also prey on other small mammals, birds, and insects during this time.

***Potential to occur onsite.*** Swainson's hawks are known to occur in the project vicinity. Documented nest sites are absent from the project area but occur within the project vicinity, as illustrated in Figure 4. Trees within the project area are small and contained no stick nests. It is highly unlikely that a Swainson's hawk would nest within the project area. During LOA's November field visit one inactive stick nest was observed in a Fremont cottonwood (*Populus fremontii*) tree approximately 400 feet south of the project area on the east bank of the SJR. However, the species of bird that has built and/or subsequently utilized this nest is unknown. The last use date of this nest is also unknown. This nest was not occupied by any avian species at the time of the field survey and no indications were found of recent raptor use such as prey remains, feathers, or whitewash on the ground beneath. The site offers very limited foraging habitat due to the ruderal nature of the project site and the periodic inundation of the SJR channel that would render the channel unsuitable for foraging.

### **2.7.3 San Joaquin Kit Fox (*Vulpes macrotus mutica*). Federal Listing Status: Endangered; State Listing Status: Threatened**

***Ecology of the species.*** By the time the San Joaquin kit fox (SJKF) was listed as federally endangered in 1967 and California threatened in 1971, it had been extirpated from much of its historic range. The smallest North American member of the dog family (Canidae), the kit fox historically occupied the dry plains of the San Joaquin Valley, from San Joaquin County to southern Kern County (Grinnell et al. 1937). Local surveys, research projects, and incidental sightings indicate that kit fox currently occupy available habitat on the San Joaquin Valley floor

and in the surrounding foothills. Core SJKF populations are located in the natural lands of western Kern County, the Carrizo Plain Natural Area in San Luis Obispo County, and the Ciervo-Panoche Natural Area in western Fresno and eastern San Benito Counties (USFWS 1998).

The SJKF prefers habitats of open or low vegetation with loose soils. In the southern and central portion of the Central Valley, kit fox are found in valley sink scrub, valley saltbrush scrub, upper Sonoran subshrub scrub, and annual grassland (USFWS 1998). Kit fox may also be found in grazed grasslands, urban settings, and in areas adjacent to tilled or fallow fields (USFWS 1998). They require underground dens to raise pups, regulate body temperature, and avoid predators and other adverse environmental conditions (Golightly and Ohmart 1984). In the central portion of their range, they usually occupy burrows excavated by small mammals such as California ground squirrels. The SJKF is primarily carnivorous, feeding on rodents such as kangaroo rats, black-tailed hares, and desert cottontails, insects, reptiles, and some birds.

***Potential to occur onsite.*** The deep unconsolidated sand within the SJR channel, periodically inundated areas of the SJR channel, the thick tangle of riparian trees and shrubs, and ruderal habitats of the project site provide marginal foraging habitat and unsuitable denning habitat for the San Joaquin kit fox. Surrounding agricultural lands are similarly unsuitable. Documented kit fox sightings are absent from the project site and vicinity. The nearest occurrences are approximately 8 miles to the north and south of the project site (Figure 5). Based on the documented presence of kit fox to the north and south, it is possible that individual foxes occasionally pass through the site, making use of the SJR corridor for dispersal movements. No burrows of suitable dimensions for the San Joaquin kit fox were observed on the project site or surrounding lands at the time of the field survey.

## **2.8 JURISDICTIONAL WATERS**

Jurisdictional waters include rivers, other natural drainages having a defined bed and bank (creeks), lakes, ponds, reservoirs, and wetlands. Such waters may be subject to the regulatory authority of the U.S. Army Corps of Engineers (USACE), the CDFW and the Regional Water Quality Control Board (RWQCB) (see Section 3.2.9 of this report for additional information).

The USACE and RWQCB have jurisdiction over all areas of the SJR and Poso Canal below ordinary high water (OHW). The CDFW has jurisdiction over the SJR to the top of bank. State Lands Commission may have jurisdiction over all areas below mean high water. The stretch of the SJR on the project site is designated a Section 10 water by the USACE.

## **2.9 DESIGNATED CRITICAL HABITAT**

As will be discussed further in Section 3.2.3, the USFWS often designates areas of “critical habitat” when it lists species as threatened or endangered. Critical habitat is a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection.

Units of critical habitat are absent from the project site and surrounding lands.

## **2.10 ESSENTIAL FISH HABITAT**

As will be discussed further in Section 3.2.4, the National Marine Fisheries Service (NMFS) has designated “essential fish habitat” (EFH) for fish managed under the federal Magnuson-Stevens Fishery and Conservation Act. EFH encompasses all habitats required by federally managed species over the course of their life cycles under the three Fishery Management Plans (FMPs) (Pacific Coast FMP, Pacific Groundfish FMP, and the Coastal Pelagic Species FMP). Activities that have the potential to adversely affect EFH include dredging, filling, excavation, mining, discharge, water diversion, thermal additions, actions which contribute to non-point source pollution and sedimentation, introduction of exotic species, and conversion of aquatic habitats that may diminish or disrupt the functions of EFH.

The SJR below Friant Dam, including the reach of the river that passes through the project site, has been designated as EFH for Pacific salmon species.

## **2.11 WILDLIFE MOVEMENT CORRIDORS**

Wildlife movement corridors are routes that animals regularly and predictably follow during seasonal migration, dispersal from native ranges, daily travel within home ranges, and inter-population movements. Movement corridors in California are typically associated with valleys, ridgelines, and rivers and creeks supporting riparian vegetation. Such geographic and

topographic features are present on the project site in the form of the San Joaquin River corridor. A number of wildlife species are expected to make use of this corridor for regular and seasonal movements. For example, a number of migrant birds travel along the SJR corridor between breeding grounds in the Sierra Nevada and wintering grounds in the Central Valley. North-south migrant birds may use the river corridor as a resting and/or feeding point during migration. Consequently, the river corridor on site is considered a significant wildlife movement corridor.

## **2.12 NATURAL COMMUNITIES OF SPECIAL CONCERN**

Natural communities of special concern are habitats that are of limited distribution, distinguished by significant biological diversity, home to special status plant and animal species, and are of importance in maintaining water quality or sustaining flows, etc. Examples of sensitive habitats include vernal pools, emergent marsh, various types of riparian forest, etc. (Sawyer, Keeler-Wolf, and Evens 2009). Sensitive habitats of the project site include riparian and aquatic habitat of the SJR when it is present.

### **3.0 IMPACTS AND MITIGATIONS**

#### **3.1 SIGNIFICANCE CRITERIA**

##### **NEPA**

Federal projects are subject to the provisions of NEPA. The purpose of NEPA is to assess the effects of a proposed action on the human environment, assess the significance of those effects, and recommend measures that if implemented would mitigate those effects. As used in NEPA, a determination that certain effects on the human environment are “significant” requires considerations of both context and intensity (see 40 CFR 1508.27).

Context means that significance must be analyzed in terms of the affected environment in which a proposed action would occur (“action area”). For the purposes of assessing effects of an action on biological resources, the relevant context is often local. The analysis requires a comparison of the action area’s biological resources to the biological resources of the local area within which the action area is located. The analysis may, however, require a comparison of the action area’s biological resources with the biological resources of an entire region.

Intensity refers to the severity of impact. In considering the intensity of impact to biological resources, it is necessary to address the unique qualities of wetlands and ecologically critical areas that may be affected by the action, the degree to which the action will be controversial, the degree to which the effects of the action will be uncertain, the degree to which the action will establish a precedent for future actions that may result in significant effects, and the potential for the action to result in cumulatively significant effects.

The effects of an action on some biological resources are generally considered to be “significant.” Actions that adversely affect federally listed threatened and endangered species and Waters of the U.S. are two examples. Other examples include actions that impede the migratory movements of fish and wildlife, and actions that substantially reduce the areal extent of fish and wildlife habitat, especially if habitat loss occurs in areas identified by state and federal governments as ecologically sensitive or of great scenic value.

NEPA requires mitigation for the effects of an action on the environment. Suitable measures include the following:

- (a) Avoiding the impact altogether by not taking a certain action or parts of an action.
- (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the project.
- (e) Compensating for the impact by replacing or providing substitute resources or environments.

This report identifies likely project impacts, identifies those that may be considered “significant” per the provisions of NEPA, and recommends mitigation measures, if any, that would avoid significant impact to biological resources.

### **CEQA**

Approval of general plans, area plans, and specific projects is subject to the provisions of CEQA. The purpose of CEQA is to assess the impacts of proposed projects on the environment before they are carried out. CEQA is concerned with the significance of a proposed project’s impacts. For example, a proposed development project may require the removal of some or all of a site’s existing vegetation. Animals associated with this vegetation could be destroyed or displaced. Animals adapted to humans, roads, buildings, pets, etc., may replace those species formerly occurring on the site. Plants and animals that are state and/or federally listed as threatened or endangered may be destroyed or displaced. Sensitive habitats such as wetlands and riparian woodlands may be altered or destroyed.

Whenever possible, public agencies are required to avoid or minimize environmental impacts by implementing practical alternatives or mitigation measures. According to Section 15382 of the CEQA Guidelines, a significant effect on the environment means a “substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest.”



Specific project impacts to biological resources may be considered “significant” if they would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Furthermore, CEQA Guidelines Section 15065(a) states that a project may trigger the requirement to make “mandatory findings of significance” if the project has the potential to:

“Substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare or threatened species, or eliminate important examples of the major periods of California history or prehistory.”

## **3.2 RELEVANT GOALS, POLICIES, AND LAWS**

### **3.2.1 General Plan Policies of Madera and Fresno Counties**

The Madera County General Plan (1995) and the Fresno County General Plan (2000) provides the County direction in project planning and approval with respect to land use, transportation, public facilities and services, recreation, cultural resources, health and safety, noise, agriculture, and natural resources. The Plans are implemented via a number of goals and corresponding

policies. Natural resources goals relevant to the current project include protection and enhancement of water resources; protection of wetland and riparian areas; protection, restoration, and enhancement of fish and wildlife habitat to maintain populations at viable levels; preservation and protection of vegetation resources; and the preservation and enhancement of open space land. The natural resources sections of both general plans are presented in Appendix D.

### **3.2.2 Threatened and Endangered Species**

As discussed, state and federal “endangered species” legislation has provided CDFW and USFWS with a mechanism for conserving and protecting plant and animal species of limited distribution and/or low or declining populations. Permits may be required from both the CDFW and USFWS if activities associated with a proposed project will result in the “take” of a listed species. “Take” is defined by the state of California as “to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill” (California Fish and Game Code, Section 86). “Take” is more broadly defined by the federal Endangered Species Act to include “harm” (16 USC, Section 1532(19), 50 CFR, Section 17.3). Furthermore, the CDFW and the USFWS are responsible agencies under CEQA. Both agencies review CEQA documents in order to determine the adequacy of their treatment of endangered species issues and to make project-specific recommendations for their conservation.

### **3.2.3 Designated Critical Habitat**

The USFWS often designates areas of “critical habitat” when it lists species as threatened or endangered. Critical habitat is defined by section 3(5)(A) of the federal Endangered Species Act as “(i) The specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection; and (ii) specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.” The Act goes on to define “conservation” as “the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which listing under the Act is no longer necessary.”

The designation of a specific area as critical habitat does not directly affect its ownership. Federal actions that result in destruction or adverse modification of critical habitat are, however, prohibited in the absence of prior consultation with the USFWS according to provisions of the act. Furthermore, recent appellate court cases require that federal actions affecting critical habitat promote the recovery of the listed species protected by the critical habitat designation.

The USFWS designates critical habitat for a species by identifying general areas likely to contain the species' "primary constituent elements," or physical or biological features of the landscape that the species needs to survive and reproduce. Although a unit of critical habitat for a particular species may be quite large, only those lands within the unit that contain the species' primary constituent elements are actually considered critical habitat by the USFWS.

#### **3.2.4 Essential Fish Habitat**

In 1996, the NMFS designated "essential fish habitat" (EFH) for approximately 1,000 fish species managed under the federal Magnuson-Stevens Fishery Conservation and Management Act. EFH is the habitat necessary for managed fish to complete their life cycles, thus contributing to a fishery that can be harvested sustainably. EFH is defined as the waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. EFH applies to all life stages of managed fish. EFH for a particular species may span a variety of aquatic habitats to cover the range of environments in which that species spawns, breeds, feeds, and grows to maturity.

The Magnuson-Stevens Act requires NMFS to work with other Federal agencies to conserve and enhance EFH. As a result, whenever Federal agencies authorize, fund, or carry out actions that may adversely impact EFH, they must consult with NMFS regarding the impact of their activities on EFH. Specifically, the MSA requires: (1) federal agencies to consult with NMFS on all actions or proposed actions authorized, funded, or undertaken by the agency that could adversely affect EFH; (2) NMFS to provide conservation recommendations for any federal or State action that could adversely affect EFH; and (3) federal agencies to provide a detailed response in writing to NMFS within 30 days of receiving EFH conservation recommendations if they are choosing to not implement NMFS conservation recommendations.

### **3.2.5 Migratory Birds**

The Federal Migratory Bird Treaty Act (FMBTA: 16 USC 703-712) prohibits killing, possessing, or trading in any bird species covered in one of four international conventions to which the United States is a party, except in accordance with regulations prescribed by the Secretary of the Interior. The name of the act is misleading, as it actually covers almost all birds native to the United States, even those that are non-migratory. The FMBTA encompasses whole birds, parts of birds, and bird nests and eggs. Additionally, California Fish and Game Code makes it unlawful to take or possess any non-game bird covered by the FMBTA (Section 3513), as well as any other native non-game bird (Section 3800).

### **3.2.6 Birds of Prey**

Birds of prey are protected in California under provisions of the Fish and Game Code (Section 3503.5), which states that it is unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks and eagles) or Strigiformes (owls), as well as their nests and eggs. The bald eagle and golden eagle are afforded additional protection under the federal Bald and Golden Eagle Protection Act (16 USC 668), which makes it unlawful to kill birds or their eggs.

### **3.2.7 Nesting Birds**

In California, protection is afforded to the nests and eggs of all birds. California Fish and Game Code (Section 3503) states that it is “unlawful to take, possess, or needlessly destroy the nest or eggs of any bird except as otherwise provided by this code or any regulation adopted pursuant thereto.” Breeding-season disturbance that causes nest abandonment and/or loss of reproductive effort is considered a form of “take” by the CDFW.

### **3.2.8 Bats**

Section 2000 and 4150 of the California Fish and Game Code states that it is unlawful to take or possess a number of species, including bats, without a license or permit as required by Section 3007. Additionally, Title 14 of the California Code of Regulations states it is unlawful to harass, herd, or drive a number of species, including bats. To harass is defined as “an

intentional act which disrupts an animal's normal behavior patterns, which includes, but is not limited to, breeding, feeding or sheltering.”

### **3.2.9 Wetlands and Other Jurisdictional Waters**

Natural drainage channels and adjacent wetlands may be considered “waters of the United States” or “jurisdictional waters” subject to the jurisdiction of the USACE. The extent of jurisdiction has been defined in the Code of Federal Regulations but has also been subject to interpretation of the federal courts. Jurisdictional waters generally include:

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- All interstate waters including interstate wetlands;
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce;
- All impoundments of waters otherwise defined as waters of the United States under the definition;
- Tributaries of waters identified in paragraphs (a)(1)-(4) (i.e. the bulleted items above).

As determined by the United States Supreme Court in its 2001 *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (SWANCC) decision, channels and wetlands isolated from other jurisdictional waters cannot be considered jurisdictional on the basis of their use, hypothetical or observed, by migratory birds. Similarly, in its 2006 consolidated *Carabell/Rapanos* decision, the U.S. Supreme Court ruled that a significant nexus between a wetland and other navigable waters must exist for the wetland itself to be considered a navigable and therefore jurisdictional water.

The USACE regulates the filling or grading of jurisdictional waters under the authority of Section 404 of the Clean Water Act. The extent of jurisdiction within drainage channels is defined by “ordinary high water marks” on opposing channel banks. All activities that involve

the discharge of fill into jurisdictional waters are subject to the permit requirements of the USACE. Such permits are typically issued on the condition that the applicant agrees to provide mitigation that result in no net loss of wetland functions or values. No permit can be issued until the RWQCB issues a certification (or waiver of such certification) that the proposed activity will meet state water quality standards.

The filling of isolated wetlands, over which the USACE has disclaimed jurisdiction, is regulated by the RWQCB. It is unlawful to fill isolated wetlands without filing a Notice of Intent with the RWQCB. The RWQCB is also responsible for enforcing National Pollution Discharge Elimination System (NPDES) permits, including the General Construction Activity Storm Water Permit. All projects requiring federal money must also comply with Executive Order 11990 (Protection of Wetlands).

CDFW has jurisdiction over the bed and bank of natural drainages and lakes according to provisions of Section 1601 and 1602 of the California Fish and Game Code (2003). Activities that would disturb these waters are regulated by the CDFW via a Streambed Alteration Agreement. Such an agreement typically stipulates that certain measures will be implemented which protect the habitat values of the drainage in question.

### **3.3 ENVIRONMENTAL IMPACT/MITIGATION**

As described in Section 1.1, the proposed project is the construction of a turnout on Poso Canal and trenching of approximately 452 feet of pipeline, a short section of which crosses the SJR. All work in the river bed will occur when the river is dry. The following analysis of impacts assumes that nearly all impacts will be temporary impacts. The only permanent impacts associated with the project will be approximately 16 square feet, from the proposed concrete canal turnout. Potentially significant project impacts/effects to biological resources and associated mitigations to reduce the magnitudes of these impacts/effects are discussed below.

## **“Less Than Significant”/“Not Likely to Adversely Affect” Project Impacts**

### **3.3.1 Potential Project Impacts to Special Status Plant Species**

**Impact.** Sixteen special status vascular plant species are known to occur in the general project vicinity (see Table 2). Habitats required for these special status plants are absent and/or the project site is outside the species’ known range. Therefore, the proposed project will have no effect or impact on regional populations of any special status plants per the provisions of CEQA and NEPA.

**Mitigation.** No special status plant species are expected to occur in areas to be impacted on the site. Mitigations are not warranted.

### **3.3.2 Potential Project Impacts to Special Status Animal Species Absent or Unlikely to Occur on Site**

**Impact.** Thirty four special status animal species occur regionally (see Table 3). Of these 34 species, 18 species would not occur on the project site due to the absence of suitable habitat and/or the site’s being situated outside of their known range, and 6 species would be unlikely to occur on the project site due to the presence of very low quality habitat. These species include the conservancy fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, valley longhorn elderberry beetle, delta smelt, Central Valley steelhead, hardhead, Sacramento splittail, western spadefoot, western pond turtle, Blainville’s horned lizard, California tiger salamander, California red-legged frog, blunt-nosed leopard lizard, giant garter snake, bald eagle, American peregrine falcon, mountain plover, California spotted owl, short-eared owl, burrowing owl, American badger, Nelson’s antelope squirrel, and Fresno kangaroo rat. The proposed project would have no effect/impact on regional populations of these 24 species. However, should the site be colonized by California ground squirrels prior to construction, then it is remotely possible that burrowing owls could move onto the site, in which individual owls would be at risk of construction-related mortality. Section 3.3.10 addresses this impact and provides appropriate mitigation measures for reducing the impact to a “less than significant level” under CEQA and NEPA, and a “not likely to adversely affect” level under ESA.

**Mitigation.** Mitigation measures are not warranted.

### **3.3.3 Potential Project Impacts to Special Status Animal Species that May Forage on the Site, but would Breed Elsewhere**

**Impact.** Three special status avian species may occasionally forage within the site, but would breed elsewhere. These species include the golden eagle, northern harrier, and yellow-headed blackbird. The site does not provide regionally important foraging habitat for any of these species. Project construction may, at most, temporarily disrupt a small area of available foraging habitat. The project would not result in direct mortality of individuals of these species because these birds are highly mobile and would only potentially use the site for foraging. Therefore, the project would have a “less than significant” impact on these species under CEQA and NEPA and would be “not likely to adversely affect” these species under ESA.

**Mitigation.** Mitigation measures are not warranted.

### **3.3.4 Potential Project Impacts to Chinook Salmon**

**Impact.** As a result of SJRRP reintroduction efforts, both spring-run and fall-run Chinook salmon may occur in the reach of the SJR when it is flowing through the project site. However, these species would be absent from the project site during project construction, which will occur when this stretch of river is dry. Furthermore, the trenched area of the project site will result in less than a quarter of an acre of temporary impact to the dry river bed, which will be restored to pre-project contours. Additionally, mitigations to avoid adverse effects to water quality presented in Section 3.3.14 will assure indirect impacts to Chinook salmon from poor water quality will not occur. Therefore, the proposed project will have no effect or impact on spring-run and fall-run Chinook salmon per the provisions of CEQA and NEPA.

**Mitigation.** No mitigation is warranted.

### **3.3.5 Potential Project Impact to Designated Critical Habitat**

**Impact.** No designated USFWS Critical Habitat for federally listed species occurs on the project site or surrounding lands. Therefore, the project will have no effect/impact on designated Critical Habitat.

**Mitigation.** Mitigation measures are not warranted.



### **3.3.6 Potential Project Impact to Essential Fish Habitat**

Project construction will occur when the river channel is dry. The project is anticipated to result in less than a quarter of an acre of temporary disturbance to EFH. Additionally, pre-project contours will be restored and hydrologic conditions will not be permanently altered by the project. Chinook salmon spawning habitat is absent from the project site. For these reasons the proposed project will have no permanent adverse effect/impact on EFH per the provisions of CEQA and NEPA.

Nonetheless, Reclamation will consult with NMFS on the action's potential effects on EFH.

**Mitigation.** Mitigation measures are not warranted.

### **3.3.7 Potential Project Impact to Fish or Wildlife Movement Corridors**

**Impact.** The project site includes a short segment of the San Joaquin River corridor, which is a regionally important movement corridor for fish and wildlife species. Construction activities are expected to be brief and occur only during daylight hours. Nearly all terrestrial wildlife species, aside from avian species, engage in primarily nocturnal movements, and would, therefore, be unlikely to experience much disruption to their night time movements through the river corridor. At most, construction activities may result in only a brief disruption of native wildlife movements in this small section of the corridor. There would be no permanent impacts to the SJR and wildlife would be expected to resume normal movement patterns when construction is complete. Since construction will occur when the river is dry, impacts to fish movements will be absent. Therefore, the project will have a "less than significant" impact/effect on fish or wildlife movement corridors per the provisions of CEQA and NEPA.

**Mitigation.** Mitigation measures are not warranted.

### **3.3.8 Project Impacts to Waters of the U.S.**

**Impact.** The project is anticipated to result in less than a quarter of an acre of temporary disturbance to the SJR, a federally regulated water, and approximately 16 sq. ft. of permanent impact to the Poso Canal, a potential water of the U.S. After construction the river bed will be restored to its original contours. After the installation of the small concrete turnout structure the

Poso Canal will be restored to function in nearly the same manner as before construction. As a result, the project's impacts to waters of the U.S. will be "less than significant" under CEQA and NEPA. However, a Department of Army, Clean Water Act Permit (most likely a Nationwide Permit 12) will be required to lawfully construct all project components within OHW of the SJR and the Poso Canal. This nationwide permit requires preconstruction notification, compliance with general conditions of the permit, removal of temporary fills from jurisdictional areas, and preparation of a restoration plan and revegetation, as appropriate.

The USACE cannot issue a Clean Water Act permit until the RWQCB issues a Section 401 Water Quality Certification. As such, obtaining the certification from the RWQCB will also be required. Furthermore, CDFW requires notification and issuance of a Streambed Alteration Agreement prior to working within the San Joaquin River.

**Mitigation.** Mitigation measures are not warranted.

### **3.3.9 Consistency of Project with Local Ordinances Protecting Biological Resources**

**Impact.** The proposed project is designed to be consistent with policies of the County of Madera General Plan (1995) and County of Fresno General Plan (2000). This project will not be in conflict with any local policies or ordinances protecting biological resources.

**Mitigation.** Mitigation measures are not warranted.

### **"Less Than Significant"/"Not Likely to Adversely Affect" Project Impacts After Mitigation**

#### **3.3.10 Potential Project Impacts to Burrowing Owl**

**Impact.** Burrowing owls and burrows suitable for burrowing owls were not observed on the project site during the field survey. The project site offers only marginal foraging habitat for this species, and burrows of suitable dimensions for the burrowing owl were absent at the time of the field survey. Agricultural lands surrounding the site offer potentially suitable habitat for this species. The majority of project impacts will be temporary in nature. The small area of permanent impacts associated with Poso Canal turnout will be in ruderal roadside/canal habitats that would be marginal, at best, for the burrowing owl. Therefore, loss of habitat for the

burrowing owl would constitute a less than significant effect/impact of the project as defined by CEQA and NEPA.

Should California ground squirrels colonize the site before construction, it is remotely possible that one or more burrowing owls could move onto or immediately adjacent to the site, in which case they would be at risk of construction-related injury or mortality. These small raptors are protected under the Federal Migratory Bird Treaty Act and California Fish and Game Code. Mortality of individual owls would be a violation of state and federal law, and would constitute a significant impact of the project under CEQA and an adverse effect under NEPA.

**Mitigation.** Implementation of the following measures will reduce potential project impacts to the burrowing owl to a “less than significant” level under CEQA and NEPA.

- ***Mitigation Measure 3.3.10a: Pre-construction Surveys.*** A “take avoidance survey” as described in the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012) will be conducted by a qualified biologist for burrowing owls within 30 days of the onset of project activities involving ground disturbance or heavy equipment use. The survey area will include all suitable habitat on and within 500 feet of project impact areas, where accessible.
- ***Mitigation Measure 3.3.10b: Avoidance of Active Nests.*** If pre-construction surveys and subsequent project activities are undertaken during the breeding season (February 1-August 31) and active nest burrows are located within or near project impact areas, a 250-foot construction setback will be established around active owl nests, or alternate avoidance measures implemented in consultation with CDFW. The buffer areas will be enclosed with temporary fencing to prevent construction equipment and workers from entering the setback area. Buffers will remain in place for the duration of the breeding season, unless otherwise arranged with CDFW. After the breeding season (i.e. once all young have left the nest), passive relocation of any remaining owls may take place as described below.
- ***Mitigation Measure 3.3.10c: Passive Relocation of Resident Owls.*** During the non-breeding season (September 1-January 31), resident owls occupying burrows in project impact areas may be passively relocated to alternative habitat in accordance with a relocation plan prepared by a qualified biologist and approved by CDFW. Passive relocation may include one or more of the following elements: 1) establishing a minimum 50 foot buffer around all active burrowing owl burrows, 2) removing all suitable burrows outside the 50 foot buffer and up to 160 feet outside of the impact areas as necessary, 3) installing one-way doors on all potential owl burrows within the 50 foot buffer, 4) leaving one-way doors in place for 48 hours to ensure owls have vacated the burrows, and 5) removing the doors and excavating the remaining burrows within the 50 foot buffer.

### 3.3.11 Construction Mortality of the San Joaquin Kit Fox

**Potential Impacts.** As previously discussed, the project site offers only marginal foraging habitat for the San Joaquin kit fox and provides unsuitable denning habitat. No burrows of suitable dimensions for the San Joaquin kit fox were observed on the project site at the time of the field survey. Furthermore documented kit fox occurrences are absent from the project sight and surrounding lands. However, San Joaquin kit fox may utilize the SJR channel as a dispersal corridor from time to time.

If a kit fox were passing through the project site at the time of construction, then they would be at risk of construction-related mortality. As discussed, this species is listed as both federally and state endangered. In the absence of incidental take authorization by the USFWS and CDFW, construction mortality of the San Joaquin kit fox would constitute a violation of the state and federal Endangered Species Acts. Construction mortality of the San Joaquin kit fox would also constitute a significant impact of the project as defined by CEQA and an adverse effect of the project as defined by NEPA.

**Mitigation.** Prior to construction, all minimization measures contained in the U.S. Fish and Wildlife Service 2011 *Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* will be implemented (see Appendix E for a complete list of all minimization measures)

- **Mitigation Measure 3.3.11a (Pre-construction Surveys).** Pre-construction surveys shall be conducted no less than 14 days and no more than 30 days prior to the start of construction. These surveys will be conducted in accordance with the USFWS *Standard Recommendations*. The primary objective is to identify kit fox habitat features (e.g. potential dens and refugia) on the project site and evaluate their use by kit foxes through use of remote monitoring techniques such as motion-triggered cameras and tracking medium. If an active kit fox den is detected within or immediately adjacent to the area of work, the USFWS and CDFW shall be contacted immediately.
- **Mitigation Measure 3.3.11b (Avoidance).** Should an active kit fox den be detected within or immediately adjacent to the area of work, a minimum 50-foot disturbance-free buffer will be established around the den in consultation with the USFWS and CDFW, to be maintained until a qualified biologist has determined that the den is no

longer occupied. Known kit fox dens may not be destroyed until they have been vacant for a period of at least three days, as demonstrated by use of motion-triggered cameras or tracking medium, and then only after obtaining take authorization from the USFWS.

- ***Mitigation Measure 3.3.11c (Minimization).*** Construction activities shall be carried out in a manner that minimizes disturbance to kit foxes. Minimization measures include, but are not limited to: restriction of project-related vehicle traffic to established roads, construction areas, and other designated areas; inspection and covering of structures (e.g., pipes), as well as installation of escape structures, to prevent the inadvertent entrapment of kit foxes; restriction of rodenticide and herbicide use; and proper disposal of food items and trash.
- ***Mitigation Measure 3.3.11d (Employee Education Program).*** Prior to the start of construction, the applicant will retain a qualified biologist to conduct one tailgate meeting to train construction staff that will be involved with the project on the San Joaquin kit fox. This training will include a description of the kit fox and its habitat needs; a report of the occurrence of kit fox in the project area; an explanation of the status of the species and its protection under the Endangered Species Act; and a list of the measures being taken to reduce impacts to the species during project construction. The training will include a hand out with all of the training information included in it. The project manager will use this handout to train any additional construction staff that were not in attendance at the first meeting, prior to starting work on the project.
- ***Mitigation Measure 3.3.11e (Mortality Reporting).*** The Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW will be notified in writing within three working days in case of the accidental death or injury of a San Joaquin kit fox during project-related activities. Notification must include the date, time, location of the incident or of the finding of a dead or injured animal, and any other pertinent information.

Implementation of these measures will reduce potentially significant project impacts to the San Joaquin kit fox to a “less than significant” level under CEQA and NEPA, a “not likely to adversely affect” level under ESA, and ensure compliance with state and federal laws protecting this species.

### **3.3.12 Potential Project Impact to Nesting Birds**

**Impact.** The project site provides nesting habitat for numerous bird species protected under the federal Migratory Bird Treaty Act and related state laws. Special status bird species potentially nesting within the project site are the Swainson’s hawk, which is afforded additional protections under the California Endangered Species Act, the white-tailed kite, which is California Fully

Protected, and the loggerhead shrike and tricolored blackbird, which are California Species of Special Concern. However, onsite nesting habitat is marginal for the Swainson's hawk, white-tailed kite, and tricolored blackbird. In the event that special status or other migratory birds were to be nesting on or in close proximity of the project site at the time of construction, individuals would be at risk of construction-related injury or mortality. In addition to direct "take" of nesting birds, project activities could disturb birds nesting within and adjacent to work areas such that they would abandon their nests. Project activities that adversely affect the nesting success of raptors and migratory birds or result in the mortality of individual birds constitute a violation of state and federal laws and represent a potentially significant adverse environmental effect/impact of the project as defined by NEPA and CEQA.

**Mitigation.** In order to minimize construction disturbance to migratory bird nests, the applicant will implement one or more of the following measure(s) as necessary, prior to project construction:

- ***Mitigation Measure 3.3.12a: Avoidance.*** If feasible, project activities will occur outside of the typical avian nesting season, or between September 1 and January 31. If the project is constructed entirely outside of the nesting season, there will be no impacts to nesting birds, and no further mitigation is required.
- ***Mitigation Measure 3.3.12b: Pre-construction Surveys.*** If project activities must occur during the nesting season, a pre-construction survey shall be conducted by a qualified biologist for nesting birds within 30 days of the onset of construction. The survey will include the project site and surrounding lands within a radius of one half-mile for the Swainson's hawk and white-tailed kite, and a radius of 500 feet for all other avian species.
- ***Mitigation Measure 3.3.12c: Establish Buffers.*** Should any active nests be discovered, the biologist will determine appropriate construction setback distances based on applicable CDFW guidelines and/or the biology of the affected species. Construction-free buffers will be identified on the ground with flagging, fencing, or by other easily visible means, and will be maintained until the biologist has determined that the young have fledged.

Implementation of these measures will reduce potential project impacts to nesting migratory birds to a "less than significant" level under CEQA and NEPA, as well as ensure compliance with state and federal laws protecting these species.

### 3.3.13 Potential Project Impact to Natural Communities of Special Concern

**Impact.** As discussed in Section 2.11, the riparian habitat of the site is considered a natural community of special concern. The project will avoid impacts to all riparian trees, if feasible; however, there is some potential for effects/impacts to riparian habitat to occur.

**Mitigation.** The following measures will be implemented to mitigate any potential impacts to riparian and other sensitive habitats during construction of the project.

- ***Mitigation Measure 3.3.13a. (Tree Survey).*** Prior to project construction a qualified biologist will survey all trees with a diameter at breast height (DBH) greater than 4 inches within the project impact area. During the survey the biologist will note the location, DBH, and species of each tree. Upon project completion a qualified biologist will survey the site to determine if any surveyed trees were removed.
- ***Mitigation Measure 3.3.13b. (Revegetation of Disturbed Areas).*** After construction, all disturbed areas will be restored to approximate pre-project conditions. The herbaceous vegetation within the river bottom and quick growing riparian shrub species (i.e. California rose and sandbar willow) that dominate the river banks are anticipated to revegetate naturally from adjacent root masses.

The applicant will provide compensation for removal of riparian trees with a DBH of more than 4 inches. Replacement planting will be implemented at a ratio of 3:1 for trees with a DBH between 4-24 inches, and at a ratio of 10:1 for trees with a DBH greater than 24 inches. Species chosen for the plant palette will include native riparian trees such as valley oaks, Oregon ash and Fremont's cottonwoods. These trees will be planted as container plants and/or cuttings. If possible, cuttings will be gathered from lands fronting the San Joaquin River. All planting material will be installed in the late fall or early winter. All plantings will be monitored annually for a minimum of five years. A revegetation plan will be completed for the project which will detail the maintenance, monitoring, performance criteria and success rate for trees planted within the project site.

Implementation of these measures will reduce potential project impacts to riparian and sensitive habitats to a "less than significant" level under CEQA and NEPA.

### 3.3.14 Degradation of Water Quality in Downstream Waters

**Impact.** Trenching required by the proposed project could result in increased sediment loads entering the SJR. Project elements such as recontouring after construction, removing spoils, and reseeding with native species approved by a biologist will reduce impacts to downstream water

quality. However, project activities still pose a potential effect/impact to downstream water quality.

**Mitigation.** The following measures are designed to reduce soil erosion on the project site during construction and the concomitant deposition of sediment into the SJR and other downstream waters.

- ***Mitigation Measure 3.3.14a (Preparation and implementation of erosion control plan):*** Prior to the onset of construction, an erosion control plan will be prepared by a qualified engineer consistent with the requirements of a General Construction Permit (an NPDES permit issued by the Regional Water Quality Control Board for Projects in which one or more acres of land are graded). Typically, specified erosion control measures must be implemented prior to the onset of the rainy season. The site must then be monitored periodically throughout the rainy season to ensure that the erosion control measures are successfully preventing onsite erosion and the concomitant deposition of sediment into jurisdictional waters. Elements of this plan would address both the potential for soil erosion and non-point source pollution. At a minimum, elements of an erosion control plan typically include the following:
  - 1) Protection of exposed graded slopes and/or temporary sidecast soils from sheet, rill and gully erosion. Such protection could be in the form of erosion control fabric or sheeting, straw wattles, post-construction hydromulch containing the seed of native soil-binding plants, or straw mechanically embedded in exposed soils.
  - 2) Use of best management practices (BMPs) to control soil erosion and non-point source pollution.

***Mitigation Measure 3.3.1.3b (Time construction to occur during the dry season):*** Where possible, project construction will be confined to the dry season, when the chance for significant rainfall and stormwater runoff is very low. Construction during the spring, summer, and fall will not eliminate the need to implement erosion control measures described in Mitigation Measure 3.3.14a, but will ensure that the potential for soil erosion has been minimized to the maximum extent feasible.

Compliance with these measures would reduce project impacts to water quality in downstream waters to a “less than significant” level under CEQA and NEPA.



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**APPENDIX A: VASCULAR PLANTS OF THE  
PROJECT SITE**

## APPENDIX A: VASCULAR PLANTS OF THE PROJECT SITE

The plants species listed below were observed on the project site during surveys conducted by Live Oak Associates, Inc. on November 9, 2015. The U.S. Fish and Wildlife Service wetland indicator status of each plant has been shown following its common name.

OBL - Obligate  
 FACW - Facultative Wetland  
 FAC - Facultative  
 FACU - Facultative Upland  
 UPL - Upland

### APIACEAE – Carrot Family

<i>Conium maculatum</i>	Poison Hemlock	FACW
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### ASTERACEAE - Sunflower Family

<i>Ambrosia acanthicarpa</i>	Annual Bursage	UPL
<i>Artemisia douglasiana</i>	Mugwort	FAC
<i>Erigeron canadensis</i>	Canada Horseweed	FACU
<i>Heterotheca grandiflora</i>	Telegraph Weed	UPL
<i>Pseudognaphalium luteoalbum</i>	Jersey Cudweed	FAC
<i>Silybum marianum</i>	Milk Thistle	UPL
<i>Stephanomeria exigua</i>	Small Wirelettuce	UPL
<i>Xanthium strumarium</i>	Rough Cocklebur	FAC

### BORAGINACEAE – Borage Family

<i>Amsinckia sp.</i>	Fiddleneck	UPL
<i>Heliotropium curassavicum</i>	Heliotrope	FACU

### BRASSICACEAE – Mustard Family

<i>Brassica nigra</i>	Black Mustard	UPL
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### CHENOPODIACEAE – Goosefoot Family

<i>Atriplex serenana</i> var. <i>serenana</i>	Bractscale	FAC
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### CYPERACEAE- Sedge Family

<i>Carex</i> sp.	Sedge	OBL
<i>Cyperus</i> sp.	Umbrella Sedge	FACW or OBL

### JUNCACEAE – Rush Family

<i>Juncus</i> sp.	Rush	FACW
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### LAMIACEAE – Mint Family

<i>Marrubium vulgare</i>	Common Horehound	UPL
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### MALVACEAE – Mallow Family

<i>Malva</i> sp.	Cheeseweed	UPL
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### OLEACEAE – Ash Family

<i>Fraxinus latifolia</i>	Oregon Ash	FACW
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### POACEAE - Grass Family

<i>Bromus diandrus</i>	Ripgut	UPL
<i>Bromus hordeaceus</i>	Soft Chess	FACU
<i>Bromus madritensis rubens</i>	Red Brome	UPL
<i>Cynodon dactylon</i>	Bermuda Grass	FACU
<i>Distichlis spicata</i>	Salt Grass	FAC
<i>Leptochloa uninerva</i>	Mexican Sprangletop	UPL
<i>Polypogon monspeliensis</i>	Rabbitsfoot Grass	FACW

**POLYGONACEAE – Smartweed Family**

*Rumex crispus*

Curly Dock

FAC

**ROSACEAE – Rose Family**

*Rosa californica*

California Wild Rosa

FAC

*Rubus ursinus*

California Blackberry

FAC

**RUBIACEAE – Madder Family**

*Cephalanthus occidentalis*

Button Willow

OBL

**SALICACEAE – Willow Family**

*Salix exigua*

Sandbar Willow

FACW

*Salix gooddingii*

Goodding's Black Willow

FACW

**SOLANACEAE - Nightshade Family**

*Datura wrightii*

Jimson Weed

UPL

**URTICACEAE- Nettle Family**

*Urtica dioica* ssp. *holericea*

Stinging Nettle

FAC

**VISCACEAE – Mistletoe Family**

*Phoradendron* sp.

Mistletoe

UPL

**APPENDIX B: TERRESTRIAL VERTEBRATE SPECIES THAT POTENTIALLY  
OCCUR ON THE SITE**

**APPENDIX B**  
**TERRESTRIAL VERTEBRATE SPECIES THAT MAY OCCUR**  
**ON THE SITE**

The species listed below are those that may reasonably be expected to use or pass through the habitats of the site. The list was not intended to include birds that are vagrants or occasional transients. Its purpose is rather to include those species that may be expected to routinely and predictably use or pass through the project site during some or all of the year. An asterisk denotes a species observed on or immediately adjacent to the site during LOA's survey conducted on November 9, 2015.

**CLASS: AMPHIBIA**

**ORDER: SALIENTIA (Frogs and Toads)**

**FAMILY: BUFONIDAE**

Western Toad (*Bufo boreas*)

**FAMILY: HYLIDAE (Treefrogs and Relatives)**

Pacific Treefrog (*Pseudacris regilla*)

**CLASS: REPTILIA**

**ORDER: SQUAMATA (Lizards and Snakes)**

**SUBORDER: SAURIA (Lizards)**

**FAMILY: PHRYNOSOMATIDAE**

Western Fence Lizard (*Sceloporus occidentalis*)

Side Blotched Lizard (*Uta stansburiana*)

**FAMILY: TEIIDAE (Whiptails and relatives)**

Western Whiptail (*Cnemidophorus tigris*)

**SUBORDER: SERPENTES (Snakes)**

**FAMILY: COLUBRIDAE (Colubrids)**

Ringneck Snake (*Diadophis punctatus*)

Striped Racer (*Coluber lateralis*)

Gopher Snake (*Pituophis melanoleucus*)

Glossy snake (*Arizona elegans*)

Common Kingsnake (*Lampropeltis getulus*)

Common Garter Snake (*Thamnophis sirtalis*)

**FAMILY: VIPERIDAE**

Western Rattlesnake (*Crotalus viridis*)

**CLASS: AVES**

**ORDER: CICONIIFORMES (Herons, Storks, Ibises and Relatives)**

**FAMILY: ARDEIDAE (Herons and Egrets)**

Great Egret (*Casmerodius albus*)

\*Great Blue Heron (*Ardea herodias*)

Snowy Egret (*Egretta thula*)

Green Heron (*Butorides virescens*)

Black-Crowned Night Heron (*Nycticorax nycticorax*)

**FAMILY: CATHARTIDAE (New World Vultures)**

Turkey Vulture (*Cathartes aura*)

**ORDER: ANSERIFORMES (Screamers, Ducks and Relatives)**

**FAMILY: ANATIDAE (Swans, Geese and Ducks)**

Canada Goose (*Branta canadensis*)

Mallard (*Anas platyrhynchos*)

Cinnamon Teal (*Anas cyanoptera*)

Common Merganser (*Mergus merganser*)

**ORDER: FALCONIFORMES (Vultures, Hawks, and Falcons)**

**FAMILY: ACCIPITRIDAE (Hawks, Old World Vultures, and Harriers)**

White Tailed Kite (*Elanus leucurus*)

Northern Harrier (*Circus cyaneus*)

Sharp-shinned Hawk (*Accipiter striatus*)

Cooper's Hawk (*Accipiter cooperi*)

Red-shouldered Hawk (*Buteo lineatus*)

Swainson's Hawk (*Buteo swainsoni*)

\*Red-tailed Hawk (*Buteo jamaicensis*)

Ferruginous Hawk (*Buteo regalis*)

Rough-legged Hawk (*Buteo lagopus*)

\*Golden Eagle (*Aquila chrysaetos*)

**FAMILY: FALCONIDAE (Caracaras and Falcons)**

American Kestrel (*Falco sparverius*)

Merlin (*Falco columbarius*)

Prairie Falcon (*Falco mexicanus*)

**ORDER: GRUIFORMES (Cranes and Rails)**

**FAMILY: RALLIDAE (Rails)**

American Coot (*Fulica americana*)

**ORDER: CHARADRIIFORMES (Plovers, Sandpipers, Gulls, and Terns)**

**FAMILY: CHARADRIIDAE (Plovers)**

\*Killdeer (*Charadrius vociferus*)

**FAMILY: RECURVIROSTRIDAE (Avocets and Stilts)**

Black-Necked Stilt (*Himantopus mexicanus*)

American Avocet (*Recurvirostra americana*)

**FAMILY: SCOLOPACIDAE (Sandpipers)**

Greater Yellowlegs (*Tringa melanoleuca*)

Spotted Sandpiper (*Actitis macularia*)

Long-billed Dowitcher (*Limnodromus scolopaceus*)

Least Sandpiper (*Calidris bairdii*)

**FAMILY: LARIDAE (Skuas, Gulls, Terns and Skimmers)**

Ring-Billed Gull (*Larus delawarensis*)

California Gull (*Larus californicus*)

Herring Gull (*Larus argentatus*)

**ORDER: COLUMBIFORMES (Pigeons and Doves)**

**FAMILY: COLUMBIDAE (Pigeons and Doves)**

Rock Pigeon (*Columba livia*)

\*Mourning Dove (*Zenaida macroura*)

**ORDER: STRIGIFORMES (Owls)**



**FAMILY: TYTONIDAE (Barn Owls)**

Barn Owl (*Tyto alba*)

**FAMILY: STRIGIDAE (Typical Owls)**

Western Screech Owl (*Otus kennicottii*)

Great Horned Owl (*Bubo virginianus*)

Burrowing Owl (*Athene cunicularia*)

**ORDER: CAPRIMULGIFORMES (Goatsuckers and relatives)**

**FAMILY: CAPRIMULGIDAE (Goatsuckers)**

Lesser Nighthawk (*Chordeiles acutipennis*)

**ORDER: APODIFORMES (Swifts and Hummingbirds)**

**FAMILY: TROCHILIDAE (Hummingbirds)**

Anna's Hummingbird (*Calypte anna*)

Black-chinned Hummingbird (*Archilochus alexandri*)

**ORDER: PICIFORMES (Woodpeckers and Relatives)**

**FAMILY: PICIDAE (Woodpeckers and Wrynecks)**

Red-Breasted Sapsucker (*Sphyrapicus ruber*)

Nuttall's Woodpecker (*Picoides nuttallii*)

Downy Woodpecker (*Picoides pubescens*)

\*Northern Flicker (*Colaptes auratus*)

**ORDER: PASSERIFORMES (Perching Birds)**

**FAMILY: TYRANNIDAE (Tyrant Flycatchers)**

Western Wood-Pewee (*Contopus sordidulus*)

Pacific-Slope Flycatcher (*Empidonax difficilis*)

\*Black Phoebe (*Sayornis nigricans*)

\*Say's Phoebe (*Sayornis saya*)

Ash-Throated Flycatcher (*Myiarchus cinerascens*)

Western Kingbird (*Tyrannus verticalis*)

**FAMILY: LANIIDAE (Shrikes)**

\*Loggerhead Shrike (*Lanius ludovicianus*)

**FAMILY: CORVIDAE (Jays, Magpies, and Crows)**

\*Western Scrub-Jay (*Aphelocoma californica*)

\*American Crow (*Corvus brachyrhynchos*)

\*Common Raven (*Corvus corax*)

**FAMILY: ALAUDIDAE (Larks)**

Horned Lark (*Eremophila alpestris*)

**FAMILY: HIRUNDINIDAE (Swallows)**

Violet-green Swallow (*Tachycineta thalassina*)

Northern Rough-winged Swallow (*Stelgidopteryx serripennis*)

Barn Swallow (*Hirundo rustica*)

Cliff Swallow (*Petrochelidon pyrrhonota*)

**FAMILY: AEGITHALIDAE (Bushtit)**

\*Bushtit (*Psaltiriparus minimus*)

**FAMILY: TROGLODYTIDAE (Wrens)**

Rock Wren (*Salpinctes obsoletus*)

Bewick's Wren (*Thryomanes bewickii*)

House Wren (*Troglodytes aedon*)

**FAMILY: REGULIDAE (Kinglets)**

\*Ruby-Crowned Kinglet (*Regulus calendula*)

**FAMILY: SYLVIIDAE (Old World Warblers and Gnatcatchers)**

\*Blue-Gray Gnatcatcher (*Polioptila caerulea*)

**FAMILY: TURDIDAE (Thrushes)**

Western Bluebird (*Sialia mexicana*)

Mountain Bluebird (*Sialia currucoides*)

Hermit Thrush (*Catharus guttatus*)

American Robin (*Turdus migratorius*)

**FAMILY: MIMIDAE (Mockingbirds and Thrashers)**

\*Northern Mockingbird (*Mimus polyglottos*)

**FAMILY: STURNIDAE (Starlings and Allies)**

European Starling (*Sturnus vulgaris*)

**FAMILY: MOTACILLIDAE (Wagtails and Pipits)**

American Pipit (*Anthus rubescens*)

**FAMILY: BOMBYCILLIDAE (Waxwings)**

Cedar Waxwing (*Bombycilla cedrorum*)

**FAMILY: PTILOGONATIDAE (Silky Flycatchers)**

Phainopepla (*Phainopepla nitens*)

**FAMILY: PARULIDAE (Wood Warblers and Relatives)**

Orange-Crowned Warbler (*Vermivora celata*)

Yellow Warbler (*Dendroica petechia*)

\*Yellow-Rumped Warbler (*Dendroica coronata*)

Common Yellowthroat (*Geothlypis trichas*)

Wilson's Warbler (*Wilsonia pusilla*)

**FAMILY: EMBERIZIDAE (Emberizines)**

Lark Sparrow (*Chondestes grammacus*)

\*Savannah Sparrow (*Passerculus sandwichensis*)

Song Sparrow (*Melospiza melodia*)

Lincoln's Sparrow (*Melospiza lincolnii*)

White-Crowned Sparrow (*Zonotrichia leucophrys*)

Golden-Crowned Sparrow (*Zonotrichia atricapilla*)

Dark-Eyed Junco (*Junco hyemalis*)

**FAMILY: CARDINALIDAE (Cardinals, Grosbeaks and Allies)**

Black-Headed Grosbeak (*Pheucticus melanocephalus*)

Blue Grosbeak (*Passerina caerulea*)

Lazuli Bunting (*Passerina amoena*)

**FAMILY: ICTERIDAE (Blackbirds, Orioles and Allies)**

Red-Winged Blackbird (*Agelaius phoeniceus*)

Tricolored Blackbird (*Agelaius tricolor*)

Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*)

\*Western Meadowlark (*Sturnella neglecta*)

Brewer's Blackbird (*Euphagus cyanocephalus*)

Great-Tailed Grackle (*Quiscalus mexicanus*)

Brown-Headed Cowbird (*Molothrus ater*)

Bullock's Oriole (*Icterus bullockii*)

**FAMILY: FRINGILLIDAE (Finches)**

House Finch (*Carpodacus mexicanus*)

Lesser Goldfinch (*Carduelis psaltria*)

American Goldfinch (*Carduelis tristis*)

**FAMILY: PASSERIDAE (Old World Sparrows)**

House Sparrow (*Passer domesticus*)

**CLASS: MAMMALIA**

**ORDER: DIDELPHIMORPHIA (Marsupials)**

**FAMILY: DIDELPHIDAE (Opossums)**

Virginia Opossum (*Didelphis virginiana*)

**ORDER: INSECTIVORA (Shrews and Moles)**

**FAMILY: TALPIDAE (Moles)**

Broad-footed Mole (*Scapanus latimanus*)

**ORDER: CHIROPTERA (Bats)**

**FAMILY: VESPERTILIONIDAE (Vespertilionid Bats)**

Yuma Myotis (*Myotis yumanensis*)

Long-eared Myotis, (*Myotis evotis*)

Fringed Myotis (*Myotis thysanodes*)

California Myotis (*Myotis californicus*)

Long-legged Myotis (*Myotis volans*)

Small-footed Myotis (*Myotis leibii*)

Hoary Bat (*Lasiurus cinereus*)

Big Brown Bat (*Eptesicus fuscus*)

**ORDER: LAGOMORPHA (Rabbits, Hares, and Pikas)**

**FAMILY: LEPORIDAE (Rabbits and Hares)**

\*Audubon's Cottontail (*Sylvilagus audubonii*)

Black-Tailed Jackrabbit (*Lepus californicus*)

**ORDER: RODENTIA (Squirrels, Rats, Mice, and Relatives)**

**FAMILY: SCIURIDAE (Squirrels, Chipmunks, and Marmots)**

California Ground Squirrel (*Spermophilus beecheyi*)

**FAMILY: GEOMYIDAE (Pocket Gophers)**

\*Botta's Pocket Gopher (*Thomomys bottae*)

**FAMILY: HETEROMYIDAE**

California Pocket Mouse (*Chaetodipus californicus*)

Heermann's Kangaroo Rat (*Dipodomys heermanni*)

**FAMILY: MURIDAE (Mice, Rats and Voles)**

Western Harvest Mouse (*Reithrodontomys megalotis*)

California Mouse (*Peromyscus californicus*)

Deer Mouse (*Peromyscus maniculatus*)

Brush Mouse (*Peromyscus boylii*)

Dusky-footed Woodrat (*Neotoma fuscipes*)

House Mouse (*Mus musculus*)

**ORDER: CARNIVORA (Carnivores)**

**FAMILY: CANIDAE (Foxes, Wolves, and Relatives)**

Coyote (*Canis latrans*)

Gray Fox (*Urocyon cinereoargenteus*)

San Joaquin Kit Fox (*Vulpes macrotis mutica*) (

**FAMILY: PROCYONIDAE (Raccoons and Relatives)**

Raccoon (*Procyon lotor*)

**FAMILY: MEPHITIDAE**

Striped Skunk (*Mephitis mephitis*)

**FAMILY: FELIDAE**

Feral Cat (*Felis catus*)

Bobcat (*Felis rufus*)

## **APPENDIX C: SELECTED PHOTOGRAPHS OF THE PROJECT SITE**



**Photo 1. SJR bed at pipeline crossing.**



**Photo 2. Riparian trees within pipeline alignment.**





**Photo 3. Poso Canal.**



**Photo 4. Project staging area.**

## **APPENDIX D: FRESNO AND MADERA COUNTY GENERAL PLANS**



## SECTION 5

### AGRICULTURAL AND NATURAL RESOURCES

#### A. AGRICULTURE

**Goal 5.A:** To designate adequate agricultural land and promote development of agricultural uses to support the continued viability of Madera County's agricultural economy.

##### **Agricultural Land Use Policies**

- 5.A.1. The County shall maintain agriculturally-designated areas for agricultural uses and direct urban uses to designated new growth areas, existing communities, and/or cities.
- 5.A.2. The County shall discourage the conversion of prime agricultural land to urban uses unless an immediate and clear need can be demonstrated that indicates a lack of land for non-agricultural uses.
- 5.A.3. The County shall seek to ensure that new development and public works projects do not encourage further expansion of urban uses into designated agricultural areas.
- 5.A.4. The County will maintain large-parcel agricultural zoning and prohibit the subdivision of agricultural lands into parcels smaller than permitted by the zoning.
- 5.A.5. The County shall allow the conversion of existing agricultural land to urban uses only within designated urban and rural residential areas, new growth areas, and within city spheres of influence where designated for urban development on the General Plan *Land Use Diagram*.
- 5.A.6. The County shall encourage continued and, where possible, increased agricultural activities on lands designated for agricultural uses.
- 5.A.7. The County shall encourage agricultural soil conservation practices such as crop rotation, cover crops, and coordinated disking times to reduce wind erosion. The County shall also encourage farmers and ranchers to develop farm or ranch plans with the appropriate U.S. Soil Conservation Service district office.
- 5.A.8. The County shall encourage land improvement programs to increase soil productivity in those agriculturally-designated areas containing lesser quality soils.
- 5.A.9. The County shall encourage infill development in urban areas as an alternative to expanding urban boundaries into agriculturally-designated areas.
- 5.A.10. The County shall support merging or reversion to acreage of substandard lots in "paper subdivisions" in agriculturally-designated areas under the same ownership and not being used as separate parcels.
- 5.A.11. The County shall facilitate agricultural production by allowing agricultural service uses (i.e., commercial and industrial uses) to locate in agriculturally-designated areas if they relate to the

primary agricultural activity in the area. The County shall use the following guidelines to analyze the suitability of a proposed agricultural service use:

- a. The use will not adversely affect agricultural production in the area;
- b. The use supports local agricultural production; and
- c. It is compatible with existing agricultural activities and residential uses in the area.

- 5.A.12. The County shall actively encourage enrollments of agricultural lands in its Williamson Act program, particularly on the edges of new growth areas.

#### **Land Use Conflict Policies**

- 5.A.13. The County shall require development within or adjacent to designated agricultural areas to incorporate design, construction, and maintenance techniques that protect agriculture and minimize conflicts with adjacent agricultural uses.
- 5.A.14. The County shall continue to enforce the provisions of its *Right-to-Farm Ordinance* and of the existing state nuisance law.
- 5.A.15. The County shall encourage educational programs to inform Madera County residents of the importance of protecting farmland.

#### **Economic Viability of Agriculture Policies**

- 5.A.16. The County shall support opportunities to promote and market agricultural products grown or processed within Madera County (such as farmers' markets) as a part of the economic development activities of local agencies.
- 5.A.17. The County shall permit a wide variety of promotional and marketing activities for county-grown products in all agricultural zone districts.
- 5.A.18. The County shall permit on-farm product handling and selling. The County shall permit stands for the sale of agricultural products in any agricultural land use designation to promote and market those agricultural products grown or processed in Madera County. Secondary and incidental sales of agricultural products grown elsewhere may be permitted subject to appropriate approvals.
- 5.A.19. The County shall ensure that land use regulations do not arbitrarily restrict potential agricultural-related enterprises which could provide supplemental sources of income for farm operators.

### **B. FOREST RESOURCES**

- Goal 5.B:** To conserve Madera County's forest resources, enhance the quality and diversity of forest ecosystems, reduce conflicts between forestry and other uses, and encourage a sustained yield of forest products.

#### **Policies**

- 5.B.1. The County shall encourage the sustained productive use of forest land as a means of providing open space and conserving other natural resources.

- 5.B.2. The County shall discourage development that conflicts with timberland management.
- 5.B.3. The County shall work closely and coordinate with agencies involved in the regulation of timber harvest operations to ensure that County conservation goals are achieved.
- 5.B.4. The County shall encourage qualified landowners to enroll in the Timberland Production Zone (TPZ) program.
- 5.B.5. The County shall encourage and promote the productive use of wood waste generated in the county.
- 5.B.6. The County shall encourage and support conservation programs to reforest private timberlands.

### C. WATER RESOURCES

**Goal 5.C:** To protect and enhance the natural qualities of Madera County's streams, creeks and groundwater.

#### Policies

- 5.C.1. The County shall protect preserve areas with prime percolation capabilities and minimize placement of potential sources of pollution in such areas.
- 5.C.2. The County shall minimize sedimentation and erosion through control of grading, cutting of trees, removal of vegetation, placement of roads and bridges, and use of off-road vehicles. The County shall discourage grading activities during the rainy season, unless adequately mitigated, to avoid sedimentation of creeks and damage to riparian habitat.
- 5.C.3. The County shall require new development of facilities near rivers, creeks, reservoirs, or substantial aquifer recharge areas to mitigate any potential impacts of release of pollutants in flood waters, flowing river, stream, creek, or reservoir waters.
- 5.C.4. The County shall require the use of feasible and practical best management practices (BMPs) to protect streams from the adverse effects of construction activities, and shall encourage the urban storm drainage systems and agricultural activities to use BMPs.
- 5.C.5. The County shall approve only wastewater disposal facilities that will not contaminate groundwater or surface water.
- 5.C.6. The County shall require that natural watercourses are integrated into new development in such a way that they are accessible to the public and provide a positive visual element.
- 5.C.7. The County shall protect groundwater resources from contamination and further overdraft by encouraging water conservation efforts and supporting the use of surface water for urban and agricultural uses wherever feasible.
- 5.C.8. The County shall support the policies of the San Joaquin River Parkway Plan to protect the San Joaquin River as an aquatic habitat and a water source.

[See also policies/programs under 3.C. Water Supply and Delivery, starting on page 39; 3.E. Stormwater Drainage and Flood Control, starting on page 41; and 6.B. Flood Hazards, starting on page 66]

### Implementation Programs

- 5.1. The County shall inform the public and prospective developers about those sections of the *California Fish and Game Code* that apply to diversion or obstruction of stream channels and pollution of waterways with detrimental material. This shall be done through distribution of educational materials with building permits and as a part of project review.

Responsibility:	Engineering Department, Building Division
Time Frame:	Ongoing
Funding:	Permit fees

### D. WETLAND AND RIPARIAN AREAS

**Goal 5.D:** To protect wetland communities and related riparian areas throughout Madera County as valuable resources.

#### Policies

- 5.D.1. The County shall comply with the wetlands policies of the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and the California Department of Fish and Game. Coordination with these agencies at all levels of project review shall continue to ensure that appropriate mitigation measures and the concerns of these agencies are adequately addressed.
- 5.D.2. The County shall require new development to mitigate wetland loss in both regulated and non-regulated wetlands through any combination of avoidance, minimization, or compensation. The County shall support mitigation banking programs that can provide the opportunity to mitigate impacts to rare, threatened, and endangered species and/or the habitat which supports these species in wetland and riparian areas.
- 5.D.3. Development should be designed in such a manner that pollutants and siltation will not significantly adversely affect the value or function of wetlands.
- 5.D.4. The County shall require riparian protection zones around natural watercourses. Riparian protection zones shall include the bed and bank of both low and high flow channels and associated riparian vegetation, the band of riparian vegetation outside the high flow channel, and buffers of 100 feet in width as measured from the top of bank of unvegetated channels and 50 feet in width as measured from the outer edge for the canopy of riparian vegetation. Exceptions may be made in existing developed areas where existing development and lots are located within the setback areas.
- 5.D.5. The County shall strive to identify and conserve remaining upland habitat areas adjacent to wetlands and riparian areas that are critical to the feeding or nesting of wildlife species associated with these wetland and riparian areas.
- 5.D.6. The County shall require new private or public developments to preserve and enhance existing native riparian habitat unless public safety concerns require removal of habitat for flood control



or other public purposes. In cases where new private or public development results in modification or destruction of riparian habitat for purposes of flood control, the developers shall be responsible for creating new riparian habitats within or near the project area at a ratio of three acres of new habitat for every acre destroyed.

- 5.D.7. The County shall support the management of wetland and riparian plant communities for passive recreation, groundwater recharge, nutrient catchment, and wildlife habitats. Such communities shall be restored, where possible.
- 5.D.8. The County shall support the goals and policies of the San Joaquin River Parkway Plan to preserve existing habitat and maintain, enhance, or restore native vegetation to provide essentially continuous riparian and upland habitat for wildlife along the river between Friant Dam and the Highway 145 crossing.

### **Implementation Programs**

- 5.2. The County shall work toward the acquisition by public or private, non-profit conservation organizations of creek corridors, wetlands, and areas rich in wildlife or of a fragile ecological nature as public open space where such areas cannot be effectively preserved through the regulatory process. Such protection may take the form of fee acquisition or protective easements and may be carried out in cooperation with other local, state, and federal agencies and private entities. Acquisition should include provisions for maintenance and management in perpetuity.

Responsibility:	Engineering Department Planning Department Board of Supervisors
Time Frame:	Ongoing
Funding:	Mitigation fees State and federal grants

- 5.3. The County shall adopt an ordinance for riparian protection zones identifying allowable activities in riparian protection zones and allowable mitigation techniques.

Responsibility:	Planning Department
Time Frame:	FY 97-98
Funding:	General Fund

### **E. FISH AND WILDLIFE HABITAT**

- Goal 5.E:** To protect, restore, and enhance habitats that support fish and wildlife species so as to maintain populations at viable levels.

#### **Policies**

- 5.E.1. The County shall identify and protect critical nesting and foraging areas, important spawning grounds, migratory routes, waterfowl resting areas, oak woodlands, wildlife movement corridors, and other unique wildlife habitats critical to protecting and sustaining wildlife populations.

- 5.E.2. The County shall require development in areas known to have particular value for wildlife to be carefully planned and, where possible, located so that the reasonable value of the habitat for wildlife is maintained.
- 5.E.3. The County shall encourage private landowners to adopt sound wildlife habitat management practices, as recommended by the California Department of Fish and Game officials and the U.S. Fish and Wildlife Service.
- 5.E.4. The County shall support preservation of the habitats of rare, threatened, endangered, and/or other special status species. The County shall consider developing a formal habitat conservation plan in consultation with federal and state agencies, as well as other resource conservation organizations. Such a plan would provide a mechanism for the acquisition and management of lands supported by threatened and endangered species.
- 5.E.5. The County shall support the maintenance of suitable habitats for all indigenous species of wildlife through maintenance of habitat diversity.
- 5.E.6. The County shall ensure the conservation of sufficiently large, continuous expanses of native vegetation to provide suitable habitat for maintaining abundant and diverse wildlife, if this preservation does not threaten the economic well-being of the county.
- 5.E.7. The County shall support the preservation or reestablishment of fisheries in the rivers and streams within the county, whenever possible.
- 5.E.8. The County shall ensure close monitoring of pesticide use in areas adjacent to habitats of special status plants and animals.
- 5.E.9. The County shall promote effective methods of ground squirrel control on croplands bordering sensitive habitat that do not place kit foxes and other special-status species at risk.
- 5.E.10. Prior to approval of discretionary development permits involving parcels within a significant ecological resource area, the County shall require, as part of the environmental review process, a biotic resources evaluation of the sites by a qualified biologist. The evaluation shall be based upon field reconnaissance performed at the appropriate time of year to determine the presence or absence of rare, threatened, or endangered species of plants or animals. Such evaluation will consider the potential for significant impact on these resources and will either identify feasible measures to mitigate such impacts or indicate why mitigation is not feasible.
- 5.E.11. The County shall provide for a minimum 200 foot wildlife corridor along the San Joaquin River between Friant Dam and the Highway 145 crossing, consistent with the San Joaquin River Parkway Plan. The County shall require a buffer with a minimum width of 150 feet between existing or planned urban or suburban uses. Exceptions may be necessary where the minimum width is infeasible due to topography or other physical constraints. In these instances, an offsetting expansion on the opposite side of the river should be provided.

#### **Implementation Programs**

- 5.4. The County shall initiate detailed inventories of ecologically significant resource areas, including unique natural areas, wetland areas, riparian areas, habitats of rare, threatened, endangered, and

other uncommon and special-status species. The inventory should be conducted as area plans, specific plans, planned unit developments (PUDs), or other planning projects are considered by the County. The inventory should be based on the California Wildlife Habitats Relationships (WHR) system and shall identify appropriate buffer zones around the identified resource areas in order to account for periodic, seasonal, or ecological changes. The maps should be revised on a regular basis to reflect the availability of new information from other agencies, changes in definition, or any other changes.

Responsibility: Planning Department  
 Time Frame: FY 96-97; ongoing  
 Funding: General Fund

- 5.5. The County shall maintain current maps that indicate the extent of critical habitat for important fish and game species, as these maps are made available by the California Department of Fish and Game (CDFG). The relative importance of these game species shall be determined by the County, in consultation with CDFG, based on relevant ecological, recreational, and economic considerations. These maps shall be used by the County to evaluate proposed *area plans*, *specific plans*, and any project development proposals to determine compatibility of development with maintenance and enhancement of important fish and game species.

Responsibility: Planning Department  
 Time Frame: Ongoing  
 Funding: General Fund

- 5.6. The County shall investigate costs and possible funding sources for development of a habitat conservation plan.

Responsibility: Planning Department  
 Time Frame: FY 96-97  
 Funding: General Fund

## F. VEGETATION

**Goal 5.F:** To preserve and protect the valuable vegetation resources of Madera County.

### Policies

- 5.F.1. The County shall encourage landowners and developers to preserve the integrity of existing terrain and natural vegetation in visually-sensitive areas such as hillsides, ridges, and along important transportation corridors.
- 5.F.2. The County shall require developers to use native and compatible non-native species, especially drought-resistant species, to the extent possible in fulfilling landscaping requirements imposed as conditions of discretionary permit approval or for project mitigation.
- 5.F.3. The County shall support the preservation of outstanding areas of natural vegetation, including, but not limited to, oak woodlands, riparian areas, and vernal pools.
- 5.F.4. The County shall ensure that landmark trees are preserved and protected.

- 5.F.5. The County shall establish procedures for identifying and preserving rare, threatened, and endangered plant species that may be adversely affected by public or private development projects. The County shall consider developing a formal habitat conservation plan in consultation with federal and state agencies, as well as other resources conservation organizations. Such a plan would provide a mechanism for the acquisition and management of land supporting threatened and endangered species
- 5.F.6. The County shall require that new development preserve natural woodlands to the maximum extent possible.
- 5.F.7. The County shall require that development on hillsides be limited to maintain valuable natural vegetation, especially forests and open grasslands, and to control erosion.
- 5.F.8. The County shall support the continued use of prescribed burning to mimic the effects of natural fires to reduce fuel volumes and associated fire hazard to human residents and to enhance the health of biotic communities.

#### Implementation Programs

- 5.7. The County shall prepare and maintain an updated list of state and federal rare, threatened, and endangered plant species known or suspected to occur in the county. The following other uncommon or special-status species which occur or may occur in the county should also be included on the list: 1) plant species included in the California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California; 2) species of special concern as designated by California Department of Fish and Game; and 3) California Fully Protected animals as defined by *California Fish and Game Code*. In addition to updating the list as new information becomes available, the list should be reviewed and amended at least once every two years.

Responsibility:	Planning Department
Time Frame:	FY 96-97; every two years thereafter
Funding:	General Fund

### G. GEOLOGIC RESOURCES

**Goal 5.G:** To preserve and enhance unique geologic sites within Madera County.

#### Policies

- 5.G.1. The County shall protect unique geologic resources from incompatible development.
- 5.G.2. The County shall support the nomination of unique geologic sites in the county for inclusion in the National Register of Geologic Landmarks.

#### Implementation Programs

- 5.8. The County shall conduct an inventory of unique geologic resources in Madera County and nominate or assist in their nomination for inclusion in the National Register of Geologic Landmarks.



Responsibility: Planning Department  
Time Frame: FY 97-98  
Funding: General Fund

## H. OPEN SPACE FOR THE PRESERVATION OF NATURAL RESOURCES

**Goal 5.H:** To preserve and enhance open space lands to maintain the natural resources of the county.

### Policies

- 5.H.1. The County shall support the preservation and enhancement of natural land forms, natural vegetation, and natural resources as open space. To the extent feasible, the County shall permanently protect as open space areas of natural resource value, including wetlands preserves, riparian corridors, woodlands, and floodplains.
- 5.H.2. The County shall require that new development be designed and constructed to preserve the following types of areas and features as open space to the maximum extent feasible:
- a. High erosion hazard areas;
  - b. Scenic and trail corridors;
  - c. Streams and streamside vegetation;
  - d. Wetlands;
  - e. Other significant stands of vegetation;
  - f. Wildlife corridors; and
  - g. Any areas of special ecological significance.
- 5.H.3. The County shall support the maintenance of open space and natural areas that are interconnected and of sufficient size to protect biodiversity, accommodate wildlife movement, and sustain ecosystems.
- 5.H.4. Recognizing the importance of both public and privately-owned open space, the County shall encourage both private and public ownership and maintenance of open space.
- 5.H.5. The County shall require that significant natural, open space, and cultural resources be identified in advance of development and incorporated into site-specific development project design.

### Implementation Programs

- 5.9. The County will review and revise the planned zoning districts of the *Zoning Ordinance* to add provisions for the protection of significant natural, open space, and cultural resources.

Responsibility: Planning Department  
Time Frame: FY 96-97  
Funding: General Fund

## NATURAL RESOURCES

### D. WETLAND AND RIPARIAN AREAS

The rivers and streams that flow from the Sierra Nevada mountains historically meandered through broad floodplains in the San Joaquin Valley. Because of urbanization and agriculture, these broad floodplains have been restricted to narrower belts along the rivers and streams or otherwise modified for flood control. Within this modified landscape, remaining riparian habitat is of great value to resident and migratory animal species as it provides corridors and linkages to and from the biotic regions of the county. The numerous essential habitat elements provided by the remaining riparian/riverine corridors in Fresno County make them perhaps the most significant contributor to wildlife habitat throughout the county.

The San Joaquin Valley area of Fresno County still contains large wetlands and wildlife refuge areas, while the foothills east of the city of Fresno contain vernal pools. These areas support many specialized plant and animal species.

Policies in this section seek to protect riparian and wetland habitats in the county while allowing compatible uses where appropriate. Related policies are included in Section LU-C, River Influence Areas; Section OS-A, Water Resources; Section OS-E, Fish and Wildlife Habitat; and Section OS-F, Vegetation.

**Goal OS-D** To conserve the function and values of wetland communities and related riparian areas throughout Fresno County while allowing compatible uses where appropriate. Protection of these resource functions will positively affect aesthetics, water quality, floodplain management, ecological function, and recreation/tourism.

#### Policies

- Policy OS-D.1 The County shall support the “no-net-loss” wetlands policies of the US Army Corps of Engineers, the US Fish and Wildlife Service, and the California Department of Fish and Game. Coordination with these agencies at all levels of project review shall continue to ensure that appropriate mitigation measures and the concerns of these agencies are adequately addressed.
- Policy OS-D.2 The County shall require new development to fully mitigate wetland loss for function and value in regulated wetlands to achieve “no-net-loss” through any combination of avoidance, minimization, or compensation. The County shall support mitigation banking programs that provide the opportunity to mitigate impacts to rare, threatened, and endangered species and/or the habitat which supports these species in wetland and riparian areas.
- Policy OS-D.3 The County shall require development to be designed in such a manner that pollutants and siltation do not significantly degrade the area, value, or function of wetlands. The County shall require new developments to implement the use of Best Management Practices (BMPs) to aid in this effort.

- Policy OS-D.4 The County shall require riparian protection zones around natural watercourses and shall recognize that these areas provide highly valuable wildlife habitat. Riparian protection zones shall include the bed and bank of both low- and high-flow channels and associated riparian vegetation, the band of riparian vegetation outside the high-flow channel, and buffers of 100 feet in width as measured from the top of the bank of unvegetated channels and 50 feet in width as measured from the outer edge of the dripline of riparian vegetation.
- Policy OS-D.5 The County shall strive to identify and conserve remaining upland habitat areas adjacent to wetland and riparian areas that are critical to the feeding, hibernation, or nesting of wildlife species associated with these wetland and riparian areas.
- Policy OS-D.6 The County shall require new private or public developments to preserve and enhance existing native riparian habitat unless public safety concerns require removal of habitat for flood control or other purposes. In cases where new private or public development results in modification or destruction of riparian habitat for purposes of flood control, the developers shall be responsible for creating new riparian habitats within or near the project area. Adjacency to the project area shall be defined as being within the same watershed sub-basin as the project site. Compensation shall be at a ratio of three (3) acres of new habitat for every one (1) acre destroyed.
- Policy OS-D.7 The County shall support the management of wetland and riparian plant communities for passive recreation, groundwater recharge, nutrient storage, and wildlife habitats.
- Policy OS-D.8 The County should consider the acquisition of wetland, meadows, and riparian habitat areas for parks limited to passive recreational activities as a method of wildlife conservation.

### Implementation Programs

- Program OS-D.A The County shall work toward the acquisition by public agencies or private non-profit conservation organizations of creek corridors, wetlands, and areas rich in wildlife or of a fragile ecological nature as public open space where such areas cannot be effectively preserved through the regulatory process. Such protection may take the form of fee acquisition or protective easements and may be carried out in cooperation with other local, State, and Federal agencies and private entities. Acquisition shall include provisions for maintenance and management in perpetuity. (See Policies OS-D.2 and OS-D.8)

Responsibility: Planning & Resource Management Department  
Time Frame: Ongoing

- Program OS-D.B The County shall adopt an ordinance for riparian protection zones identifying allowable activities in riparian protection zones and allowable mitigation techniques. (See Policy OS-D.4)

Responsibility: Planning & Resource Management Department  
Time Frame: FY 02-03

## E. FISH AND WILDLIFE HABITAT

Fresno County is unique among California counties in the range of habitats that it encompasses. The County cuts an east/west cross-section across central California that includes the spine of the Sierra Nevada Mountains, the foothills of the Sierra Nevada, the Central Valley, and a small portion of the inner Coast Range. Fresno County's different regions can be described in terms of 29 distinct habitat types based on the composition and structure of vegetation found in each area. Within these habitats, there is a close relationship between natural vegetation and wildlife. The disruption of natural vegetation areas alters the food chain upon which many animals are dependent. The preservation of natural vegetation areas is, therefore, key abundance and well-being of many wildlife species.

Policies in this section seek to protect natural areas and to preserve the diversity of habitat in the county. Related policies are included in Section OS-A, Water Resources; Section OS-B, Forest Resources; Section OS-D, Wetland and Riparian Areas; Section OS-F, Vegetation; and Section LU-C, River Influence Areas.

**Goal OS-E** To help protect, restore, and enhance habitats in Fresno County that support fish and wildlife species so that populations are maintained at viable levels.

### Policies

**Policy OS-E.1** The County shall support efforts to avoid the “net” loss of important wildlife habitat where practicable. In cases where habitat loss cannot be avoided, the County shall impose adequate mitigation for the loss of wildlife habitat that is critical to supporting special-status species and/or other valuable or unique wildlife resources. Mitigation shall be at sufficient ratios to replace the function, and value of the habitat that was removed or degraded. Mitigation may be achieved through any combination of creation, restoration, conservation easements, and/or mitigation banking. Conservation easements should include provisions for maintenance and management in perpetuity. The County shall recommend coordination with the US Fish and Wildlife Service and the California Department of Fish and Game to ensure that appropriate mitigation measures and the concerns of these agencies are adequately addressed. Important habitat and habitat components include nesting, breeding, and foraging areas, important spawning grounds, migratory routes, migratory stopover areas, oak woodlands, vernal pools, wildlife movement corridors, and other unique wildlife habitats (e.g., alkali scrub) critical to protecting and sustaining wildlife populations.

**Policy OS-E.2** The County shall require adequate buffer zones between construction activities and significant wildlife resources, including both onsite habitats that are purposely avoided and significant habitats that are adjacent to the project site, in order to avoid the degradation and disruption of critical life cycle activities such as breeding and feeding. The width of the buffer zone should vary depending on the location, species, etc. A final determination shall be made based on informal consultation with the US Fish and Wildlife Service and/or the California Department of Fish and Game.

- Policy OS-E.3 The County shall require development in areas known to have particular value for wildlife to be carefully planned and, where possible, located so that the value of the habitat for wildlife is maintained.
- Policy OS-E.4 The County shall encourage private landowners to adopt sound wildlife habitat management practices, as recommended by the California Department of Fish and Game officials and the U.S. Fish and Wildlife Service.
- Policy OS-E.5 The County shall support preservation of habitats of rare, threatened, endangered, and/or other special-status species including fisheries. The County shall consider developing a formal Habitat Conservation Plan in consultation with Federal and State agencies, as well as other resource conservation organizations. Such a plan should provide a mechanism for the acquisition and management of lands that support special-status species.
- Policy OS-E.6 The County shall ensure the conservation of large, continuous expanses of native vegetation to provide suitable habitat for maintaining abundant and diverse wildlife populations, as long as this preservation does not threaten the economic well-being of the county.
- Policy OS-E.7 The County shall continue to closely monitor pesticide use in areas adjacent to habitats of special-status plants and animals.
- Policy OS-E.8 The County shall promote effective methods of pest (e.g., ground squirrel) control on croplands bordering sensitive habitat that do not place special-status species at risk, such as the San Joaquin kit fox.
- Policy OS-E.9 Prior to approval of discretionary development permits, the County shall require, as part of any required environmental review process, a biological resources evaluation of the project site by a qualified biologist. The evaluation shall be based upon field reconnaissance performed at the appropriate time of year to determine the presence or absence of significant resources and/or special-status plants or animals. Such evaluation will consider the potential for significant impact on these resources and will either identify feasible mitigation measures or indicate why mitigation is not feasible.
- Policy OS-E.10 The County shall support State and Federal programs to acquire significant fish and wildlife habitat areas for permanent protection and/or passive recreation use.
- Policy OS-E.11 The County shall protect significant aquatic habitats against excessive water withdrawals that could endanger special-status fish and wildlife or would interrupt normal migratory patterns.
- Policy OS-E.12 The County shall ensure the protection of fish and wildlife habitats from environmentally-degrading effluents originating from mining and construction activities that are adjacent to aquatic habitats.

- Policy OS-E.13 The County should protect to the maximum extent practicable wetlands, riparian habitat, and meadows since they are recognized as essential habitats for birds and wildlife.
- Policy OS-E.14 The County shall require a minimum 200-foot-wide wildlife corridor along particular stretches of the San Joaquin River and Kings River, whenever possible. The exact locations for the corridors should be determined based on the results of biological evaluations of these watercourses. Exceptions may be necessary where the minimum width is infeasible due to topography or other physical constraints. In these instances, an offsetting expansion on the opposite side of the river should be considered.
- Policy OS-E.15 The County should preserve, to the maximum extent practicable, significant wildlife migration routes such as the North Kings Deer Herd migration corridors and fawn production areas.
- Policy OS-E.16 Areas that have unusually high value for fish and wildlife propagation should be preserved in a natural state to the maximum possible extent.
- Policy OS-E.17 The County should preserve, to the maximum possible extent, areas defined as habitats for rare or endangered animal and plant species in a natural state consistent with State and Federal endangered species laws.
- Policy OS-E.18 The County should preserve areas identified as habitats for rare or endangered plant and animal species primarily through the use of open space easements and appropriate zoning that restrict development in these sensitive areas.

## Implementation Programs

- Program OS-E.A The County shall compile inventories of ecologically significant resource areas, including unique natural areas, wetlands, riparian areas, and habitats for special-status plants and animals from existing data sources. The inventories shall be presented when area plans, specific plans, or other project development proposals are considered by the County. The classification system shall be based on the California Wildlife Habitats Relationships (WHR) system and shall identify appropriate buffer zones around the identified resource areas in order to account for periodic, seasonal, or ecological changes. The maps shall be revised on a regular basis to reflect the availability of new information from other agencies, changes in definition, or any other changes. (See Policies OS-E.1, OS-E.2, and OS-E.5)

Responsibility: Planning & Resource Management Department  
Time frame: Ongoing

- Program OS-E.B The County shall maintain current maps that indicate the extent of significant habitat for important fish and game species, as these maps are made available by the California Department of Fish and Game (CDFG). The relative importance of these game species shall be determined by the County, in consultation with CDFG, based on relevant ecological, recreational, and economic considerations. These maps shall be used by the

County to evaluate proposed area plans, specific plans, and any other project development proposals to determine the compatibility of development with maintenance and enhancement of important fish and game species. (See Policy OS-E.2)

Responsibility: Planning & Resource Management Department  
Time frame: Ongoing

## F. VEGETATION

Beyond providing habitat for wildlife as addressed in the two previous sections, Fresno County's native vegetation such as oak woodlands must be managed to maintain its diversity and health for ecological as well as aesthetic reasons.

Policies in this section seek to protect native vegetation resources primarily on private land within the county. Related policies are included in Section OS-A, Water Resources; Section OS-B, Forest Resources; Section OS-D, Wetland and Riparian Areas; Section OS-E, Fish and Wildlife Habitat; and Section LU-C, River Influence Areas.

**Goal OS-F** To preserve and protect the valuable vegetation resources of Fresno County.

### Policies

- Policy OS-F.1 The County shall encourage landowners and developers to preserve the integrity of existing terrain and natural vegetation in visually-sensitive areas such as hillsides and ridges, and along important transportation corridors, consistent with fire hazard and property line clearing requirements.
- Policy OS-F.2 The County shall require developers to use native and compatible non-native plant species, especially drought-resistant species, to the extent possible, in fulfilling landscaping requirements imposed as conditions of discretionary permit approval or for project mitigation.
- Policy OS-F.3 The County shall support the preservation of significant areas of natural vegetation, including, but not limited to, oak woodlands, riparian areas, and vernal pools.
- Policy OS-F.4 The County shall ensure that landmark trees are preserved and protected whenever possible.
- Policy OS-F.5 The County shall establish procedures for identifying and preserving rare, threatened, and endangered plant species that may be adversely affected by public or private development projects. As part of this process, the County shall require, as part of the environmental review process, a biological resources evaluation of the project site by a qualified biologist. The evaluation shall be based on field reconnaissance performed at the appropriate time of year to determine the presence or absence of significant plant resources and/or special-status plant species. Such evaluation shall consider the potential for significant impact on these resources and shall either identify feasible mitigation measures or indicate why mitigation is not feasible.

- Policy OS-F.6 The County shall require that development on hillsides be limited to maintain valuable natural vegetation, especially forests and open grasslands, and to control erosion.
- Policy OS-F.7 The County shall require developers to take into account a site's natural topography with respect to the design and siting of all physical improvements in order to minimize grading.
- Policy OS-F.8 The County should encourage landowners to maintain natural vegetation or plant suitable vegetation along fence lines, drainage and irrigation ditches and on unused or marginal land for the benefit of wildlife.
- Policy OS-F.9 The County shall support the continued use of prescribed burning to mimic the effects of natural fires to reduce fuel volumes and associated fire hazards to human residents and to enhance the health of biotic communities.
- Policy OS-F.10 The County shall require that new developments preserve natural woodlands to the maximum extent possible.
- Policy OS-F.11 The County shall promote the preservation and management of oak woodlands by encouraging landowners to follow the Fresno County Oak Management Guidelines shown below and to prepare an Oak Management Plan for their property.

### Implementation Programs

- Program OS-F.A The County shall prepare and maintain an updated list of State and Federal rare, threatened, and endangered plant species known or suspected to occur in the county. The following other uncommon or special-status species which occur or may occur in the County should also be included on the list: 1) plant species included in the California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California; and 2) species of special concern as designated by California Department of Fish and Game. In addition to updating the list as new information becomes available, the list should be reviewed and amended at least once every two years. (See Policy OS-F.5)
- Responsibility: Planning & Resource Management Department  
Time Frame: FY 00-01; every two years thereafter
- Program OS-F.B The County shall make the Fresno County Oak Management Guidelines and other educational resources available to landowners located in oak woodland habitat. (See Policy OS-F.11)
- Responsibility: Planning & Resource Management Department  
Time Frame: Ongoing



### **Fresno County Oak Woodlands Management Guidelines (Policy OS-F.11)**

#### **1. When Building Within Oak Woodlands:**

- Develop an Oak Woodland Management Plan to retain existing oaks, preserve agriculture, retain wildlife corridors, and enhance soil and water conservation practices.
- Avoid tree root compaction during construction by limiting heavy equipment in root zones.
- Carefully plan roads, cuts and fills, building foundations, and septic systems to avoid damage to tree roots. Design roads and consolidate utility services to minimize erosion and sedimentation to downstream sources. Also, consider reseeded any disturbed ground.
- Avoid landscaping which requires irrigation within ten (10) feet of the trunk of an existing oak tree to prevent root rot.
- Consider replacing trees whose removal during construction was avoidable.
- Use fire-inhibiting and drought-tolerant and oak-compatible landscaping wherever possible.

#### **2. Take Steps to Increase Fire Safety on Wooded Parcels:**

- Recognize fire as a natural feature of the oak woodland landscape and plan accordingly.
- Set up a continuous management program as a part of your Oak Woodland Management Plan to maintain a fire-safe property environment.
- Identify and manage trees to be fire-safe.
- Recognize the impact of steep slopes on fire safety.
- Develop a fire-safe and oak-friendly landscape plan for your home or business.
- Create "Defensible Space" around buildings. Defensible space is that area which lies between a structure and an oncoming wildfire where the vegetation has been modified to reduce the wildfire threat and which provides an opportunity for firefighters to safely defend a structure.

#### **3. When Implementing Range Improvement Practices in Oak Woodlands:**

- When using prescribed fire as a range improvement practice, obtain professional assistance to maximize benefits and minimize risk.
- When converting oak woodlands to other agricultural uses, consider incorporating an oak retention component or a conservation easement in your Oak Woodland Management Plan.
- Develop water sources--ponds, troughs, seeps, and springs for livestock and wildlife.

#### **4. When Harvesting Oaks for Fuel or Range Improvement, Plan Your Harvest to:**

- Maintain an average canopy cover of 10 to 30 percent depending on site, elevation, and precipitation.
- Retain some oak trees of all sizes and species represented at the site and in clusters where possible.
- When safety permits, leave old hollow trees and those actively being used for nesting, roosting, or feeding.
- Where low fire risk and aesthetics allow, pile limbs and brush to provide wildlife cover.
- Where commercial or extensive harvest is being contemplated, seek professional advice.

*Adopted by the Fresno County Board of Supervisors on March 10, 1998 (Resolution # 98-150).*

## **G. AIR QUALITY**

Air quality in Fresno County is a key element in defining the quality of life for county residents. Air pollution adversely affects human health, degrades the natural and built environments, causes agricultural losses, and changes the earth's climate. Air quality is a global problem that must be addressed by all levels of government.

The linkages between land use patterns, transportation systems, and air quality are the primary means for local governments to address air quality issues. The main method of local control over air quality in Fresno County is the reduction of the number of vehicular miles traveled (VMT) and resulting vehicular emissions. Thus, Fresno's air quality strategy focuses on ways to reduce air pollutants by promoting compact efficient development patterns that support transit use, walking, and bicycling as alternatives to single occupant vehicle use. This type of land use

**APPENDIX E: STANDARDIZED RECOMMENDATIONS FOR THE PROTECTION  
OF THE ENDANGERED SAN JOAQUIN KIT FOX PRIOR TO OR DURING GROUND  
DISTURBANCE**

**U.S. FISH AND WILDLIFE SERVICE  
STANDARDIZED RECOMMENDATIONS  
FOR PROTECTION OF THE ENDANGERED SAN JOAQUIN KIT FOX  
PRIOR TO OR DURING GROUND DISTURBANCE**

Prepared by the Sacramento Fish and Wildlife Office  
January 2011

## INTRODUCTION

The following document includes many of the San Joaquin kit fox (*Vulpes macrotis mutica*) protection measures typically recommended by the U. S. Fish and Wildlife Service (Service), prior to and during ground disturbance activities. **However, incorporating relevant sections of these guidelines into the proposed project is not the only action required under the Endangered Species Act of 1973, as amended (Act) and does not preclude the need for section 7 consultation or a section 10 incidental take permit for the proposed project.** Project applicants should contact the Service in Sacramento to determine the full range of requirements that apply to your project; the address and telephone number are given at the end of this document. Implementation of the measures presented in this document may be necessary to avoid violating the provisions of the Act, including the prohibition against "take" (defined as killing, harming, or harassing a listed species, including actions that damage or destroy its habitat). These protection measures may also be required under the terms of a biological opinion pursuant to section 7 of the Act resulting in incidental take authorization (authorization), or an incidental take permit (permit) pursuant to section 10 of the Act. The specific measures implemented to protect kit fox for any given project shall be determined by the Service based upon the applicant's consultation with the Service.

The purpose of this document is to make information on kit fox protection strategies readily available and to help standardize the methods and definitions currently employed to achieve kit fox protection. The measures outlined in this document are subject to modification or revision at the discretion of the Service.

## IS A PERMIT NECESSARY?

**Certain acts need a permit from the Service which includes destruction of any known (occupied or unoccupied) or natal/pupping kit fox dens.** Determination of the presence or absence of kit foxes and /or their dens should be made during the environmental review process.

All surveys and monitoring described in this document must be conducted by a qualified biologist and these activities do not require a permit. A qualified biologist (biologist) means any person who has completed at least four years of university training in wildlife biology or a related science and/or has demonstrated field experience in the identification and life history of the San Joaquin kit fox. In addition, the biologist(s) must be able to identify coyote, red fox,

gray fox, and kit fox tracks, and to have seen a kit fox in the wild, at a zoo, or as a museum mount. Resumes of biologists should be submitted to the Service for review and approval prior to any survey or monitoring work occurring.

### **SMALL PROJECTS**

Small projects are considered to be those projects with small foot prints, of approximately one acre or less, such as an individual in-fill oil well, communication tower, or bridge repairs. These projects must stand alone and not be part of, or in any way connected to larger projects (i.e., bridge repair or improvement to serve a future urban development). The Service recommends that on these small projects, the biologist survey the proposed project boundary and a 200-foot area outside of the project footprint to identify habitat features and utilize this information as guidance to situate the project to minimize or avoid impacts. If habitat features cannot be completely avoided, then surveys should be conducted and the Service should be contacted for technical assistance to determine the extent of possible take.

Preconstruction/preactivity surveys shall be conducted no less than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities or any project activity likely to impact the San Joaquin kit fox. Kit foxes change dens four or five times during the summer months, and change natal dens one or two times per month (Morrell 1972). Surveys should 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 should be determined and mapped (see Survey Protocol). Written results of preconstruction/preactivity surveys must be received by the Service within five 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, the Service shall be immediately notified and under no circumstances should the den be disturbed or destroyed without prior authorization. If the preconstruction/preactivity survey reveals an active natal pupping or new information, the project applicant should contact the Service immediately to obtain the necessary take authorization/permit.**

If the take authorization/permit has already been issued, then the biologist may proceed with den destruction within the project boundary, except natal/pupping den which may not be destroyed while occupied. A take authorization/permit is required to destroy these dens even after they are vacated. Protective exclusion zones can be placed around all known and potential dens which occur outside the project footprint (conversely, the project boundary can be demarcated, see den destruction section).

### **OTHER PROJECTS**

It is likely that all other projects occurring within kit fox habitat will require a take authorization/permit from the Service. This determination would be made by the Service during the early evaluation process (see Survey Protocol). These other projects would include, but are not limited to: Linear projects; projects with large footprints such as urban development; and projects which in themselves may be small but have far reaching impacts (i.e., water storage or conveyance facilities that promote urban growth or agriculture, etc.).

The take authorization/permit issued by the Service may incorporate some or all of the protection measures presented in this document. The take authorization/permit may include measures specific to the needs of the project and those requirements supersede any requirements found in this document.

## EXCLUSION ZONES

In order to avoid impacts, construction activities must avoid their dens. The configuration of exclusion zones around the kit fox dens should have a radius measured outward from the entrance or cluster of entrances due to the length of dens underground. The following distances are **minimums**, and if they cannot be followed the Service must be contacted. Adult and pup kit foxes are known to sometimes rest and play near the den entrance in the afternoon, but most above-ground activities begin near sunset and continue sporadically throughout the night. Den definitions are attached as Exhibit A.

Potential den**	50 feet
Atypical den**	50 feet
Known den*	100 feet
Natal/pupping den (occupied <u>and</u> unoccupied)	Service must be contacted

**\*Known den:** To ensure protection, the exclusion zone should be demarcated by fencing that encircles each den at the appropriate distance and does not prevent access to the den by kit foxes. Acceptable fencing includes untreated wood particle-board, silt fencing, orange construction fencing or other fencing as approved by the Service as long as it has openings for kit fox ingress/egress and keeps humans and equipment out. Exclusion zone fencing should be maintained until all construction related or operational disturbances have been terminated. At that time, all fencing shall be removed to avoid attracting subsequent attention to the dens.

**\*\*Potential and Atypical dens:** Placement of 4-5 flagged stakes 50 feet from the den entrance(s) will suffice to identify the den location; fencing will not be required, but the exclusion zone must be observed.

Only essential vehicle operation on existing roads and foot traffic should be permitted. Otherwise, all construction, vehicle operation, material storage, or any other type of surface-disturbing activity should be prohibited or greatly restricted within the exclusion zones.

## **DESTRUCTION OF DENS**

Limited destruction of kit fox dens may be allowed, if avoidance is not a reasonable alternative, provided the following procedures are observed. The value to kit foxes of potential, known, and natal/pupping dens differ and therefore, each den type needs a different level of protection.

**Destruction of any known or natal/pupping kit fox den requires take authorization/permit from the Service.**

Destruction of the den should be accomplished by careful excavation until it is certain that no kit foxes are inside. The den should be fully excavated, filled with dirt and compacted to ensure that kit foxes cannot reenter or use the den during the construction period. If at any point during excavation, a kit fox is discovered inside the den, the excavation activity shall cease immediately and monitoring of the den as described above should be resumed. Destruction of the den may be completed when in the judgment of the biologist, the animal has escaped, without further disturbance, from the partially destroyed den.

**Natal/pupping dens:** Natal or pupping dens which are occupied will not be destroyed until the pups and adults have vacated and then only after consultation with the Service. Therefore, project activities at some den sites may have to be postponed.

**Known Dens:** Known dens occurring within the footprint of the activity must be monitored for three days with tracking medium or an infra-red beam camera to determine the current use. If no kit fox activity is observed during this period, the den should be destroyed immediately to preclude subsequent use.

If kit fox activity is observed at the den during this period, the den should be monitored for at least five consecutive days from the time of the observation to allow any resident animal to move to another den during its normal activity. Use of the den can be discouraged during this period by partially plugging its entrances(s) with soil in such a manner that any resident animal can escape easily. Only when the den is determined to be unoccupied may the den be excavated under the direction of the biologist. If the animal is still present after five or more consecutive days of plugging and monitoring, the den may have to be excavated when, in the judgment of a biologist, it is temporarily vacant, for example during the animal's normal foraging activities.

**The Service encourages hand excavation, but realizes that soil conditions may necessitate the use of excavating equipment. However, extreme caution must be exercised.**

Potential Dens: If a take authorization/permit has been obtained from the Service, den destruction may proceed without monitoring, unless other restrictions were issued with the take authorization/permit. If no take authorization/permit has been issued, then potential dens should be monitored as if they were known dens. If any den was considered to be a potential den, but is later determined during monitoring or destruction to be currently, or previously used by kit fox (e.g., if kit fox sign is found inside), then all construction activities shall cease and the Service shall be notified immediately.

## **CONSTRUCTION AND ON-GOING OPERATIONAL REQUIREMENTS**

Habitat subject to permanent and temporary construction disturbances and other types of ongoing project-related disturbance activities should be minimized by adhering to the following activities. Project designs should limit or cluster permanent project features to the smallest area possible while still permitting achievement of project goals. To minimize temporary disturbances, all project-related vehicle traffic should be restricted to established roads, construction areas, and other designated areas. These areas should also be included in preconstruction surveys and, to the extent possible, should be established in locations disturbed by previous activities to prevent further impacts.

1. Project-related vehicles should observe a daytime speed limit of 20-mph throughout the site in all project areas, except on county roads and State and Federal highways; this is particularly important at night when kit foxes are most active. Night-time construction should be minimized to the extent possible. However if it does occur, then the speed limit should be reduced to 10-mph. Off-road traffic outside of designated project areas should be prohibited.
2. To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of a project, all excavated, steep-walled holes or trenches more than 2-feet deep should be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the Service and the California Department of Fish and Game (CDFG) shall be contacted as noted under measure 13 referenced below.
3. Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored at a construction site for one or more overnight periods should be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe should not be moved until the Service has been consulted. If necessary, and under the direct supervision of the biologist, the pipe

may be moved only once to remove it from the path of construction activity, until the fox has escaped.

4. All food-related trash items such as wrappers, cans, bottles, and food scraps should be disposed of in securely closed containers and removed at least once a week from a construction or project site.
5. No firearms shall be allowed on the project site.
6. No pets, such as dogs or cats, should be permitted on the project site to prevent harassment, mortality of kit foxes, or destruction of dens.
7. Use of rodenticides and herbicides in project areas should be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds should observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other State and Federal legislation, as well as additional project-related restrictions deemed necessary by the Service. If rodent control must be conducted, zinc phosphide should be used because of a proven lower risk to kit fox.
8. A representative shall be appointed by the project proponent who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped kit fox. The representative will be identified during the employee education program and their name and telephone number shall be provided to the Service.
9. An employee education program should be conducted for any project that has anticipated impacts to kit fox or other endangered species. The program should consist of a brief presentation by persons knowledgeable in kit fox biology and legislative protection to explain endangered species concerns to contractors, their employees, and military and/or agency personnel involved in the project. The program should include the following: A description of the San Joaquin kit fox and its habitat needs; a report of the occurrence of kit fox in the project area; an explanation of the status of the species and its protection under the Endangered Species Act; and a list of measures being taken to reduce impacts to the species during project construction and implementation. A fact sheet conveying this information should be prepared for distribution to the previously referenced people and anyone else who may enter the project site.
10. Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. should be re-contoured if necessary, and revegetated to promote restoration of the area to pre-project conditions. An area subject to "temporary" disturbance means any area that is



disturbed during the project, but after project completion will not be subject to further disturbance and has the potential to be revegetated. Appropriate methods and plant species used to revegetate such areas should be determined on a site-specific basis in consultation with the Service, California Department of Fish and Game (CDFG), and revegetation experts.

11. In the case of trapped animals, escape ramps or structures should be installed immediately to allow the animal(s) to escape, or the Service should be contacted for guidance.
12. Any contractor, employee, or military or agency personnel who are responsible for inadvertently killing or injuring a San Joaquin kit fox shall immediately report the incident to their representative. This representative shall contact the CDFG immediately in the case of a dead, injured or entrapped kit fox. The CDFG contact for immediate assistance is State Dispatch at (916)445-0045. They will contact the local warden or Mr. Paul Hoffman, the wildlife biologist, at (530)934-9309. The Service should be contacted at the numbers below.
13. The Sacramento Fish and Wildlife Office and CDFG shall be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during project related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information. The Service contact is the Chief of the Division of Endangered Species, at the addresses and telephone numbers below. The CDFG contact is Mr. Paul Hoffman at 1701 Nimbus Road, Suite A, Rancho Cordova, California 95670, (530) 934-9309.
14. New sightings of kit fox shall be reported to the California Natural Diversity Database (CNDDDB). A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed should also be provided to the Service at the address below.

Any project-related information required by the Service or questions concerning the above conditions or their implementation may be directed in writing to the U.S. Fish and Wildlife Service at:

Endangered Species Division  
2800 Cottage Way, Suite W2605  
Sacramento, California 95825-1846  
(916) 414-6620 or (916) 414-6600

**EXHIBIT “A” - DEFINITIONS**

"Take" - Section 9 of the Endangered Species Act of 1973, as amended (Act) prohibits the "take" of any federally listed endangered species by any person (an individual, corporation, partnership, trust, association, etc.) subject to the jurisdiction of the United States. As defined in the Act, take means " . . . to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct". Thus, not only is a listed animal protected from activities such as hunting, but also from actions that damage or destroy its habitat.

"Dens" - San Joaquin kit fox dens may be located in areas of low, moderate, or steep topography. Den characteristics are listed below, however, the specific characteristics of individual dens may vary and occupied dens may lack some or all of these features. Therefore, caution must be exercised in determining the status of any den. Typical dens may include the following: (1) one or more entrances that are approximately 5 to 8 inches in diameter; (2) dirt berms adjacent to the entrances; (3) kit fox tracks, scat, or prey remains in the vicinity of the den; (4) matted vegetation adjacent to the den entrances; and (5) manmade features such as culverts, pipes, and canal banks.

"Known den" - Any existing natural den or manmade structure that is used or has been used at any time in the past by a San Joaquin kit fox. Evidence of use may include historical records, past or current radiotelemetry or spotlighting data, kit fox sign such as tracks, scat, and/or prey remains, or other reasonable proof that a given den is being or has been used by a kit fox. The Service discourages use of the terms "active" and "inactive" when referring to any kit fox den because a great percentage of occupied dens show no evidence of use, and because kit foxes change dens often, with the result that the status of a given den may change frequently and abruptly.

"Potential Den" - Any subterranean hole within the species' range that has entrances of appropriate dimensions for which available evidence is insufficient to conclude that it is being used or has been used by a kit fox. Potential dens shall include the following: (1) any suitable subterranean hole; or (2) any den or burrow of another species (e.g., coyote, badger, red fox, or ground squirrel) that otherwise has appropriate characteristics for kit fox use.

"Natal or Pupping Den" - Any den used by kit foxes to whelp and/or rear their pups. Natal/pupping dens may be larger with more numerous entrances than dens occupied exclusively by adults. These dens typically have more kit fox tracks, scat, and prey remains in the vicinity of the den, and may have a broader apron of matted dirt and/or vegetation at one or more entrances. A natal den, defined as a den in which kit fox pups are actually whelped but not necessarily reared, is a more restrictive version of the pupping den. In practice, however, it is difficult to distinguish between the two, therefore, for purposes of this definition either term applies.

"Atypical Den" - Any manmade structure which has been or is being occupied by a San Joaquin kit fox. Atypical dens may include pipes, culverts, and diggings beneath concrete slabs and buildings.



# Appendix E

## Cultural Resources Inventory

# **Cultural Resources Inventory for the Red Top Area Water Conveyance from the San Joaquin River Systems Project, Fresno and Madera Counties, California**

Jay Lloyd, Katie Asselin, and Randy Baloian

Prepared By



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January 2016



## MANAGEMENT SUMMARY

The Central California Irrigation District (CCID) is proposing to construct a pipeline crossing under the San Joaquin River from the Poso Canal as part of the Red Top Area Water Conveyance from the San Joaquin River Systems Project (Project) in eastern Fresno and western Madera counties in central California. The crossing, known as the Vlot-Triangle T Crossing, is approximately 17 miles east of Los Banos. The proposed pipeline is about 452 feet long and will be placed across the river using an open cut trench. The Project also requires construction of a new concrete box turnout in the Poso Canal and a connector to an existing pump station and conveyance facilities on the east side of the river. There is also a staging area outside the San Joaquin River, just northeast of the pipeline crossing.

Because the Project will be overseen by the Bureau of Reclamation and requires a U.S. Army Corps of Engineers 404 Permit, it must comply with Section 106 of the National Historic Preservation Act (NHPA). The Project will be built by CCID and requires permits from the California State Water Resources Control Board and California Department of Fish and Wildlife; therefore, it also must comply with the California Environmental Quality Act (CEQA). Both the NHPA and CEQA essentially mandate that government agencies consider the effects and impacts of their actions on important cultural and natural resources.

Provost and Pritchard Consulting Group has been contracted by CCID to oversee the planning of this Project, and Applied EarthWorks, Inc. (Æ) was subcontracted to provide the cultural resources services. To meet federal and state requirements on behalf of CCID, Æ conducted a cultural resources inventory of the 1.85-acre Project area. The investigation included a records search to identify previously recorded cultural resources and prior studies in the Project vicinity, assessment of the buried site sensitivity of the area, and an archaeological pedestrian survey of the Project area. Consultation with the Native American community was handled separately by the Bureau of Reclamation. The records search conducted by the Southern San Joaquin Valley Information Center identified the Poso Canal (P-10-006248) within the Project Area of Potential Effects. The canal has been previously determined not eligible for listing on the National Register of Historic Places and the California Register of Historical Resources. No additional cultural resources were identified in association with the proposed Project as part of the pedestrian survey efforts.

Prior to the final project design, two additional potential crossings (Red Top and Harman) were considered by CCID. Because these crossings were included in Æ's inventory prior to being excluded from the Project, the results of Æ's cultural resources inventory at these locations (totaling 2.08 acres) also are included in this report.

A copy of this report will be transmitted to the Southern San Joaquin Valley Information Center at California State University, Bakersfield and the Central California Information Center at California State University, Stanislaus for inclusion in the California Historical Resources Information System. Field notes and photographs are on file at Æ's office in Fresno, California.





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# 1

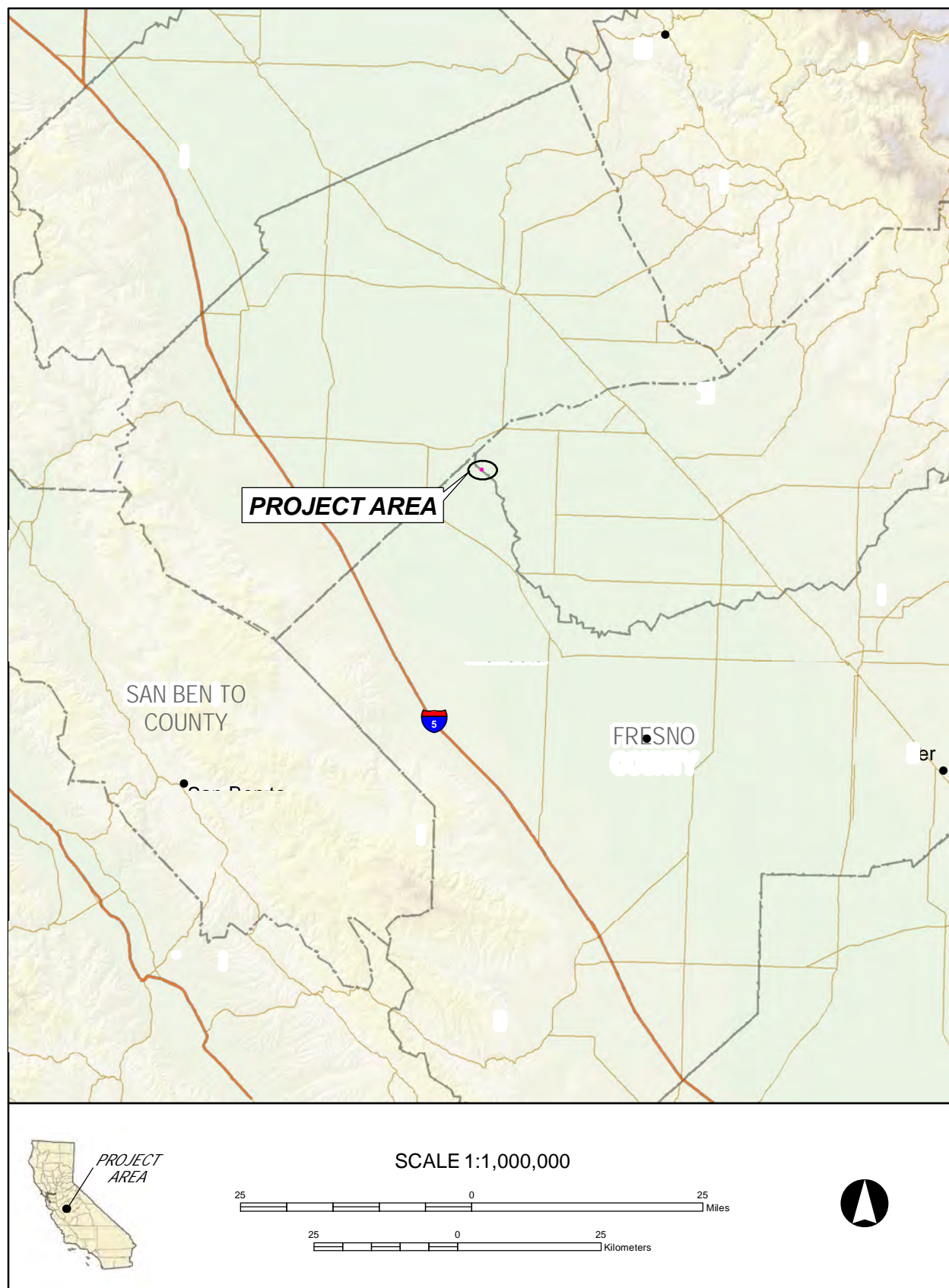
## INTRODUCTION

The Central California Irrigation District (CCID) is proposing to construct a pipeline crossing under the San Joaquin River from the Poso Canal as part of the Red Top Area Water Conveyance from the San Joaquin River Systems Project (Project) to provide surface water to be used to combat land subsidence in western Madera County. The crossing, known as the Vlot-Triangle T Crossing, is located approximately 17 miles east of Los Banos and crosses the San Joaquin River, which serves as the boundary between Fresno and Madera counties (Figure 1-1). Specifically, the Project is in Township 10 South, Range 13 East, Section 34 as depicted on the U.S. Geological Survey (USGS) Santa Rita Bridge 7.5-minute quadrangle (Figure 1-2).

The pipeline will be approximately 452 feet long and placed across the river using an open cut trench. The Project consists of constructing a new cast-in-place concrete box turnout in the Poso Canal as well as the Vlot-Triangle T Crossing. The pipeline will require installation of a 36-inch single-wall reinforced concrete pipe or mortar-lined and coated steel pipeline from a 36-inch stub on a 48 by 48 inch cast-in-place concrete box turnout in the Poso Canal. It will cross the San Joaquin River, where it will connect to an existing pump station and conveyance facilities on the east side of the river. The pipeline will be buried a minimum of 6 feet below the river bed.

The width of disturbance for excavating the trench and installing the pipeline will be approximately 80 feet for the crossing, and the total temporarily disturbed area across the San Joaquin River from the Poso Canal to the pump station will be approximately 0.83 acre. The staging area is approximately 0.95 acre and is entirely outside the San Joaquin River just northeast of the pipeline crossing. It will be used during construction for the staging of equipment, and no trenching is anticipated at this location. Construction equipment is expected to include the use of graders, compacters, backhoes, excavators, forklifts, skid steers, front-end loaders, generators, water trucks, and trucks for hauling materials and equipment. Based on these areas of disturbance, the Area of Potential Effects (APE) is 1.85 acres and includes the pipeline crossing, turnout, and staging area (Figure 1-3). Prior to the identification of the Vlot-Triangle T Crossing location, two additional potential crossings—Harman and Red Top—also were examined for cultural resources but were subsequently excluded from further consideration (Figure 1-2).

Because the Project will be overseen by the Bureau of Reclamation and requires a U.S. Army Corps of Engineers 404 Permit, it requires compliance with Section 106 of the National Historic Preservation Act (NHPA). The Project will be built by CCID and requires permits from the California State Water Resources Control Board and California Department of Fish and Wildlife, and therefore also must comply with the California Environmental Quality Act (CEQA). Both the NHPA and CEQA essentially mandate that government agencies consider the effects and impacts of their actions on important cultural and natural resources. Under both the NHPA and CEQA, cultural resources require consideration if they are listed in or are eligible for listing in the National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR), respectively.



**Figure 1-1** Project vicinity in Fresno and Madera counties, California.



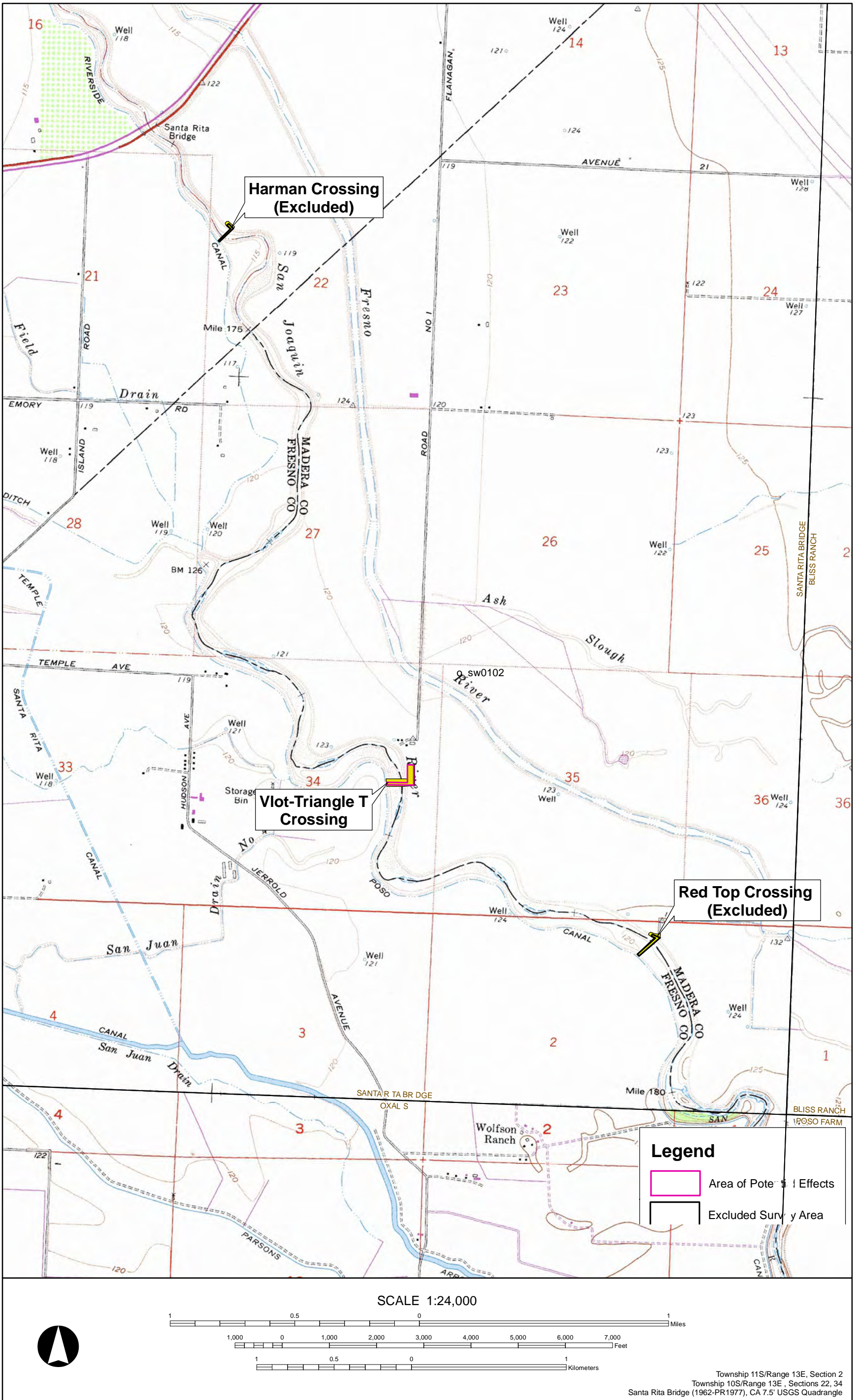


Figure 1-2 Project location on the U.S. Geological Survey Santa Rita Bridge 7.5-minute quadrangle.





**Figure 1-3 Project Area of Potential Effects.**

Provost and Pritchard Consulting Group is contracted by CCID to oversee the planning of this Project, and Applied EarthWorks, Inc. (Æ) was subcontracted to provide the cultural resources services. To assist Provost and Pritchard with its planning efforts, Æ requested records searches to identify both previously recorded resources and previously conducted archaeological studies within a 0.5-mile radius of the Project location. Consultation with the Native American community was handled separately by the Bureau of Reclamation and is not reported herein.

Æ Project Manager Mary Baloian (Ph.D.), a Registered Professional Archaeologist (RPA), served as the Project archaeologist and manager overseeing all work conducted. Æ Senior Archaeologist Jay Lloyd (M.A., RPA) served as supervisor, providing technical and administrative oversight the Project. Æ Associate Archaeologist Katie Asselin (M.A., RPA) participated in the pedestrian survey and assisted with the preparation of the technical report. Qualifications for key personnel are provided in Appendix A.

The archaeological work documented in this report was carried out to satisfy the requirements of both CEQA and Section 106 of the NHPA, and the results are presented in accordance with *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format* (Office of Historic Preservation 1990). A copy of this report will be transmitted to the regional information center for inclusion in the California Historical Resources Information System. Field notes and photographs are on file at Æ's office in Fresno, California.





## 2 SETTING

This chapter presents information on the natural environment, local prehistory, ethnography, and history of the Project vicinity. The environmental discussion focuses primarily on natural conditions and resources that would have played a major role in human occupation and resource utilization. The prehistory and archaeological overview discusses previous studies that have defined the temporal-cultural divisions of prehistoric occupation in the area. The ethnographic section describes the native people who occupied the study area during the late prehistoric and early historic eras, while the historic section provides specific details about historic-era activities in the Project vicinity.

### 2.1 NATURAL ENVIRONMENT

The study area lies within, and on the western side of, the San Joaquin Valley. The San Joaquin Valley and its northern counterpart, the Sacramento Valley, comprise the Great Valley, a 50-mile-wide elongated trough that extends approximately 400 miles south from the Cascade Range to the Tehachapi Mountains (Norris and Webb 1990:412). This vast lowland parallels the Sierra Nevada, which has had considerable effect on the valley's geological past and current hydrology.

From the late Mesozoic until the late Cenozoic, the area that would become the Great Valley served as a shallow marine embayment (Norris and Webb 1990:412). The Coast Ranges had not yet formed, but the region received sediments from the eroding Sierra Nevada as well as marine deposition throughout this period. These waters began to diminish around 10 million years ago and eventually were cut off from the ocean altogether by the formation of the Coast Ranges (starting in the late Pliocene), leaving tributaries and small lakes that survived until historical times (Hill 1984:28; Norris and Webb 1990:380). Much of the Great Valley rests upon thick strata of alluvial sediments washed down from the Sierra Nevada and Coast Ranges during the Quaternary (Norris and Webb 1990:Figure12-9). It is this same soil that today makes the valley such a fertile agricultural region. Below these levels are layers from the Pliocene and older epochs, which consist of both marine (shale, sandstone) and nonmarine (basalt, andesite) materials.

The San Joaquin River is the San Joaquin Valley's dominant hydrological feature. The river descends from the foothills northeast of Fresno and flows west across the valley floor toward the community of Mendota, where it turns and follows a north-northwest course to the Sacramento–San Joaquin Delta. Along the way, numerous rivers and creeks emerging from the Sierra Nevada flow into the San Joaquin River until it converges with the Sacramento River in the Delta, and they eventually empty into San Francisco Bay. Prior to the mid-twentieth century and the construction of Friant Dam, which controls the river's natural runoff, the river's periodic overflow during the rainy seasons (winter and spring) created marshes and swamps along its banks. Both historical and current maps of the study vicinity show a dense network of sloughs on either side of the river, some of which have since been channelized. The wetlands surrounding the San Joaquin River and other waterways supported marshy or aquatic communities of tule

(*Scirpus* sp.), cottonwood (*Populus fremontii*), sycamore (*Platanus racemosa*), and willow (*Salix* sp.) (Wallace 1978:448–449).

The previously swampy valley floor once provided a lush habitat for a variety of animals. Even as late as the 1860s, travelers passing through the study vicinity reported that there were “herds of antelope in sight all the time, grizzly bears along the river, bands of wild horses on the plains, many elk along the sloughs, and in the winter and spring, millions of ducks and geese and many sand hill cranes. Coyotes and jackrabbits were unbelievably thick” (Radcliffe 1940:133). In addition, salmon, which made their annual runs up the San Joaquin and its tributaries, provided a short-term but abundant food source during historical and prehistoric times.

## **2.2 PREHISTORY AND ARCHAEOLOGY**

Relatively few research-oriented archaeological investigations have been conducted in the Central Valley south of the Stockton area, and thus synthesized information on prehistoric events in the area is sparse (Moratto 1984:189, 191–193, 512, 573; Rosenthal et al. 2007). Research in the Project vicinity is rarer still, although a handful of excavations in support of cultural resource management efforts have been performed (Becker 2003a, 2003b; Dougherty et al. 1993), and mound sites have been identified near the Project area (Massey and Hewes 1939; McGeein 1950). Although these studies are few in number, the results nonetheless provide valuable information for understanding the prehistoric people who inhabited this region. A summary of available information is presented below.

A cultural sequence for the Central Valley was first proposed in the 1930s, after archaeologists from Sacramento Junior College and the University of California, Berkeley excavated numerous sites in the Delta and lower Sacramento Valley (Heizer 1936; Heizer and Fenenga 1938; Heizer and Krieger 1935–1936; Lillard and Purves 1936; Riddell and Riddell 1940; Wedel 1935); many of these were mound sites. Through an intersite comparison of stratigraphically distinct cultural assemblages, a tri-period chronological sequence—Early Horizon, Middle Horizon, and Late Horizon—was developed for the Delta region, defined primarily in terms of mortuary patterns and ornamental artifacts (Lillard et al. 1939; Moratto 1984:181–183).

Efforts to date this widely used Delta sequence were problematic due to the broad geographic and cultural range to which it was applied. Initial dates of 2500 B.C. for the Early Horizon, 1500 B.C. for the Middle Horizon, and A.D. 500 for the Late Horizon were developed mid century (Heizer 1949) and have remained relatively unchanged. However, growing criticism and frustration with the limitations of the sequence (Bickel 1974; Gerow 1954), spurred by the development of more sophisticated dating techniques, prompted Ragir (1972), Bennyhoff (1972, as cited in Elsasser 1978), Fredrickson (1974), and others to modify the sequence and develop variations for specific localities in central California (see Moratto 1984). As Moratto (1984:215) summarizes, the prehistory of the mid Central Valley is better understood now in terms of the broad cultural “patterns” proposed by Fredrickson (1974) “which represent fundamental economic, technologic, and often social continuities over large areas and long intervals of time.”

Studies conducted in the 1960s along the eastern side of the Diablo Range, west of the Project area, resulted in the identification of a cultural sequence similar to, but distinct from, that of the Delta region. Excavations conducted for the construction of several reservoirs, including San

Luis (Olsen and Payen 1969; Riddell and Olsen 1965; Treganza 1960), Los Banos (Pritchard 1967, 1970), and Little Panoche (Olsen and Payen 1968), led to the development of four cultural complexes focused on the exploitation of the foothill-valley biotic zone (Table 2-1).

**Table 2-1**  
**Culture Phases in the Western San Joaquin Valley**  
**(adapted from Moratto 1984)**

Phase	Dates	Common Artifacts and Features
Positas Complex	ca. 3300–2600 B.C.	Shaped mortars, short cylindrical pestles, milling stones, perforated flat cobbles, spire-lopped <i>Olivella</i> beads
Pacheco B Complex	ca. 2600–1600 B.C.	Foliate bifaces, rectangular <i>Haliotis</i> ornaments, rectangular <i>Olivella</i> beads
Pacheco A Complex	ca. 1600 B.C.–A.D. 300	Multiple types of <i>Olivella</i> beads (often in interments), <i>Haliotis</i> disk beads and ornaments, perforated canine teeth, bone awls, whistles, grass saws, large stemmed and side-notched projectile points, milling stones, mortars, and pestles
Gonzaga Complex	A.D. 300–1000	Extended and flexed burials, bowl mortars and shaped pestles, squared and taper-stemmed projectile points, bone awls and grass saws, <i>Haliotis</i> ornaments, multiple types of <i>Olivella</i> wall beads
Unknown	A.D. 1000–1500	Unknown
Panoche Complex	A.D. 1500–1850	Large circular structures; flexed burials; cremations; few milling stones; multiple types of mortars and pestles; bone awls, saws, whistles, and tubes; side-notched arrowheads; clamshell disk beads; <i>Haliotis</i> epidermis disk beads; <i>Olivella</i> wall beads

It is difficult to determine the ancestry of these early inhabitants. Olsen and Payen (1983) speculate that Ohlone people may have crossed the Diablo Range and established habitation on its eastern side near the pass. Others suggest that the artifact assemblages associated with occupation circa 1000 B.C.–A.D. 500 are more similar to those of the Valley Yokuts (Moratto 1984:193). The latest occupation, the Panoche Complex, is associated with the time period in which the ethnographic Yokuts inhabited the region.

West of the Project area near Dos Palos, excavations at CA-MER-323 (Dougherty et al. 1993) revealed a cemetery and intermittent habitation dating to the Pacheco A Complex. The site appears to have been used by small mobile bands that relied on both seeds and acorns as well as large game animals, such as elk and deer. Investigations at this site found a very high proportion of ground stone artifacts relative to flaked stone artifacts. *Olivella* shell beads were found exclusively in burial contexts, suggesting that these imported coastal beads served a special function within the local culture. The site's constituents were dispersed broadly across an agricultural field, and only systematic testing provided a sufficient amount of data to accurately characterize the site (Dougherty et al. 1993). Two additional sites in the vicinity, CA-MER-53 and CA-FRE-42, purportedly contained burials, ground and flaked stone artifacts, and *Olivella* and clay beads (McGeein 1950; Massey and Hewes 1939). Both have been either entirely or partially leveled for agricultural use; however, the brief descriptions on the site records suggest that they are similar to CA-MER-323.

Somewhat farther afield, northeast of the Project area near Merced, excavations at CA-MER-381/H (Becker 2003a) and CA-MER-383 (Becker 2003b) yielded information relevant to the development of a local chronology. Both sites are in areas that have been affected by agriculture, and both sites contain “core areas” with deep (up to 1.5 meter below grade) cultural deposits surrounded by a wider apron of shallow dispersed artifacts. This distribution of materials appears consistent with sites disturbed by agricultural activity.

Chronological data from CA-MER-381/H is sparse, but the site appears to be the remains of a long period of intermittent occupation ranging from 5000 B.C. to A.D. 1000, with two periods of intense occupation both predating 2000 B.C. Flaked stone dominates the assemblage, although ground stone is present. Overall, the site is consistent with intermittent use by mobile hunter-gatherers dependent on hard seeds and small fauna from the local grasslands (Becker 2003a).

CA-MER-383 dates to circa 200 B.C.–A.D. 1000, falling in the Middle and Late Horizons of the Delta Sequence and Pacheco A Complex and Gonzaga Complex described above. Ground stone, including both mortars and pestles and handstones and slabs/basins, is abundant at this site. In contrast to CA-MER-381/H, the faunal collection is dominated by larger animals, specifically artiodactyls such as deer and elk. Unlike CA-MER-381/H, CA-MER-383 contains numerous burials, which may indicate more intense use of sites during Pacheco A, possibly indicating constrained gathering areas and increased sedentism (Becker 2003b).

Overall, the impression gained from excavations at these sites is one of highly mobile foragers who were slowly changing lifeways and becoming more sedentary due to ecological or social changes. The shift in resource procurement from small animals and hard seeds toward acorns and larger game suggests intensified and more specialized use of local resources.

During the early nineteenth century, Native Californian populations dwindled, the missions began to lose neophytes, and Spanish (and later Mexican) raids into the inland areas were conducted to capture runaway neophytes, abduct people (especially children) for the missions, and conduct punitive actions against both runaways and native raiders. In addition, the presence of the Spanish missions pushed many formerly coastal people inland, causing some consolidation of the Native Californian population around water sources in the San Joaquin Valley. As a result, the peoples of the San Joaquin Valley became dependent on a diminishing resource base and became more militant in their opposition to European forces. Raiding parties originating in the San Joaquin Valley traveled through the Panoche and Pacheco passes to attack Spanish/Mexican settlements both in acts of armed resistance and to obtain goods. This not only required the adoption of horses and firearms, but also resulted in a switch in staple foods from acorn to horsemeat (Beck and Haase 1974:23; Cook 1976:226–254).

The missions were secularized in 1834, and the need for new recruits therefore ceased. Many Native Californians found employment on the ranchos, locally including Sanjon de Santa Rita (Beck and Haase 1974:24, 32). As the nineteenth century wore on and California was “Americanized,” Native Californians continued to assimilate, although not always easily, into local social and economic systems.

## **2.3 ETHNOGRAPHY**

The study area lies within the homeland of the Northern Valley Yokuts. At the time of first contact with the Spanish missionaries, the Yokuts people, who also include Southern Valley and Foothill groups, collectively inhabited the San Joaquin Valley as well as the western foothills of the Sierra Nevada from the Fresno River southward to the Kern River (Kroeber 1976). The Yokuts language belongs to the broader Penutian family, which subsumes a relatively diverse assemblage of languages including Miwok, Costanoan, Maiduan, and Wintuan (Silverstein 1978). Compared to other Penutian languages, however, Yokuts shows considerable internal linguistic homogeneity, especially given the extent of its geographic distribution. Dialects differ minimally and were mutually intelligible, at least among speakers of contiguous groups. This relative lack of linguistic differentiation suggests that ancestors of the Yokuts entered California after the arrival and subsequent radiation of the more linguistically diverse Penutian groups such as the Miwok and Costanoan (Moratto 1984:554).

The Northern Valley Yokuts—a categorical construct of ethnographers—subsumes numerous tribes that share linguistic similarities; each of these groups was centered on a main village or group of villages. Specifically, the study area is in the territory of the Nupchenches, also referred to as the Kawatchwah (Latta 1977:143–147), who lived east of the Diablo Range foothills and west of the San Joaquin River between Firebaugh and Los Banos (Cook 1955:51; Latta 1977:144–145). The San Joaquin River and its sloughs offered a rich and varied array of resources to the Yokuts tribes occupying its environs. The Yokuts relied on the plentiful supply of riverine resources, including clams, fish, raccoon, otter, waterfowl, elk, pronghorn, jackrabbits, small seeds, grass nuts, and tule seeds and roots. Wild seeds and acorns were harvested in the early summer and fall, respectively, and stored for use throughout the year. Burning was used to enhance the productivity of vegetable foods.

The Yokuts resided in round or oval sunken houses with conically shaped pole frames covered with tule mats. Tules were used to manufacture a wide variety of items, including baskets, floor mats, sunshades, curtains, boats, baby cradles, and even women's skirts (Latta 1977). The Northern Valley Yokuts employed bone harpoon tips for fishing, stone sinkers for nets, chert projectile points for hunting, mortars and pestles, scrapers, knives, and bone awls to procure and manufacture food. They acquired marine shell from coastal tribes to make necklaces and other adornments.

The serial incursion of Spanish, Mexican, and finally northern European settlers irrevocably changed the lifeways of the Yokuts and ultimately led to the complete displacement of native peoples from the valley. With the founding of Mission San Juan Bautista in 1797, Indians inhabiting the western portion of the San Joaquin Valley were forcibly recruited to serve at the mission. Latta (1999) writes that virtually all Yokuts living west of the San Joaquin River had been taken to the Spanish missions and that those remaining Indians who survived into the Mexican Period (1821–1846) perished in an 1833 epidemic.

## **2.4 HISTORY**

In September 1806, Spanish officer Gabriel Moraga departed from Mission San Juan Bautista in pursuit of a band of horse thieves that had fled east into a largely unexplored portion of the

valley beyond the coastal mountains (Cook 1960:247–254). The first leg of his historic journey no doubt took him through Pacheco Pass, by the present-day town of Los Banos, across the San Joaquin River near Firebaugh, then northward on his way through what is now Merced and Stanislaus counties (Cook 1960:248–249). The pass and roadside community that have become well known to motorists traveling along Highway 152 received their appellations well after Moraga's passing, but the Spanish explorer did name several of the valley's geographic features, including the Merced and Mariposa rivers as well as the San Joaquin and Kings rivers, which he had encountered during an earlier expedition. Father Pedro Muñoz accompanied the detachment and served as its chronicler; his report clearly indicates that along with tracking down the bandits, the group was in search of new mission sites.

In the 1850s, much of California's population could be found in the Sierra Nevada foothills in search of gold or in the state's commercial centers—San Francisco and Sacramento—where the precious ore was traded for money, goods, or whatever else was required by a miner. At the time, few people lived in the Central Valley in general and even fewer on the valley's West Side in particular. An 1873 map of the Central Valley shows that tule swamps covered much of the study vicinity (U.S. Congress 1873). Despite the dearth of inhabitants, the West Side appears to have been well-traveled in the 1850s. The Stockton-Visalia freight road operated throughout the decade and passed through San Luis Camp, Firebaugh's Ferry, and the few outposts west of the San Joaquin River (Milliken 1973:6). In 1857, a year after Fresno County had been formed from Mariposa, Merced, and Tulare counties, Andrew Firebaugh completed a toll road across Pacheco Pass (Pimentel 1987:25). From 1858 to 1861, the Butterfield Stage Line incorporated the West Side road network into its San Francisco to St. Louis route (Hoover et al. 1966).

However, perhaps the defining moment in the history of the West Side came in the early 1860s when Henry Miller descended from Pacheco Pass on horseback looking for opportunities, much as Gabriel Moraga had done some 50 years before. Born Heinrich Kreiser in Germany, Miller landed in New York in 1846 (Treadwell 1981). He later moved to San Francisco, where he established a butcher business. Miller joined with former competitor Charles Lux in 1858. Soon after, the partners became the unquestioned leaders of the California cattle industry and, in time, the owners of over 1 million acres.

In addition to his cattle and canal operations, Miller showed considerably interest in developing the commercial base of the West Side. Back in the late 1860s, he leased a section of land to Gustave Kreyenhagen for 10 years for only \$1, on the condition that he would establish a store (Outcalt 1925:219). Kreyenhagen was also the first farmer to grow grain on the West Side (Pimentel 1987:35). His business initially sat along the freight road at a location known as Lone Willow, a favorite meeting place for Miller, at the present-day northwest corner of Highway 152 and Turner Island Road (Pimentel 1987:26; Radcliffe 1940:132). This site eventually became known as Los Banos Village (or old Los Banos), which in 1881 included the store (now under the ownership of B. Scheeline), Thornton's Hotel, a blacksmith, and a hay and grain barn (Elliot & Moore 1974:120). There were also other small communities in the vicinity, such as Central Point and Dogtown (Milliken 1973:10).

Prior to the arrival of the railroad, local farmers carted their grain to the Salt Slough warehouse on the Santa Rita Ranch, where during times of high water on the San Joaquin River steamers transported loads to the Bay Area for sale. Sometime in the 1880s, Miller began purchasing the

wheat from the farmers and hauled it, along with his cattle, over Pacheco Pass to the railhead at Gilroy (Radcliffe 1940:145). In this way, farmers received payment for the crops shortly after harvest, thus minimizing storage costs. The development of irrigation on the West Side continued with the construction the East Side Canal by James Stevenson in 1887–1888 as well as the Outside Canal and Parallel Canal by Miller in the late 1890s (Mead 1901:247–249).

Perhaps the second most important commercial venture on the West Side in the nineteenth century—next to the San Joaquin and Kern River Canal Company’s Main Canal—was the arrival of the San Pablo Tulare Extension Railroad in 1890 (Radcliffe 1940:146). The rail line was part of the larger Southern Pacific Company system and passed through Los Banos, which was moved east to its current location. Unlike the Fresno, Madera, and Merced areas, where community and productivity developed hand-in-hand with the railroad, the new road was more or less drawn to the West Side due to Miller and Lux’s cattle empire and the success of grain farming. The effect of the railway was considerable. Miller platted the town of (new) Los Banos in 1890 and built a brick building that housed his store (Radcliffe 1940:146–147). The buildings of Central Point and old Los Banos—including Miller and Lux’s businesses—were uprooted and consolidated into the new community.

It was also around this time that the community, or communities, of Dos Palos emerged. Meaning two trees, the term “Dos Palos” is first found on Sobranes’ claimant maps from the early 1840s. The “town” of Dos Palos arose around a railroad station along the San Pablo Tulare Extension line and was eventually platted by the Pacific Improvement Company (the real estate arm of the Southern Pacific) in 1907 (Outcalt 1925:371). The place is known today as South Dos Palos or Southtown. According to local historians, land developer Bernard Marks initially founded the “colony” of Dos Palos somewhere in northwest Fresno County near Firebaugh in 1893 (Outcalt 1925:220, 370). Marks attracted settlers from the East and Midwest, including a party of 19 colonists from Tennessee, but upon their arrival they found the land less than suitable for cultivation (Radcliffe 1940:149). In response, Marks worked a deal with Miller whereby the colony would relocate onto the cattleman’s land in Merced County. Located about 2 miles northeast of South Dos Palos, the Dos Palos Colony was platted in 1895. By 1899, the settlement was populated by 600 colonists, who cultivated fruit, nut, and berry crops or operated dairies (Radcliffe 1940:151, 152). Today, this place is simply known as Dos Palos.

With the railroad, the pace of development accelerated on the West Side. Dairies began appearing in the 1890s (Radcliffe 1940:148), and correspondingly alfalfa became a principal crop as feed for dairy cows. In the recreational sphere, the natural wetlands and the flooded pastures around the San Joaquin attracted birds by the millions. Local historian Corwin Radcliffe (1940:148) called the region “one of the greatest duck hunters’ paradises that the whole world has ever seen.

As with many of the water conveyance systems on the West Side, the Poso Canal is also associated with the operations of Miller and Lux. The partners, who likely financed construction of the canal to irrigate their properties, had the canal built as part of the irrigation network that originates from the San Joaquin and Kings River Canal (presently the Central California Irrigation District’s Main Canal) (Lloyd et al. 2013). The Poso Canal first appears on the USGS 1920 Santa Maria Bridge and 1922 Oxalis quadrangles, which plot its course but do not label the canal by name. The two maps were surveyed in 1916 and 1919, respectively. The canal is not



shown on the USGS 1913 Panoche quadrangle, surveyed between 1908 and 1911, indicating that it was built sometime between 1908 and 1916. Based on maps from and prior to the late 1940s, the canal initially tapped the Main Canal at a location 1 mile southeast of its current head. The canal was realigned to its present point of origin by the time of the USGS 1956 Firebaugh quadrangle. Similarly, the canal's end point has been altered. At the time of the Poso Canal's construction, the Santa Rita Ditch and the Riverside Canal had yet to be built, and the Poso Canal simply terminated near its current end point. By the time of the USGS 1948 Santa Rita Bridge quadrangle, the Poso Canal appears to be connected to these two branch canals.

## **3 METHODS**

### **3.1 RECORDS SEARCH**

On October 29, 2015, Æ requested a records search from the Southern San Joaquin Valley Information Center (SSJVIC) at California State University, Bakersfield for the Vlot-Triangle T Crossing (Records Search File No. 15-438). The records search encompassed the Vlot-Triangle T Crossing pipeline and staging area locations as well as a 0.5-mile surrounding area. SSJVIC staff examined site record files, maps, and other materials to identify previously recorded resources and prior surveys within the requested area (Appendix B). Additional sources included the National Register of Historic Place, California Register of Historical Resources, California Historical Landmarks, California Inventory of Historic Resources, California Points of Historical Interest, Directory of Properties in the Historic Property Data File and Archaeological Determinations of Eligibility, California Department of Transportation (Caltrans) State and Local Bridge Survey, and General Land Office plats and other pertinent historical map data.

Prior to their exclusion from the Project, on October 16, 2014 Æ also requested a records search from the SSJVIC for the Red Top crossing (Records Search File No. 14-375) and from the Central California Information Center for the Harman crossing (Records Search File No. 9130I).

### **3.2 NATIVE AMERICAN CONSULTATION**

Æ contacted the Native American Heritage Commission (NAHC) to request a search of the sacred land file contact information for Native American groups or individuals who may have an interest in the Project or knowledge about cultural resources in the area. The NAHC responded on October 30, 2014 (Appendix C). That response was forwarded to the Bureau of Reclamation which will conduct the Native American consultation for the project.

### **3.3 PEDESTRIAN SURVEYS**

On November 9, 2015, Æ archaeologist Katie Asselin conducted an intensive pedestrian survey of the Vlot-Triangle T Crossing and associated staging area. Asselin examined the APE using meandering and parallel transects spaced 15–20 meters apart. The survey area was photographed with an Olympus Tough TG-860 and GPS data were obtained using a Trimble GeoXH unit. The digital files and field notes are archived at Æ's office in Fresno, California.

Æ archaeologists Katie Asselin and Jay Lloyd conducted an intensive pedestrian survey of the two originally proposed crossings (Harman and Red Top) on October 16, 2014. These areas were also photographed and surveyed using meandering and parallel transects spaced 15–20 meters apart. The digital files and field notes are archived at Æ's office in Fresno, California. Subsequently, the Project was redesigned to only include the Vlot-Triangle T Crossing, and these locations are no longer part of the Project; however, survey coverage is documented in this report for inclusion in the California Historical Resources Information System.

### **3.4 BURIED SITE ASSESSMENT**

The current Project area was analyzed to identify the potential for buried cultural resources. AE consulted geological maps, historic maps, geologic/sediment databases, geoarchaeological studies, and soil surveys of the two proposed crossing. These sources provided information regarding the historical routes of the San Joaquin River and its tributaries as well as data about local soils and sediments, parent rock formations, and historic vegetation. This information was used to consider the hydrologic and geologic forces that created and placed these sediments, and assess the probability of encountering buried cultural resources during Project activities.

## 4 FINDINGS

### 4.1 RECORDS SEARCH

The SSJVIC identified one previously recorded resource within the Project area—the Poso Canal (P-10-006248), which has been previously evaluated and recommended not eligible for the NRHP or the CRHR (Lloyd et al. 2013; see California Department of Parks and Recreation cultural resource record forms in Appendix D). The California State Historic Preservation Officer (SHPO) concurred that the canal is not eligible for the NHRP in a letter dated September 18, 2014 (Appendix B). The only previously identified resources identified as a result of the records searches for the now-excluded crossings were the Poso Canal at the Red Top crossing and the Riverside Canal (P-24-001798) at the Harman crossing.

The records search identified one previous study within the APE associated with a geotechnical levee study along the San Joaquin River (FR-02469) and one previous study within the 0.5 mile vicinity for structure replacements along the Friant-Kern Canal (FR-02509). More details about these studies are provided in the records search results in Appendix B.

### 4.2 PEDESTRIAN SURVEY

On November 9, 2015, Æ Associate Archaeologist Katie Asselin performed an intensive pedestrian survey of the Vlot-Triangle T Crossing and associated staging area. The entire area was covered by intensive survey totaling 3.22 acres (Figure 4-1). The Project area was accessible by a graded dirt road where there was 100 percent visibility. Visibility varied between 20 and 90 percent in the dry river bed where views were obscured by patches of grasses and weeds (Figure 4-2). Visibility on the banks of the San Joaquin River was less than 5 percent, obscured by willow growth on the western bank (Figure 4-3) and a thicket of blackberries and scrub oak on the eastern bank (Figure 4-4). The staging area had excellent visibility at nearly 100 percent and was only obscured by piled agriculture debris in the middle (Figure 4-5). A new turnout will be constructed on the Poso Canal (Figure 4-6) at the west edge of the Project area. Apart from the previously recorded Poso Canal (P-10-006248), no cultural resources were observed during the survey.

As shown on Figure 1-2, an additional 2.08 acres was surveyed for the now-excluded Red Top (1.38 acres) and Harman (0.70 acre) crossings. Visibility at both locations was 100 percent within the river bed, decreasing to about 50 percent along the river margins due to dense riparian vegetation. Surface visibility on the river banks was also about 50 percent due to cultivated farmland. Only the previously recorded canals were observed in these areas during survey.

Æ prepared a Linear Feature Record for the Vlot-Triangle T Crossing and one for the excluded Red Top Crossing as well as a revised Location Map to update the California Department of Parks and Recreation cultural resource record for the Poso Canal (Appendix D).



**Figure 4-1** Survey coverage of Vlot-Triangle T Crossing on aerial photo.





**Figure 4-2** Survey conditions in San Joaquin River bed at proposed pipeline crossing, facing west.



**Figure 4-3** Western bank of San Joaquin River showing vegetation growth, facing east.





**Figure 4-4** Vegetation on east bank of San Joaquin River, looking east from pipeline route.



**Figure 4-5** Staging area with pump in foreground and piled debris in the middle, facing north.



**Figure 4-6** Area of Poso Canal (P-10-006248) proposed for new turnout construction, facing south.

### **4.3 BURIED SITE POTENTIAL**

As early as 1920, a USGS map (Santa Rita Bridge 7.5-minute quadrangle [1920]) shows the San Joaquin River as channelized and settled into its present course within the vicinity of the proposed crossing. The area has been formally channelized and a complex network of irrigation ditches and canals crisscrosses the region. The surface near the river is represented on the map as relatively flat with a number of depressions, likely abandoned meanders of the river not yet infilled that formed prior to channelization associated with its most recent period of downcutting.

According to geologic literature, sediments along the San Joaquin River are mapped as Young Unconsolidated surficial deposits, of alluvial sand, silt and gravel associated with floodplains and low terraces (Marchland 1976). The *Geologic Map of California: Santa Cruz Sheet* (Jennings and Strand 1958), also identified sediments in the Project area as Recent (Holocene) stream channel deposits.

In a geoarchaeological sensitivity study prepared for Caltrans Districts 6 and 9 (Meyer et al. 2010), sediments along the bank of the San Joaquin River are dated to historical and modern time (150–0 cal B.P.), based on available radiocarbon dates from the districts. Samples were obtained and dated from related soils and similar settings and used to model the potential period of deposition throughout the districts. The Meyer et al. (2010) study suggests that these sediments were deposited within the last 150 years. During the historical and modern period, human impacts to the valley and the mountains resulted in the rapid displacement of large



quantities of sediment into the valley. The loss of native vegetation due to human activities destabilized slopes, making sediments susceptible to erosion. Agriculture, irrigation, logging, mining, and introduction of invasive plants were the main driving causes behind this effect; radiocarbon data suggest that the bulk of it occurred during the gold rush (Meyer et al. 2010).

The results of this analysis indicate that the Project area is located in the actively evolving floodplain of the San Joaquin River. However, historical maps suggest that not much has happened in this area for the last 90 years or more, and therefore it is now somewhat stable. Prior to this time, the area would likely have been subject to floods and deposition of new material resulting from historic-period activities in the mountains, foothills, and surrounding countryside. Flooding also would have occurred throughout the Holocene. The native ground surface likely would have consisted of seasonal wetlands, oxbow lakes, cut-off channels, and other fluvial features. Soil formation would likely be minimal due to rapid aggradation of sediments.

The age of the near-surface sediments is predicted to be very young, and therefore the chance of buried archaeological sites within the Project area is low. As such, the 6-foot depth of potential Project disturbance represents a short period of time, as Holocene sediments may be very deep in this area. Should archaeological deposits be identified, it is likely they are in a secondary context, having been subject to erosion during flood events when water overtops the banks of the river. This area was likely used by Native Americans for resource gathering and processing; however, camps and other long-term settlement would likely be found on higher ground. The classification of this area as low sensitivity for prehistoric sites does not preclude the possibility of buried sites, as it is highly likely that any portion of the vertical soil column likely to be encountered by the Project was exposed during the Holocene. However, modeling for this area suggests that cultural deposits would represent gathering activities, as opposed to habitation, and possibly would be in secondary context due to the higher energy of deposition of the local sedimentary deposits.

## 5 SUMMARY AND RECOMMENDATIONS

### 5.1 SUMMARY OF INVESTIGATIONS

The CCID proposes to construct the Red Top area water conveyance across the San Joaquin River in Fresno and Madera counties. The Project is subject to both Section 106 of the NHPA and provisions of the CEQA, which mandate that public agencies determine whether a proposed Project will adversely affect/significantly impact cultural resources, and, if so, whether that effect/impact can be avoided or mitigated.

Accordingly, Æ requested and reviewed a records search, conducted a cultural resources survey of the 1.85-acre APE for the Vlot-Triangle T Crossing and associated staging area, and prepared this technical report. The records search revealed one previously recorded resource within the Project APE, the Poso Canal (P-10-006248). Æ's pedestrian survey of the APE did not locate any additional cultural resources, and the buried site assessment indicates that the Project area has a very low potential for buried resources.

Before CCID finalized the Project design, Æ conducted a cultural resources inventory at two previously considered crossings, one north and one south of the Project area. The records searches and pedestrian survey of these areas identified only the previously recorded Riverside and Poso canals, respectively.

### 5.2 MANAGEMENT RECOMMENDATIONS

The Poso Canal (P-10-006248) is the only cultural resource identified within the Project APE as part of this inventory. This resource was previously evaluated and recommended ineligible for listing on the NRHP and CRHR (Lloyd et al. 2013). The SHPO concurred that the resource is not eligible for the NRHP in a letter dated September 18, 2014 (Appendix B). Therefore, no further management of this resource is recommended or necessary.

However, in the event that previously undetected cultural materials are discovered during construction, work in the immediate vicinity should immediately cease and be redirected to another area until a qualified archaeologist inspects and assesses the find.

If human remains are uncovered, or in any other case where human remains are discovered, the Fresno or Madera County Coroner, as appropriate, is to be notified to arrange their proper treatment and disposition. If the remains are identified—on the basis of archaeological context, age, cultural associations, or biological traits—as those of a Native American, California Health and Safety Code 7050.5 and Public Resource Code 5097.98 require that the coroner notify the NAHC within 24 hour of discovery. The NAHC will then notify the most likely descendant, who may recommend treatment of the remains.



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## **APPENDIX A**

### **Personnel Qualifications**



### Areas of Expertise

- California archaeology
- Field survey and methodology
- Cultural resource management
- Wildland fire and fire effects on cultural resources
- Great Basin archaeology

### Years of Experience

- 7

### Education

M.A., Archaeology, University of Manchester, 2009

B.A., Anthropology, University of California, Berkeley, 2006

### Registrations/Certifications

- Register of Professional Archaeologists (2014)

### Permits/Licensure

- Field Director, California BLM Statewide Cultural Resources Use Permit CA-15-29

### Professional Affiliations

- Society for California Archaeology

### Professional Experience

- |           |  |
|-----------|--|
| 2014–     | Associate Archaeologist, Applied EarthWorks, Inc., Fresno, California                                    |
| 2012–2014 | Archaeological Technician/Crew Leader, USDA Forest Service, Eldorado National Forest, Camino, California |
| 2011–2012 | Archaeological Technician, Great Basin Institute, Reno, Nevada   |
| 2008–2011 | Field Technician, Kautz Environmental Consultants, Inc., Reno, Nevada                                    |
| 2006      | Lab Volunteer, Archaeological Research Facility, University of California, Berkeley                      |

### Technical Qualifications

Katie Asselin has been involved in California archaeology since 2004 and has worked as a professional archaeologist since 2008. She has extensive experience with historic and prehistoric resources of the Sierra Nevada and Great Basin. Ms. Asselin has served as field supervisor, archaeologist, crew chief, and field technician for projects throughout California. She has been responsible for overseeing fieldwork, developing research designs, and preparing technical reports. Additionally, Ms. Asselin has completed the Federal Law Enforcement Training Center's Archaeological Resource Protection Program and is knowledgeable about Archaeological Resource Preservation Act regulations, violations, and writing damage assessments. While with the USDA Forest Service, she was a qualified firefighter and acted as an archaeologist protecting sites on the fire line and assessing post-burn conditions to recommend emergency mitigation measures. Currently, Ms. Asselin is completing her post-baccalaureate certificate in Geographic Information Systems and is well-versed in GIS and its applications in cultural resource management.

### Areas of Expertise

- Historical research
- Architectural and archaeological survey and site evaluation
- Field logistics
- Statistical analysis
- Biological anthropology

### Years of Experience

- 14

### Education

M.A., Anthropology, University of California, Davis, 1989

B.A., Anthropology, California State University, Fresno, 1986

B.S., Business Administration, California State University, Fresno, 1986

### Permits/Licensure

Field Director, California BLM  
Statewide Cultural Resources Use  
Permit CA-15-29

### Professional Experience

2001– Associate Historian, Applied EarthWorks, Inc., Fresno, California

### Technical Qualifications

Mr. Baloian conducts historical research, evaluates architectural and archaeological resources, performs statistical analyses, prepares reports, and assists with various administrative tasks including budget and proposal preparation. He has evaluated numerous historical resources in the Central Valley and Sierra Nevada foothills, including residences, ranch complexes, commercial structures, mining sites, recreational camps and parks, and agricultural properties. Through his efforts as a historian, Mr. Baloian has amassed a considerable archive on the topic of irrigation, and he maintains the library and site record archives at Applied EarthWorks' Fresno office. He has authored numerous evaluation reports on irrigation canals on both sides of the Central Valley, and his research on the history of the Central Valley also supports archaeological investigations in that region. In addition to his duties as historian and archivist, Mr. Baloian routinely performs archaeological surveys and has participated in site testing and data recovery fieldwork. He has completed the Advisory Council on Historic Preservation course on National Historic Preservation Act Section 106 compliance. Mr. Baloian's academic studies focused on paleoanthropology, primatology, human genetics, statistical analysis, and the genetic and cultural manifestations of ethnicity.

## Areas of Expertise

- Cultural resources management
- California archaeology
- Inventory and excavation strategies

## Years of Experience

- 18

## Education

M.A., Linguistics, University of California, Santa Cruz, 2000

B.A., Anthropology, California State University, Fresno, 1998

B.A., Linguistics, California State University, Fresno, 1998

## Registrations/Certifications

- Register of Professional Archaeologists (2006)
- Paleontologic Site Monitor Certification, Fossil Discovery Center (2011)

## Permits/Licensure

- Principal Investigator, California BLM Statewide Cultural Resources Use Permit CA-15-29

## Professional Affiliations

- Society for American Archaeology
- Society for California Archaeology
- Fresno County Archaeological Society

## Professional Experience

- |           |   |
|-----------|---|
| 2000–     | Senior Archaeologist (2007– ), Staff Archaeologist (2001–2007), Archaeological Technician (2000–2001), Applied EarthWorks, Inc., Fresno, California |
| 2000      | Adjunct Faculty Member, Reedley College, Reedley, California  |
| 1997–1998 | Archaeological Field Technician for various cultural resource management firms throughout California  |

## Technical Qualifications

Mr. Lloyd has been involved in cultural resources management throughout California for 18 years. As a senior archaeologist, he manages numerous simultaneous projects throughout the state. In this capacity, Mr. Lloyd ensures compliance with federal and state laws and regulations, and directs the work of technical staff and subcontractors. Additionally, he is responsible for project design and management; data acquisition; field supervision; technical reporting; and Native American coordination and consultation. Mr. Lloyd has worked on dozens of archaeological projects throughout California, including the Sierra Nevada and Cascade ranges, Central Valley, Central Coast, and Mojave Desert regions. He has supervised survey, extended survey, testing and evaluation, and data recovery projects at both prehistoric and historical sites. Additionally, Mr. Lloyd has authored and contributed to numerous National Historic Preservation Act Section 106 and California Environmental Quality Act compliance documents. He is proficient in laboratory sorting, cataloging, and artifact classification and has particular experience with the typologies of *Olivella* and *Halotis* beads and ornaments.



## **APPENDIX B**

### **Records Search Results**





**CALIFORNIA  
HISTORICAL  
RESOURCES  
INFORMATION  
SYSTEM**



**FRESNO  
KERN  
KINGS  
MADERA  
TULARE**

Southern San Joaquin Valley  
Information Center  
California State University, Bakersfield  
Mail Stop: 46 MEC  
9001 Stockdale Highway  
Bakersfield, California 93311-1022  
(661) 654-2289 FAX (661) 654-2415  
E-mail: ssjvic@csu.edu

11/13/2015

Jay Lloyd  
Applied EarthWorks, Inc.  
1391 W. Shaw Ave., Suite C  
Fresno, CA 93711

Re: Red Top Pipeline  
Records Search File No.: 15-438

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on the Santa Rita Bridge USGS 7.5' quads. The following reflects the results of the records search for the project area and the 0.5 mile radius:

As indicated on the data request form, the locations of reports and resources are provided in the following format: ☐ custom GIS maps ☐ shapefiles ☒ hand-drawn maps

Resources within project area:	None
Resources within 0.5 mile radius:	P-10-006248
Reports within project area:	FR-02469
Reports within 0.5 mile radius:	FR-02509

**Resource Database Printout (list):**

☒ enclosed ☐ not requested ☐ nothing listed ☐ not available

**Resource Database Printout (details):**

☒ enclosed ☐ not requested ☐ nothing listed ☐ not available

**Resource Digital Database Records:**

☒ enclosed ☐ not requested ☐ nothing listed ☐ not available

**Report Database Printout (list):**

☒ enclosed ☐ not requested ☐ nothing listed ☐ not available

**Report Database Printout (details):**

☒ enclosed ☐ not requested ☐ nothing listed ☐ not available

**Report Digital Database Records:**

☒ enclosed ☐ not requested ☐ nothing listed ☐ not available

**Resource Record Copies:**

☒ enclosed ☐ not requested ☐ nothing listed

**Report Copies:**

☐ enclosed ☒ not requested ☐ nothing listed

**OHP Historic Properties Directory:**

☐ enclosed ☐ not requested ☒ nothing listed

**Archaeological Determinations of Eligibility:**

☐ enclosed ☐ not requested ☒ nothing listed

**CA Inventory of Historic Resources (1976):**

☐ enclosed ☐ not requested ☒ nothing listed

**Caltrans Bridge Survey:** Not available at SSJVIC; please see  
<http://www.dot.ca.gov/hq/structur/strmaint/historic.htm>

**Ethnographic Information:** Not available at SSJVIC

**Historical Literature:** Not available at SSJVIC

**Historical Maps:** Not available at SSJVIC; please see  
<http://historicalmaps.arcgis.com/usgs/>

**Local Inventories:** Not available at SSJVIC

**GLO and/or Rancho Plat Maps:** Not available at SSJVIC

**Shipwreck Inventory:** Not available at SSJVIC; please see  
[http://shipwrecks.slc.ca.gov/ShipwrecksDatabase/Shipwrecks\\_Database.asp](http://shipwrecks.slc.ca.gov/ShipwrecksDatabase/Shipwrecks_Database.asp)

**Soil Survey Maps:** Not available at SSJVIC; please see  
<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.

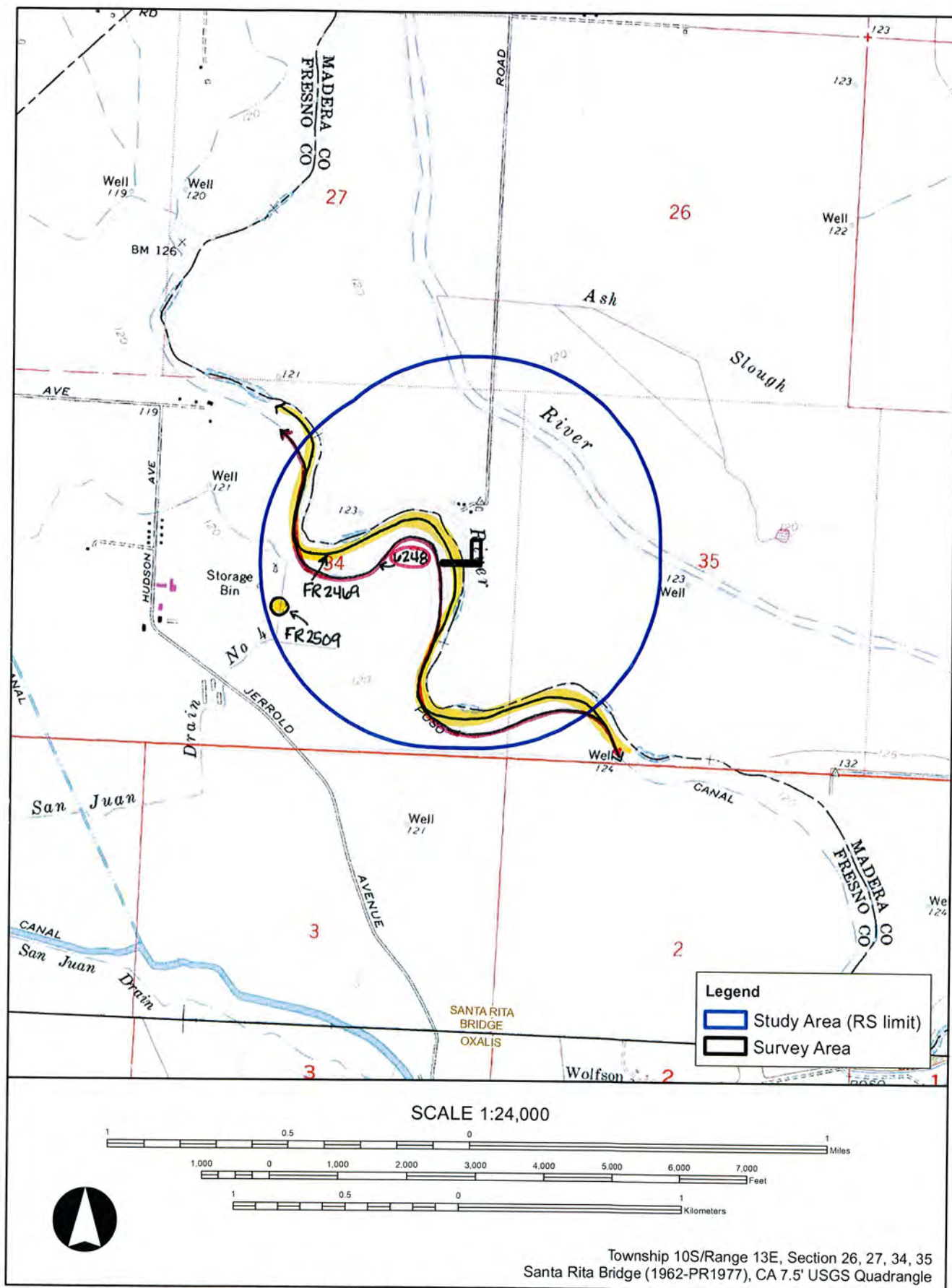
Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,



Celeste M. Thomson  
Coordinator





Records Search location map for the Red Top Pipeline Project AE3343.

## Resource Detail: P-10-006248

SSJVIC Record Search 15-438

---

### Identifying information

Primary No.: P-10-006248

Trinomial:

Name: Poso Canal segment and Flume; AE-2518-7H

Other IDs:	Type	Name
	Resource Name	Poso Canal segment and Flume
	Resource Name	AE-2518-7H

Cross-refs:

### Attributes

Resource type: Structure

Age: Historic

Information base: Survey

Attribute codes: HP20 (Canal/aqueduct)

Disclosure: Unrestricted

Collections: No

Accession no(s):

Facility:

### General notes

### Recording events

Date	Recorder(s)	Affiliation	Notes
4/21/2011	Cindy Arrington, Pete Morris	Parus Consulting	
4/15/2011	David Lemon	ICF International	[SUPPLEMENT]
4/9/2013	R. Baloian	Applied EarthWorks, Inc.	[SUPPLEMENT]

### Associated reports

Report No.	Year	Title	Affiliation
FR-02469	2011	An Archaeological Survey for the Department of Water Resources Geotechnical Levee Investigation of the San Joaquin River Segment 5028 and Segment 5030 and of Poso Canal West Levee, Fresno County, California	Parus Consulting, Inc. Roseville
FR-02589	2013	Cultural Resources Investigations for the Central California Irrigation District's Proposed Poso and East Ditch Reservoirs, Fresno and Merced Counties, California	Applied EarthWorks

### Location information

County: Fresno

USGS quad(s): Firebaugh, Oxalis, Poso Farm, Santa Rita Bridge

Address:

PLSS: T10S R13E Sec. 22 MDBM  
T10S R13E Sec. 27 MDBM  
T10S R13E Sec. 34 MDBM  
T10S R13E Sec. 35 MDBM  
T11S R13E Sec. 1 MDBM  
T11S R13E Sec. 12 MDBM  
T11S R13E Sec. 13 MDBM  
T11S R14E Sec. 13 MDBM  
T11S R14E Sec. 19 MDBM  
T11S R14E Sec. 29 MDBM  
T11S R14E Sec. 30 MDBM  
T11S R14E Sec. 32 MDBM  
T12S R14E Sec. 4 MDBM  
T12S R14E Sec. 5 MDBM  
T12S R14E Sec. 8 MDBM

## Resource Detail: P-10-006248

### SSJVIC Record Search 15-438

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T12S R14E Sec. 9 MDBM  
T12S R14E Sec. 17 MDBM  
T12S R14E Sec. 20 MDBM  
T12S R14E Sec. 21 MDBM  
T12S R14E Sec. 28 MDBM  
T12S R14E Sec. 29 MDBM  
*UTMs:* Zone 10 718573mE 4102641mN NAD83 (North End)  
Zone 10 726702mE 4082635mN NAD83 (South End)  
Zone 10 mE 4095984mN NAD83 (Easting: 7222443)

### Management status

#### Database record metadata

	<i>Date</i>	<i>User</i>	
<i>Entered:</i>	10/11/201	ssjvic	
<i>Last modified:</i>	11/13/201	user	
<i>IC actions:</i>	<i>Date</i>	<i>User</i>	<i>Action taken</i>
	10/11/201	ssjvic	Entered: CT
	10/11/201	ssjvic	Mapped: CT
	1/14/2014	ssjvic	Resource updated: JS
	11/13/201	user	Entered location: MMB
<i>Record status:</i>	Database Complete		

## Report Detail: FR-02469

SSJVIC Record Search 15-438

---

### Identifiers

Report No.: FR-02469

Other IDs:

Cross-refs:

### Citation information

Author(s): Nancy E. Sikes and Cindy Arrington

Year: 2011

Title: An Archaeological Survey for the Department of Water Resources Geotechnical Levee Investigation of the San Joaquin River Segment 5028 and Segment 5030 and of Poso Canal West Levee, Fresno County, California

Affiliation: Parus Consulting, Inc. Roseville

No. pages: 35

No. maps:

Attributes: Archaeological, Field study

Inventory size:

Disclosure: Not for publication

Collections: No

### General notes

### Associated resources

Primary No.	Trinomial	Name
P-10-006248		Poso Canal segment and Flume;
P-20-000301	CA-MAD-000301	GL-ISO-9

No. resources: 2

Has informals: No

### Location information

County(ies): Fresno

USGS quad(s): Firebaugh, Oxalis, Poso Farm, Santa Rita Bridge

Address:

PLSS:

### Database record metadata

Date	User
------	------

Entered: 8/20/2012	ssjvic
--------------------	--------

Last modified: 4/11/2013	ssjvic
--------------------------	--------

IC actions:	Date	User	Action taken
	8/20/2012	ssjvic	report entered: cls
	8/20/2012	ssjvic	report mapped: cls

Record status:

## Report Detail: FR-02509

SSJVIC Record Search 15-438

---

### Identifiers

*Report No.:* FR-02509

*Other IDs:*

*Cross-refs:*

### Citation information

*Author(s):* Chotkowski, Michael

*Year:* 2009

*Title:* Section 106 Compliance for the Replacement of Five Block Structures along the Friant-Kern Canal, Fresno and Tulare Counties, California (Project No. 10-SCAO-037)

*Affiliation:* Bureau of Reclamation,

*No. pages:* 11

*No. maps:*

*Attributes:* Architectural/historical

*Inventory size:*

*Disclosure:* Not for publication

*Collections:* No

### General notes

See also TU-01566

### Associated resources

*No. resources:* 0

*Has informals:* No

### Location information

*County(ies):* Fresno

*USGS quad(s):* Piedra

*Address:*

*PLSS:*

### Database record metadata

<i>Date</i>	<i>User</i>
-------------	-------------

<i>Entered:</i> 9/14/2012	ssjvic
---------------------------	--------

<i>Last modified:</i> 3/21/2013	ssjvic
---------------------------------	--------

<i>IC actions:</i>	<i>Date</i>	<i>User</i>	<i>Action taken</i>
	9/14/2012	ssjvic	report entered: cls
	9/14/2012	ssjvic	report mapped: cls

*Record status:*



**OFFICE OF HISTORIC PRESERVATION  
DEPARTMENT OF PARKS AND RECREATION**

1725 23<sup>rd</sup> Street, Suite 100  
SACRAMENTO, CA 95816-7100  
(916) 445-7000 Fax: (916) 445-7053  
calshpo@parks.ca.gov  
www.ohp.parks.ca.gov



September 18, 2014

Reply in Reference To: BUR\_2014\_0728\_002

Anastasia T. Leigh  
Regional Environmental Officer  
Bureau of Reclamation, Mid-Pacific Regional Office  
2800 Cottage Way  
Sacramento, CA 95825-1898

RE: East Ditch Reservoir and Poso Canal Reservoir Project, Fresno and Merced Counties,  
California; (12-SCAO-150)

Dear Ms. Leigh:

Thank you for seeking my consultation regarding the above noted undertaking. Pursuant to 36 CFR Part 800 (as amended 8-05-04) regulations implementing Section 106 of the National Historic Preservation Act (NHPA), the Bureau of Reclamation (Reclamation) is seeking my comments regarding the effects that the above named project will have on historic properties and my concurrence of a *Finding of No Historic Properties Affected*.

Reclamation is providing funding through the WaterSMART grant program to the Central California Irrigation District (CCID) for the construction of the East Ditch Reservoir and Poso Canal Reservoir. This will entail the excavation of two reservoirs, associated inlet and outlet pumps, discharge pipes and SCADA integrated controls to capture and control excess irrigation water released through operational spill and agricultural tail water.

The Area of Potential Effects (APE) for the East Ditch Reservoir will occupy approximately 37.5 acres of land. The APE for the Poso Reservoir will occupy 72 acres of land. The APE in both locations includes the reservoir, banks, associated equipment and roads. The vertical APE in both locations will be approximately four feet from existing ground surface.

In addition to your letter received July 28, 2014, you have submitted the *Cultural Resources Investigation for the Central California Irrigation District's Proposed Poso and East Ditch Reservoirs, Fresno and Merced Counties, California (12-SCAO-150)* (Applied Earthworks, October 2013) as evidence of your efforts to identify and evaluate historic properties in the project APE.

Archival research included a records search at the Southern San Joaquin Valley Information Center on March 15, 2013. No previously recorded cultural resources were identified in the APE. Reclamation identified seven Native American tribes likely to have knowledge of sites of religious or cultural significance to them in the project area. The tribes were notified of the project and comments were invited. No such properties were identified through consultation efforts.

A geo-archaeological study conducted for the project determined the East Ditch project area is highly sensitive for buried archaeological resources and the Poso Ditch project area has a low sensitivity for buried resources.

A pedestrian surface survey of the APE was conducted in both locations, between March 27 and 29, 2013, utilizing fifteen meter wide transects. The following cultural resources were identified and recorded within or immediately adjacent to the APE. Reclamation has made the following determinations as to their eligibility to the National Register of Historic Places (NRHP):

ID #	Description	Eligibility to the NRHP Determination
AE-2518-ISO-1	Isolate: Metate fragment	Not eligible.
AE-2518-ISO-1	Isolate: River cobble with battering	Not eligible.
AE-2518-1	Prehistoric site	Portion within APE does not contribute to the NRHP eligibility of the site.
AE-2518-4H	Durham/Hunger Ranch Complex	Not eligible
AE-2518-5H	Colony East Ditch	Not eligible.
AE-2518-6H	Poso Slough	Not eligible.
AE-2518-7H	Poso Canal	Not eligible.

The majority of site AE-2518-1 lies outside the APE with only the eastern portion extending inside the APE. Subsurface testing, consisting of 27 shovel test pits, was conducted to determine the extent of site within the APE. No midden, dense artifact deposit or buried archaeological features were identified; scattered artifacts identified had no spatial or stratigraphic integrity. Reclamation did not evaluate AE-2518-1; however it was determined the portion of AE-2518-1 within the APE would not contribute to NRHP eligibility of the site.

Pursuant to 36 CFR §800.4(d)(1) Reclamation has determined there will be *No Historic Properties Affected* by the proposed project. Based on your identification efforts, I concur with the eligibility determinations listed above and the *Finding of No Historic Properties Affected*. Identification efforts are sufficient and I also have no objections to the delineation of the APE, as depicted in the supporting documentation.

Thank you for considering effects to historic properties in your project planning. Be advised that under certain circumstances, such as unanticipated discovery or a change in project description, Reclamation may have additional future responsibilities for this undertaking under 36 CFR Part 800. Thank you for seeking my comments and considering historic properties as part of your project planning. If you have any questions or concerns regarding archaeological resources, please contact Associate State Archaeologist, Kim Tanksley at (916) 445-7035 or by email at [kim.tanksley@parks.ca.gov](mailto:kim.tanksley@parks.ca.gov). Any questions concerning the built environment should be directed to State Historian, Kathleen Forrest at (916)445-7022 or by email at [kathleen.forest@parks.ca.gov](mailto:kathleen.forest@parks.ca.gov).

Sincerely,



Carol Roland-Nawi, PhD  
State Historic Preservation Officer



## **APPENDIX C**

### **Native American Heritage Commission Correspondence**



STATE OF CALIFORNIAEdmund G. Brown, Jr., Governor**NATIVE AMERICAN HERITAGE COMMISSION**

1550 Harbor Blvd., ROOM 100  
West SACRAMENTO, CA 95891  
(916) 373-3710  
Fax (916) 373-5471



October 30, 2014

Betsy Rapp  
Applied Earthworks, Inc.  
1391 West Shaw Avenue, Suite C  
Fresno, CA 93711

Sent by Fax: (559) 229-2019  
Number of Pages: 4

Re: Red Top Pipeline, Fresno, Madera and Merced Counties.

Dear Ms. Rapp,

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 373-3712.

Sincerely,

A handwritten signature in cursive script that reads "Katy Sanchez".

Katy Sanchez  
Associate Government Program Analyst

**Native American Contacts  
Fresno, Madera and Merced Counties  
October 28, 2014**

Picayune Rancheria of Chukchansi  
Tex McDonald, Chairperson  
46575 Road 417 Chukchansi / Yokut  
Coarsegold, CA 93614  
(559) 683-6633 Office  
(559) 683-0599-Fax

Amah Mutsun Tribal Band  
Valentin Lopez, Chairperson  
P.O. Box 5272 Ohlone/Costanoan  
Galt, CA 95632 Northern Valley Yokuts  
vlopez@amahmutsun.org  
(916) 743-5833

Santa Rosa Rancheria Tachi Yokut Tribe  
Rueben Barrios Sr., Chairperson  
P.O. Box 8 Tache  
Lemoore, CA 93245 Tachi  
(559) 924-1278 Yokut  
(559) 924-3583 Fax

Dumna Wo-Wah Tribal Government  
Robert Ledger SR., Tribal Chairperson  
2216 East Hammond Street Dumna/Foothill  
Fresno, CA 93703 Mono  
ledgerrobert@ymail.com  
(559) 519-1742 Office

Table Mountain Rancheria  
Leanne Walker-Grant, Chairperson  
P.O. Box 410 Yokuts  
Friant, CA 93626  
(559) 822-2587  
(559) 822-2693 Fax

North Valley Yokuts Tribe  
Katherine Erolinda Perez  
P.O. Box 717  
Linden, CA 95236 Ohlone/Costanoan  
canutes@verizon.net Northern Valley Yokuts  
(209) 887-3415 Bay Miwok

Katherine Erolinda Perez  
P.O. Box 717 Ohlone/Costanoan  
Linden, CA 95236 Northern Valley Yokuts  
canutes@verizon.net Bay Miwok  
(209) 887-3415

Amah Mutsun Tribal Band  
Edward Ketchum  
35867 Yosemite Ave Ohlone/Costanoan  
Davis, CA 95616 Northern Valley Yokuts  
aerieways@aol.com

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting locative Americans with regard to cultural resources for the proposed Red Top Pipeline, Fresno, Madera and Merced Counties.

**Native American Contacts  
Fresno, Madera and Merced Counties  
October 28, 2014**

Sierra Nevada Native American Coalition  
Lawrence Bill, Interim Chairperson

P.O. Box 125                      Mono  
Dunlap                      , CA 93621      Foothill Yokuts  
(559) 338-2354                      Choinumni

Table Mountain Rancheria  
Michael Russell, Tribal Administrator

P.O. Box 410                      Yokuts  
Friant                      , CA 93626  
(559) 822-2587  
(559) 822-2693 Fax

Southern Sierra Miwuk Nation  
Lois Martin, Chairperson

P.O. Box 186                      Miwok  
Mariposa                      , CA 95338      Pauite  
(209) 742-6867 Office                      Northern Valley Yokut

Table Mountain Rancheria  
Bob Pennell, Cultural Resources Director

P.O. Box 410                      Yokuts  
Friant                      , CA 93626  
(559) 325-0351  
(559) 217-9718 - cell  
(559) 325-0394 FAX

Picayune Rancheria of Chukchansi  
Environmental Director

46575 Road 417                      Chukchansi / Yokut  
Coarsegold                      , CA 93614  
559-683-6633 Office  
(559) 683-0599 - Fax

Wuksache Indian Tribe/Eshom Valley Band  
Kenneth Woodrow, Chairperson

1179 Rock Haven Ct.                      Foothill Yokuts  
Salinas                      , CA 93906      Mono  
kwood8934@aol.com                      Wuksache  
(831) 443-9702

Picayune Rancheria of Chuckchansi  
Cultural Specialist

46575 Road 417                      Chukchansi / Yokut  
Coarsegold                      , CA 93614  
(559) 683-6633 Office  
(559) 683-0599 - Fax

Southern Sierra Miwuk Nation  
Les James, Spiritual Leader

P.O. Box 1200                      Miwok  
Mariposa                      , CA 95338      Pauite  
(209) 966-3690                      Northern Valley Yokut

This list is current only as of the date of this document.

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This list is only applicable for contacting locative Americans with regard to cultural resources for the proposed Red Top Pipeline, Fresno, Madera and Merced Counties.



**Native American Contacts  
Fresno, Madera and Merced Counties  
October 28, 2014**

**Chowchilla Tribe of Yokuts**  
Jerry Brown  
10553 N. Rice Road  
Fresno , CA 93730  
(559) 434-3160

**North Valley Yokuts**

**Santa Rosa Rancheria Tachi Yokut Tribe**  
Lalo Franco, Cultural Coordinator  
P.O. Box 8  
Lemoore , CA 93245  
(559) 924-1278 Ext. 5  
(559) 924-3583 Fax

**Tachi  
Tache  
Yokut**

**Kings River Choinumni Farm Tribe**  
Stan Alec  
3515 East Fidora Avenue  
Fresno , CA 93726  
(559) 647-3227 Cell

**Foothill Yokuts  
Choinumni**

**Dumna Wo-Wah Tribal Government**  
Eric Smith, Cultural Resource Manager  
2216 East Hammond Street  
Fresno , CA 93602  
nuem2007@yahoo.com  
(559) 519-1742

**Dumna/Foothill  
Mono**

**The Choinumni Tribe of Yokuts**  
Rosemary Smith, Chairperson  
1099 Pistachio Avenue  
Clovis , CA 96311  
monoclovis@yahoo.com

**Choinumni  
Foothill YoKut**

**Dumna Wo-Wah Tribal Government**  
John Ledger, Assistant Cultural Resource Manager  
2216 East Hammond Street  
Fresno , CA 93602  
ledger17bonnie@yahoo.com  
(559) 519-1742

**Dumna/Foothill  
Mono**

**Frank Marquez**  
P.O. Box 565  
Friant , CA 93626  
francomarquez@pmr.org  
(559) 213-6543 Cell  
(559) 822-3785

**Mono  
Foothill Yokut**

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting locative Americans with regard to cultural resources for the proposed Red Top Pipeline, Fresno, Madera and Merced Counties.

## **APPENDIX D**

### **Cultural Resource Records**



State of California — The Resources Agency  
DEPARTMENT OF PARKS AND RECREATION  
**LINEAR FEATURE RECORD**

Primary # 10-006248 (Update)  
HRI #Trinomial

Page 1 of 3

Resource Name or #: Poso Canal

**L1. Historic and/or Common Name:** Poso Canal

**L2a. Portion Described:** ☐ Entire Resource ☒ Segment ☐ Point Observation **Designation:** Vlot-Triangle T Crossing

b. Location of point or segment: USGS Santa Rita Bridge 7.5-min quadrangle, T10S, R13E, Section 34

**UTM Zone 11N:** 185823 **mE/** 4102731 **mN**

**L3. Description:** The current investigation recorded a 300-foot segment of the 16.5-mile-long Poso Canal. The recorded length consists of the canal prism and the two elevated banks on either side which also function as ranch access roads.

**L4. Dimensions:**

a. **Top Width:** 50 feet

b. **Bottom Width:** Approximately 25 feet (ditch filled to near capacity at time of documentation)

c. **Height or Depth:** At least 8 feet deep (ditch filled to near capacity at time of documentation)

d. **Length of Segment:** 300 feet

**L4e. Sketch or Cross Section** ☐ attached

☒ none

**Facing:**

**L5. Associated Resources:** No associated features (i.e., intake gates, weirs, bridges, inflow pipes, etc.) were noted along this segment.

**L6. Setting:** The canal operates in a rural part of Fresno County on the west side of California's Central Valley

**L7. Integrity Considerations:** Not applicable—the Poso Canal has been determined ineligible for listing on the NRHP.

**L8a. Photo, Map, or Drawing:**



**L8b. Description of Photo, Map, or Drawing:** Recorded segment in 2015, view to the south.

**L9. Remarks:** Further details of this investigation are provided in Lloyd et al. 2016. (Jay B. Lloyd, Katie Asselin, and Randy Baloian. 2016. *Cultural Resources Inventory for the Red Top Area Water Conveyance from the San Joaquin River Systems Project, Fresno and Madera Counties, California*. Applied EarthWorks, Inc., Fresno, California. Prepared for Provost & Pritchard Consulting Group, Visalia, California.)

**L10. Form Prepared By:** Jay Lloyd  
Applied EarthWorks, Inc.  
1391 W. Shaw Ave., Suite C  
Fresno, CA 93711

**L11. Date:** January 22, 2016

Page 2 of 3

Resource Name or #: Poso Canal

**L1. Historic and/or Common Name:** Poso Canal

**L2a. Portion Described:** ☐ Entire Resource ☒ Segment ☐ Point Observation **Designation:** Red Top Crossing

b. Location of point or segment: USGS Santa Rita Bridge 7.5-minute quadrangle; T11S, R13E, Section 2

**UTM Zone 11N:** 187458 **mE/** 4101612 **mN**

**L3. Description:** This 200-foot segment of the 16.5-mile-long Poso Canal was recorded in 2014 (Lloyd et al. 2016). The recorded length consists of the canal prism and the two elevated banks on either side which also function as ranch access roads.

**L4. Dimensions:**

a. **Top Width:** 50 feet

b. **Bottom Width:** Approximately 25 feet (ditch filled to near capacity at time of documentation)

c. **Height or Depth:** At least 8 feet deep (ditch filled to near capacity at time of documentation)

d. **Length of Segment:** 200 feet

**L4e. Sketch or Cross Section** ☐ attached

☒ none

**Facing:**

**L5. Associated Resources:** No associated features (i.e., intake gates, weirs, bridges, inflow pipes, etc.) were noted along this segment.

**L6. Setting:** The canal operates in a rural part of Fresno County on the west side of California's Central Valley

**L7. Integrity Considerations:** Not applicable—the Poso Canal has been determined ineligible for listing on the NRHP.

**L8a. Photo, Map, or Drawing:**



**L8b. Description of Photo, Map, or**

**Drawing:** Recorded segment in 2014, view to the north.

**L9. Remarks:** Further details of this investigation are provided in Lloyd et al. 2016. (Jay B. Lloyd, Katie Asselin, and Randy Baloian. 2016. *Cultural Resources Inventory for the Red Top Area Water Conveyance from the San Joaquin River Systems Project, Fresno and Madera Counties, California*. Applied EarthWorks, Inc., Fresno, California. Prepared for Provost & Pritchard Consulting Group, Visalia, California.)

**L10. Form Prepared By:** Jay Lloyd  
Applied EarthWorks, Inc.  
1391 W. Shaw Ave., Suite C  
Fresno, CA 93711

**L11. Date:** January 22, 2016

State of California — The Resources Agency  
DEPARTMENT OF PARKS AND RECREATION  
**LOCATION MAP**

Primary # 10-006248 (Update)

Trinomial

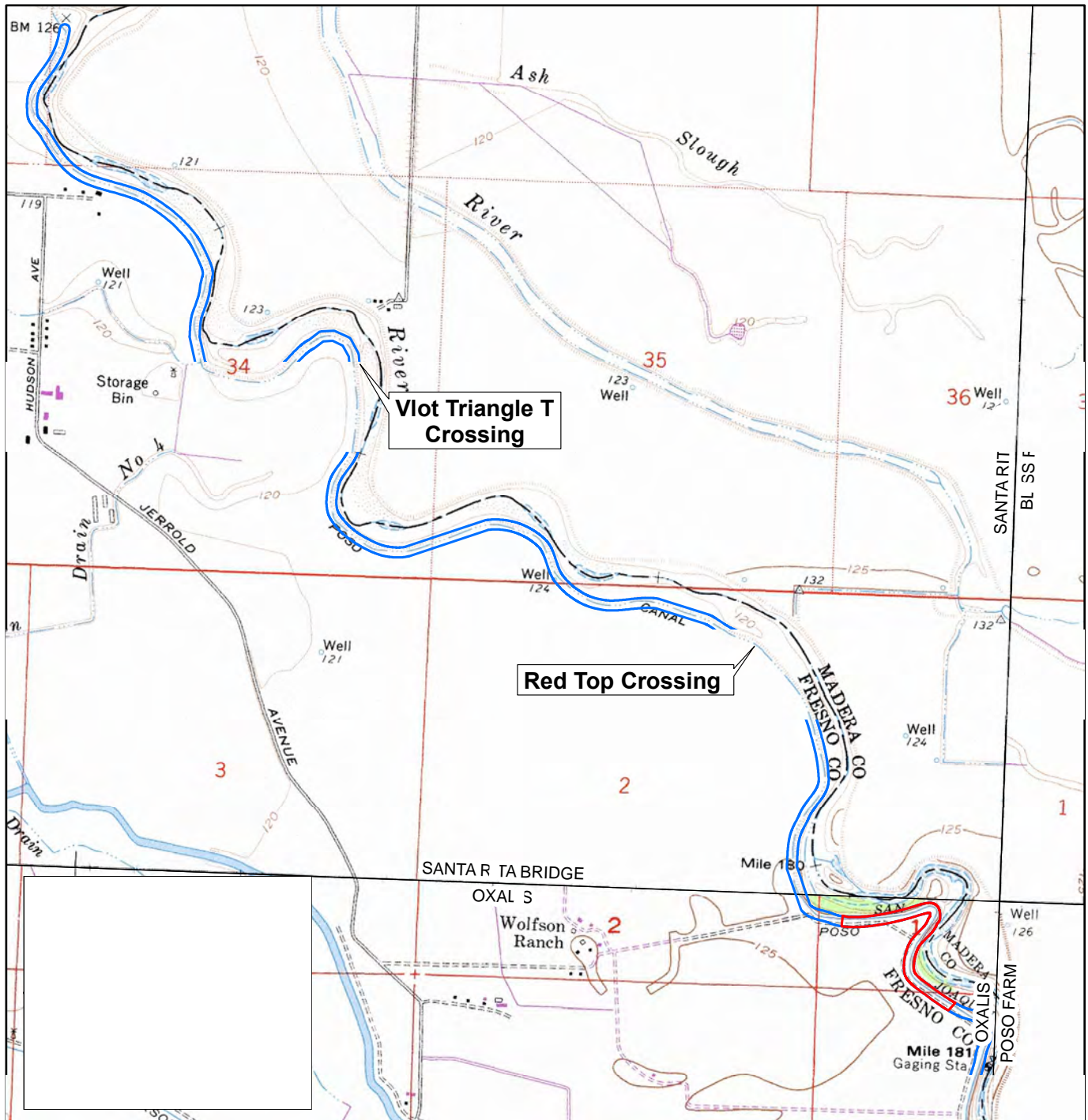
Page 3 of 3

\*Resource Name or #: AE-2518-7H, Poso Canal

\*Scale: 1:24,000

\*Map Name: Santa Rita Bridge and Oxalis, CA USGS 7.5' quadrangles

\*Date: 1962 (1977), 1956 (1984)





State of California — The Resources Agency  
DEPARTMENT OF PARKS AND RECREATION  
**PRIMARY RECORD**

Primary # 10-006248

HRI #

Trinomial

NRHP Status Code 6Y

Other Listings  
Review Code

Reviewer

Date

Page 1 of 11

Resource Name or # AE-2518-7H, Poso Canal

P1. Other Identifier: Poso Canal

\*P2. Location: a. County: Fresno

☒ Not for Publication

☐ Unrestricted

b. USGS 7.5' Quad: Firebaugh, CA

Date: 1956 (1984) T12S, R14E Sections 20, 29

USGS 7.5' Quad: Poso Farm, CA

Date: 1962 (1984) T11S, R13E Section 13

T11S R14E Sections 19, 30, 31, 32 T12 S, R14E Sections 4, 5, 8, 9, 17, 20

USGS 7.5' Quad: Oxalis, CA

Date: 1956 (1984) T11S, R13E Sections 1, 2, 12, 13

USGS 7.5' Quad: Santa Rita Bridge, CA

Date: 1962 (1977) T10S, R13E Sections 27, 34, 35, T11S, R13E Section 2

c. Address:

B.M. Mt. Diablo

d. UTM: NAD, Zone ;

mE / mN

e. Other Locational Data:

\*P3a. Description: The Poso Canal is an irrigation conveyance. It heads at the Main Canal (formerly Miller & Lux's San Joaquin and Kings River Canal) in Firebaugh and flow approximately 16.5 miles in a northwesterly direction, closely paralleling the San Joaquin River for most of its course. Along the way, the canal provides water to the Central Canal and other (unnamed) canals and ditches that tap its western bank. At its intersection with the Arroyo Canal, the waters of the Poso Canal are carried over the former via a concrete aqueduct. It terminates just before the Merced County line, where the Poso Canal diverges into the Santa Rita Ditch and the Riverside Canal. The current investigation recorded a 0.75 mile segment of the canal.

\*P3b. Resource Attributes: (List attributes and codes.) HP20 (canal/ditch)

\*P4. Resources Present: ☐ Building ☒ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other:

\*P5a. Photograph or Drawing: (Required for buildings, structures, and objects.)



P5b. Description of Photo: concrete weir within recorded segment; looking southwest

\*P6. Date Constructed/Age and Sources:  
☐ Prehistoric ☒ Historic ☐ Both

\*P7. Owner and Address:  
Central California Irrigation District

\*P8. Recorded By: R. Baloian  
Applied EarthWorks, Inc.  
1391 W. Shaw Ave., Suite C  
Fresno, CA 93711

\*P9. Date Recorded: April 9, 2013

\*P10. Survey Type: ☒ Intensive  
☐ Reconnaissance ☐ Other

Describe:

\*P11. Report Citation: Lloyd, Jay B., Randy Baloian, Matthew D. Armstrong, Michael J. Mirro, and Aubrie Morlet  
2013 *Cultural Resources Investigations for the Central California Irrigation District's Proposed Poso and East Ditch Reservoirs, Fresno and Merced Counties, California*. Applied EarthWorks, Inc., Fresno, California.  
Prepared for Central California Irrigation District, Los Banos, California.

\*Attachments: ☐ NONE

☒ Location Map

☒ Sketch Map

☒ Continuation Sheet

☒ Building, Structure, and Object Record

☐ Archaeological Record

☐ District Record

☒ Linear Feature Record

☐ Milling Station Record

☐ Rock Art Record

☐ Artifact Record

☐ Photograph Record ☐ Other (list):

State of California — The Resources Agency  
DEPARTMENT OF PARKS AND RECREATION  
**BUILDING, STRUCTURE, AND OBJECT RECORD**

Primary # 10-006248  
HRI #/Trinomial

\*NRHP Status Code 6Y

Page 2 of 11

Resource Name or #: AE-2518-7H, Poso Canal

**B1. Historic Name:** Poso Canal

**B2. Common Name:** Poso Canal

**B3. Original Use:** Irrigation Canal

**B4. Present Use:** same

**\*B5. Architectural Style:** n/a

**\*B6. Construction History (construction date, alterations, and dates of alterations):** The 1922 Oxalis and Santa Maria Bridge USGS quadrangles show but do not label the Poso Canal. The two maps were surveyed in 1919 and 1916, respectively. The canal is not plotted on the 1913 Panoche USGS quadrangle, indicating that it was built sometime between 1913 and 1916. Based on maps from and prior to the late 1940s, the canal initially tapped the Main Canal at a location 1 mile southeast of its current head; the canal was realigned to its present point of origin by 1956. Similarly, the canal's end point has been altered. At the time of the Poso Canal's construction, the Santa Rita Ditch and the Riverside Canal had yet to be built, and the Poso Canal simply terminated at its current end point. By the time of the 1948 Santa Rita Bridge USGS quadrangle, the Poso Canal appears connected to these two branches.

With regard to the recorded segment, a weir or similar structure occurs at the same location as Feature B on the 1937 aerial photograph. Considering the presence of the 1965 benchmark and the overall modern appearance of Feature B, it is apparent that the existing weir replaced an older version in 1965. Similarly, a bridge or other crossing occurs at the same location as Feature C on the 1961 aerial photograph. Although the weathered iron girder may date to the late 1950s or early 1960s, the bridge's other components—concrete footing, wooden walkway, and metal hand rail—have been recently installed or replaced older elements.

**\*B7. Moved?:** ☒ No ☐ Yes ☐ Unknown      Date:      Original Location:

**\*B8. Related Features:** see linear feature record

**B9. a. Architect:**

**b. Builder:** Miller & Lux Company

**\*B10. Significance:** Theme: West Side Agriculture Area: West Side of the Central Valley

Period of Significance: 1870-1900

Property Type: irrigation canal

Applicable Criteria: all

**Context, Theme, and Period of Significance**

The canal is set within the Westside of the Central Valley. Today, the region is an agriculturally productive, yet compared to the valley's east half success here was much harder to come by, primarily due to the stark contrasts in the natural landscape. During historical times, the marshes that flanked the west bank of the San Joaquin River quickly turned to dry plains as one traveled westward from the river towards the Coastal Range. In short, there was either too much water or not enough of it.

The development of the West Side is a chapter or sub-theme within the more general theme of California Agriculture. Certainly, the lead character in that chapter is the Miller & Lux Company, whose interests included land development, irrigation, and cattle ranching. Irrigation on the West Side began with the construction of the San Joaquin and Kings River Canal in the early 1870s by the partners. This bulk canal not only was the first major irrigation conduit in the valley but still remains one of the longest, flowing more than 100 miles through Fresno, Madera, Merced,

**Sketch Map**

See attached Sketch Map.

This space reserved for official comments.



and Stanislaus counties. Before the turn of the century, Miller & Lux also built the Outside Canal and channelized the Dos Palos and Temple sloughs. In time, the Temple Slough became the Arroyo Canal, one of the region's major irrigation arteries. Moreover, the partners played a critical role in the creation of Los Banos and Dos Palos. The world of Miller & Lux revolved around the Santa Rita Ranch, the pride of Henry Miller's vast estate and home to their immense cattle stock. Historically, the subject canal is most closely associated with trends set in motion by the Miller & Lux Company, which, depending on the magnitude of their economic effect, have significance at the local and possibly statewide level.

Consistent with AE's previous evaluation in the region (Baloian 2011), the current evaluation defines the period of significance of Miller & Lux from 1870 to 1900. Although Henry Miller did not die until 1916 and his corporation remained a dominant force in the region until the mid-20<sup>th</sup> century, the trend-setting events and projects that essentially brought wealth and power to the cattle barons and development to the West Side occurred during this formative period. Accordingly, even though major irrigation projects and other commercial endeavors were undertaken under the Miller & Lux name after 1900, they are in historical terms considered continuation of trends from the 19<sup>th</sup> century and not trend-setting events by themselves.

### Application of Significance Criteria

The subject resource is evaluated under Criteria A, B, C, and D of the National Register of Historic Places (NRHP) and Criteria 1, 2, 3, and 4 of the California Register of Historical Resources (CRHR).

*Criterion A/1:* Generally speaking, for an agricultural or commercial-type resource, historical significance under Criterion A/1 is measured by (1) the date of construction relative to the beginnings of the industry, (2) its economic importance or dominance within the larger industry or region, and/or (3) the extent to which the resource influenced history beyond or outside its industry. The Poso Canal does not match up well against these standards. Based on current research, the canal was built in the mid-1910s, more than 45 years after construction of the San Joaquin and Kings River Canal and the foundations of intensive irrigation in the region. Spanning almost 17 miles and primarily operating as a bulk canal, its capacity is considerable but certainly not above and beyond other major conduits in the region. Research found no evidence suggesting that the canal has had any socio-economic effects outside the agricultural industry.

The history of the Poso Canal is associated with the operations of the Miller & Lux Company. The company, which likely financed construction of the canal to irrigate its properties, plays an essential role in illustrating the theme discussed above. Specifically, the Poso Canal is part of the irrigation network that originates from the San Joaquin and Kings River Canal (presently the Main Canal), whose construction unquestionably represents the watershed event in the history of the region. However, simple association with a historically significant event or trend does not necessarily confer individual significance on a related resource. The canal was built more than a decade after the defined period of significance (1870-1900) for the Miller & Lux Company. Its construction is thus seen in historical terms as a continuation of the trend began in this period and as very far from a notable development in the history of irrigation in the region.

For these reasons, the Poso Canal is not considered significant under Criterion A/1.

*Criterion B/2:* The Poso Canal was constructed by the historically significant *operation or business entity* that was the Miller & Lux Company. In addition, Henry Miller and Charles Lux—the principals of this company—accrue significance under Criterion B/2 as historically important *individuals*. In order to be significant under this criterion, a resource must be illustrative of the persons' life. There is, however, no evidence that either Henry Miller or Charles Lux had any direction connection to the canal. Lux died in 1887, while Miller passed in 1916, around the time of the canal's construction. Current research found no other individuals associated with the canal. For these reasons, the Poso Canal is not considered significant under Criterion B/2.

*Criterion C/3:* Distinctive architecture and/or unique engineering design or construction methods commonly accrue significance under Criterion C. The Poso Canal is a utilitarian structure with no architectural or aesthetic value. Its engineering elements and construction methods are far from unique or innovative and are commonly found throughout the valley. It is thus not significant under Criterion C/3.

*Criterion D/4:* Although Criterion D is most relevant for archaeological sites, it can be applied to intact structures in instances where examination of the structure's features would result in historical information that cannot be obtained from other sources. However, this is not the case for the Poso Canal. Given the canal's commonality, further study about its elements would not yield more information about the history and engineering methods of canal construction and operation than what is already known from existing sources. The resource is not considered significant under Criterion D/4.

**BUILDING, STRUCTURE, AND OBJECT RECORD**

\*NRHP Status Code 6Y

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Resource Name or #: AE-2518-7H, Poso Canal

*Integrity:* Because the Poso Canal is not considered historically significant under any of the four criteria, assessment of integrity is not necessary.

*Summary:* Due to a lack of significance, the Poso Canal is not considered eligible for inclusion in the NRHP and CRHR.

**B11. Additional Resource Attributes (list attributes and codes):**

**\*B12. References:** Baloian, Randy

2011 *Cultural Resources Survey and Site Evaluation for the Eastside Conveyance Canal Project, Merced County, California.* Applied Earthworks, Inc., Fresno, CA. Summers Engineering, Hanford, CA.

**B13. Remarks:**

**\*B14. Evaluator:** Randy Baloian

**Date of Evaluation:** April 9, 2013

**L1. Historic and/or Common Name:** Poso Canal

**L2a. Portion Described:** ☐ Entire Resource ☒ Segment ☐ Point Observation **Designation:**

**b. Location of point or segment:** Section 6, T11S, R13E

**L3. Description:** The current investigation recorded a .75 mile segment of the 16.5 mile long Poso Canal, including six features: including two turn wheel intake gates into the neighboring fields (Features A and F), a concrete weir (Feature B), a foot bridge (Feature C), and two inflow pipes (Features D and E). The weir (Feature B) functions to check and partially impound the flow of water. As a result, the water level on the upstream side rises 2-3 feet higher than the level on the downstream side of the barrier; when the flow of water is high enough, water is release over the top of the metal wall. The weir serves at least two purposes. First, it ensures a sufficient volume of water to irrigate fields on the upstream side through intake gates like Feature A. Second, weirs are typically where the rate of water flow is measured, which is essential in managing the distribution of water along the canal. Set within the east shoulder of Feature B is a 1965 US Coast and Geodetic Survey bench mark, indicating its date of construction. The foot bridge (Feature C) consists of a single iron girder attached to two concrete footings on either side of the canal. Wooden boards and a metal hand rail allow passage across the beam. Although Feature C lacked any apparent temporal markers, the footings seem to be of recent construction (probably within the last 10 years). Two metal inflow pipes supplement the canal's flow of water: Feature D connects to a pump mounted on a large iron derrick that draws water from the west bank of the San Joaquin River; Feature E is similarly linked to a field pump or well located in the agricultural field west of the canal. Both features appear to be modern.

**L4. Dimensions:**

**a. Top Width:** . 50 feet

**b. Bottom Width:** approximately 25 feet (ditch filled to near capacity at time of documentation)

**c. Height or Depth:** at least 8 feet deep (ditch filled to near capacity at time of documentation)

**d. Length of Segment:** .75 mile

**L4e. Sketch or Cross Section:** ☐ attached ☒ none **Facing:**

**L5. Associated Resources:** none

**L6. Setting:** The ditch operates in a rural part of Fresno County, on the West Side of the California's Central Valley.

**L7. Integrity Considerations:** The Poso Canal first appears on the USGS 1922 Oxalis and the 1920 Santa Maria Bridge quadrangles, which plot the course but do no label the canal by name. The two maps were surveyed in 1919 and 1916, respectively. The canal is not shown on the USGS 1913 Panoche quadrangle, surveyed between 1908-1911, indicating that it was built sometime between 1908 and 1916. Based on maps from and prior to the late 1940s, the canal initially tapped the Main Canal at a location 1 mile southeast of its current head; the canal was realigned to its present point of origin by the time of the USGS 1956 Firebaugh quadrangle. Similarly, the canal's end point has been altered. At the time of the Poso Canal's construction, the Santa Rita Ditch and the Riverside Canal had yet to be built, and the Poso Canal simply terminated near its current end point. By the time of the USGS 1948 Santa Rita Bridge quadrangle, the Poso Canal appears to be connected to these two branch canals.

With regard to the recorded segment, a weir or similar structure occurs at the same location as Feature B on the 1937 aerial photograph. Considering the presence of the 1965 benchmark and the overall modern appearance of Feature B, it is apparent that the existing weir replaced an older version in 1965. Similarly, a bridge or other crossing occurs at the same location as Feature C on the 1961 aerial photograph. Although the weathered iron girder may date to the late 1950s or early 1960s, the bridge's other components—concrete footing, wooden walkway, and metal hand rail—have been recently installed or replaced older elements.

State of California — The Resources Agency  
DEPARTMENT OF PARKS AND RECREATION  
**LINEAR FEATURE RECORD**

Primary # 10-006248

HRI #

Trinomial

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Resource Name or #: AE-2518-7H, Poso Canal

L8a. Photo, Map, or Drawing:



L8b. **Description of Photo, Map, or Drawing:** recorded segment in 1937; note channelization in progress.

L9. **Remarks:**

L10. **Form Prepared By:** Randy Baloian,  
Applied EarthWorks, Inc.

L11. **Date:** April 9, 2013

State of California — The Resources Agency  
DEPARTMENT OF PARKS AND RECREATION  
**LOCATION MAP**

Primary # 10-006248

Trinomial

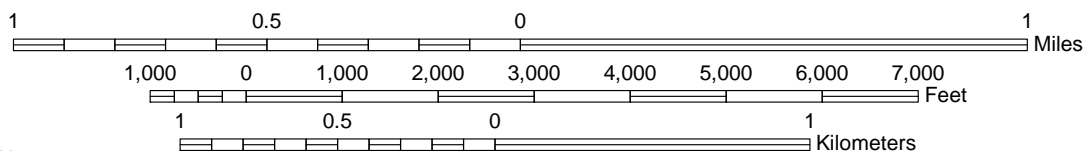
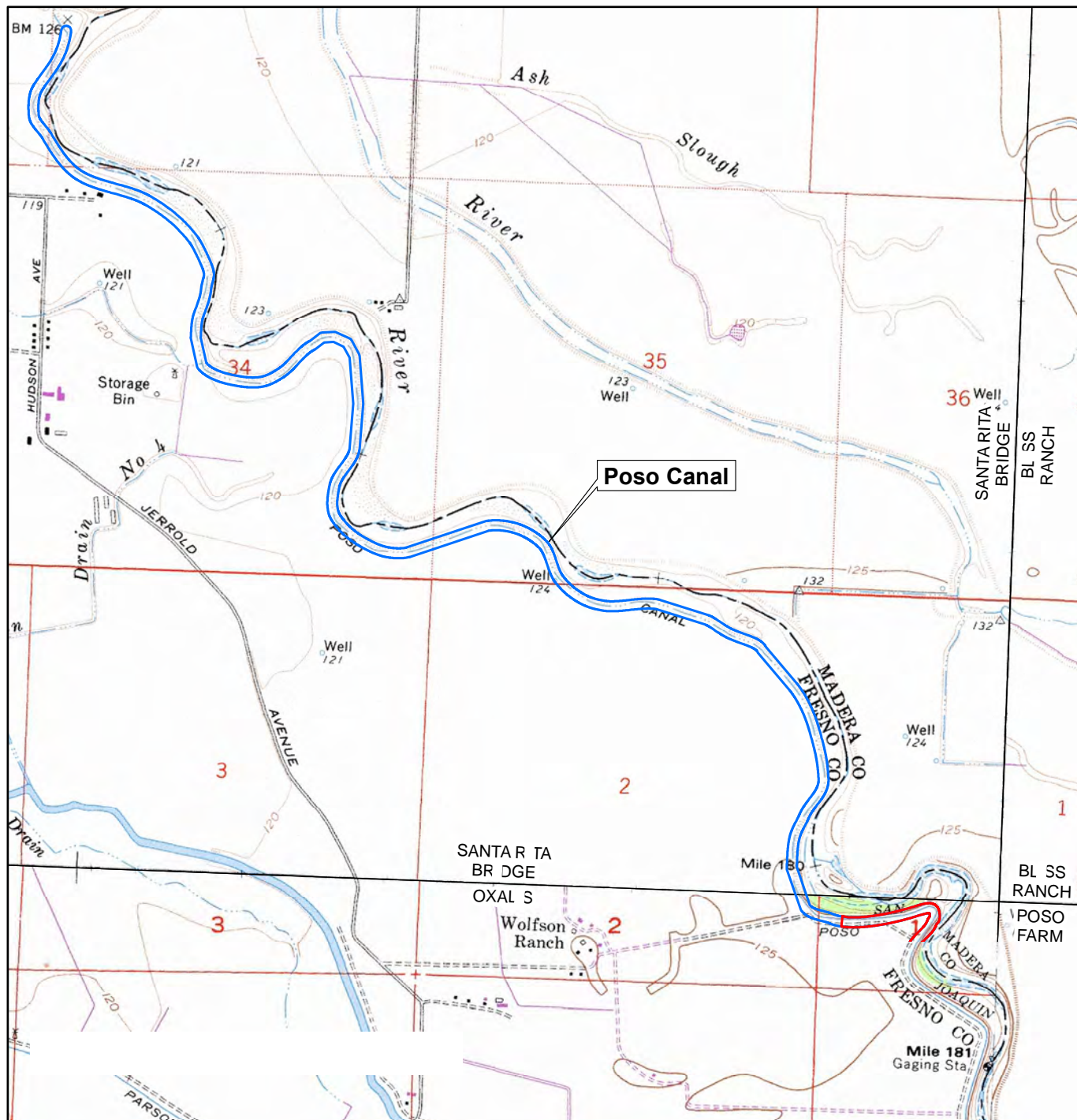
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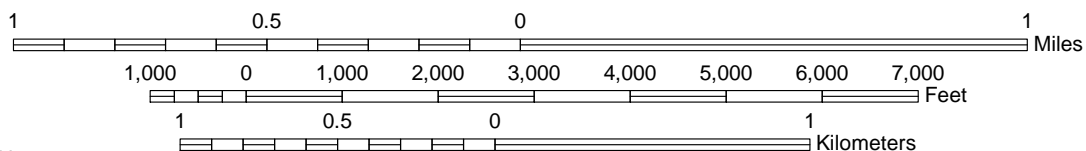
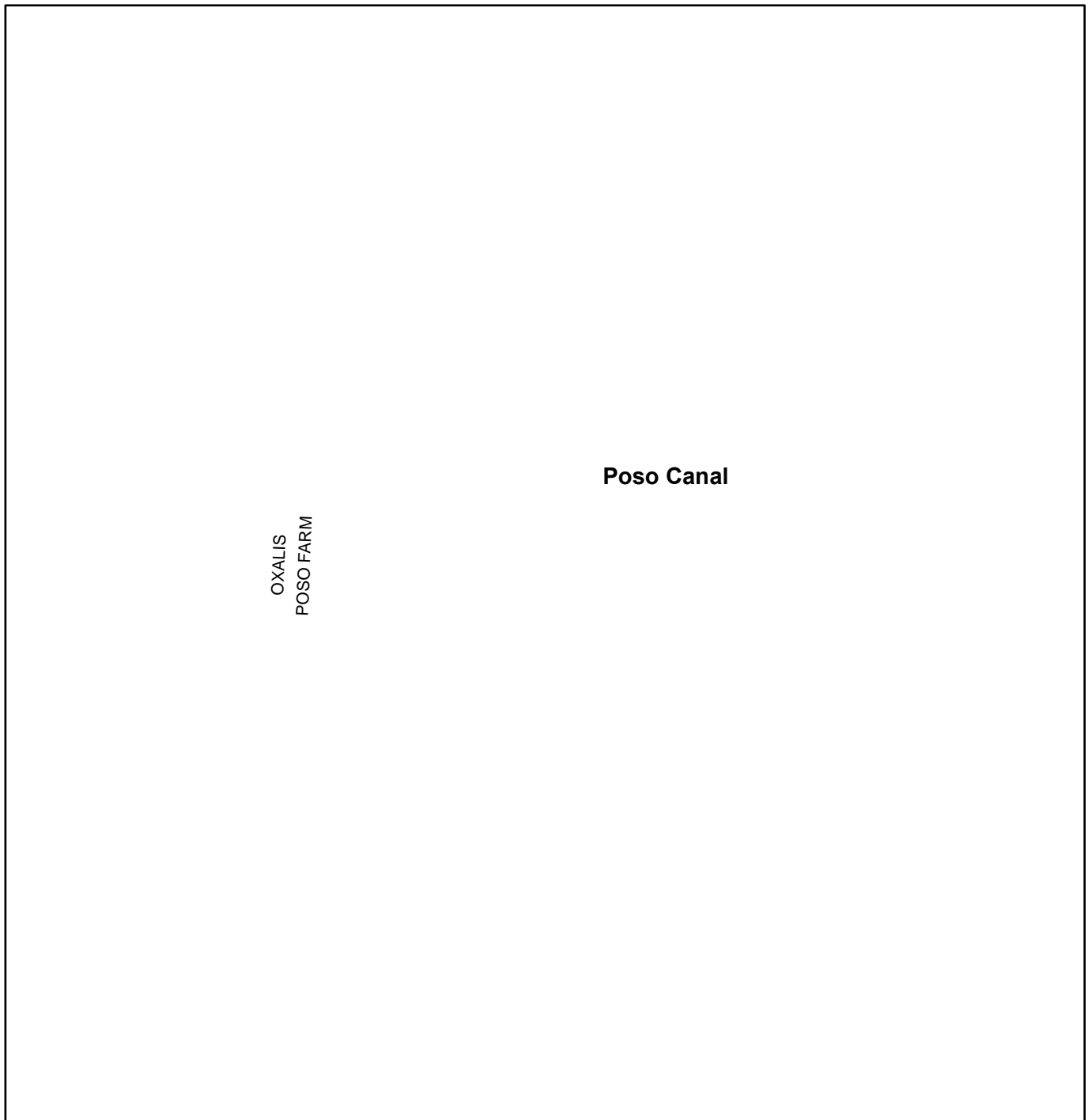
\*Resource Name or #: AE-2518-7H, Poso Canal

\*Scale: 1:24,000

\*Map Name: Santa Rita Bridge and Oxalis, CA USGS 7.5' quadrangles

\*Date: 1962 (1977), 1956 (1984)







State of California — The Resources Agency  
DEPARTMENT OF PARKS AND RECREATION  
**LOCATION MAP**

Primary # 10-006248

Trinomial

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\*Resource Name or #: AE-2518-7H, Poso Canal

\*Scale: 1:24,000

\*Map Name: Poso Farm, CA USGS 7.5' quadrangle

\*Date: 1962 (1984)

