Appendix A Biological Evaluation/Biological Assessment

LIVE OAK ASSOCIATES, INC.

an Ecological Consulting Firm

WATER CONSERVATION AND EFFICIENCY PROJECT (WCAEP)
BIOLOGICAL EVALUATION / BIOLOGICAL ASSESSMENT
ARVIN-EDISON WATER STORAGE DISTRICT, KERN COUNTY, CALIFORNIA

Prepared by

LIVE OAK ASSOCIATES, INC.

Austin Pearson, Director of Ecological Services
Rebekah Jensen, Project Manager and Staff Ecologist

Prepared for

Mary E. Beatie
Senior Planner
Provost & Pritchard Consulting Group
130 N. Garden Street
Visalia, CA 93291 -6362

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EXECUTIVE SUMMARY

Live Oak Associates, Inc. (LOA) conducted an investigation of the biological resources of the Arvin-Edison Water Storage District (AEWSD) Water Conservation and Efficiency Project Site in Kern County, California, and evaluated likely impacts to such resources resulting from proposed development. The project site is located approximately two miles east of the City of Arvin at the base of the Tehachapi foothills. In November 2014, LOA biologist Rebekah Jensen surveyed the site for biotic habitats, the plants and animals occurring in those habitats, and significant habitat values that may be protected by state and federal law. In May 2016, LOA biologist Geoff Cline conducted a small mammal trapping survey according to established protocols to determine whether the Tipton kangaroo rat occurs on the site.

The project consists of agricultural lands, access roads, and AEWSD infrastructure within a region dominated by similar uses. At the time of the field survey, all habitats of the site were disturbed and intensively managed, and offered limited habitat for native flora and fauna. The AEWSD North and South Canals and an engineered flood channel of Sycamore Creek pass through the site. These features are unlikely to be claimed as jurisdictional by the U.S. Army Corps of Engineers due to lack of downstream connectivity to Waters of the U.S.

The project has the potential to result in construction mortality of the San Joaquin kit fox, burrowing owl, and American badger, all of which have been documented on nearby lands and are expected to pass through the site occasionally. The project also has the potential to result in construction-related mortality or disturbance of nesting raptors and migratory birds protected under the federal Migratory Bird Treaty Act and related state laws. Mortality of any of these animals would be considered a significant impact of the project under the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). Project avoidance of active nests, dens, and roost sites identified during preconstruction surveys and implementation of minimization measures consistent with the USFWS *Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* will reduce the magnitude of these potential impacts to a less than significant level under NEPA and CEQA.

No other biological resources would be significantly impacted by the project as defined by NEPA and CEQA. No Tipton kangaroo rats were captured during Mr. Cline's trapping effort; this species is considered absent from the site based on survey results and the absence of suitable habitat, and would therefore not be impacted by proposed project activities. Impacts would be less than significant for all locally occurring special status plant species, 19 locally occurring special status animal species, including the Tipton kangaroo rat, that would not be expected to occur on the project site, two special status bat species that could roost on site, wildlife movement corridors, sensitive habitats, jurisdictional waters, and local policies and habitat conservation plans. Loss of habitat for special status animal species would not be considered a significant impact of the project under NEPA and CEQA.

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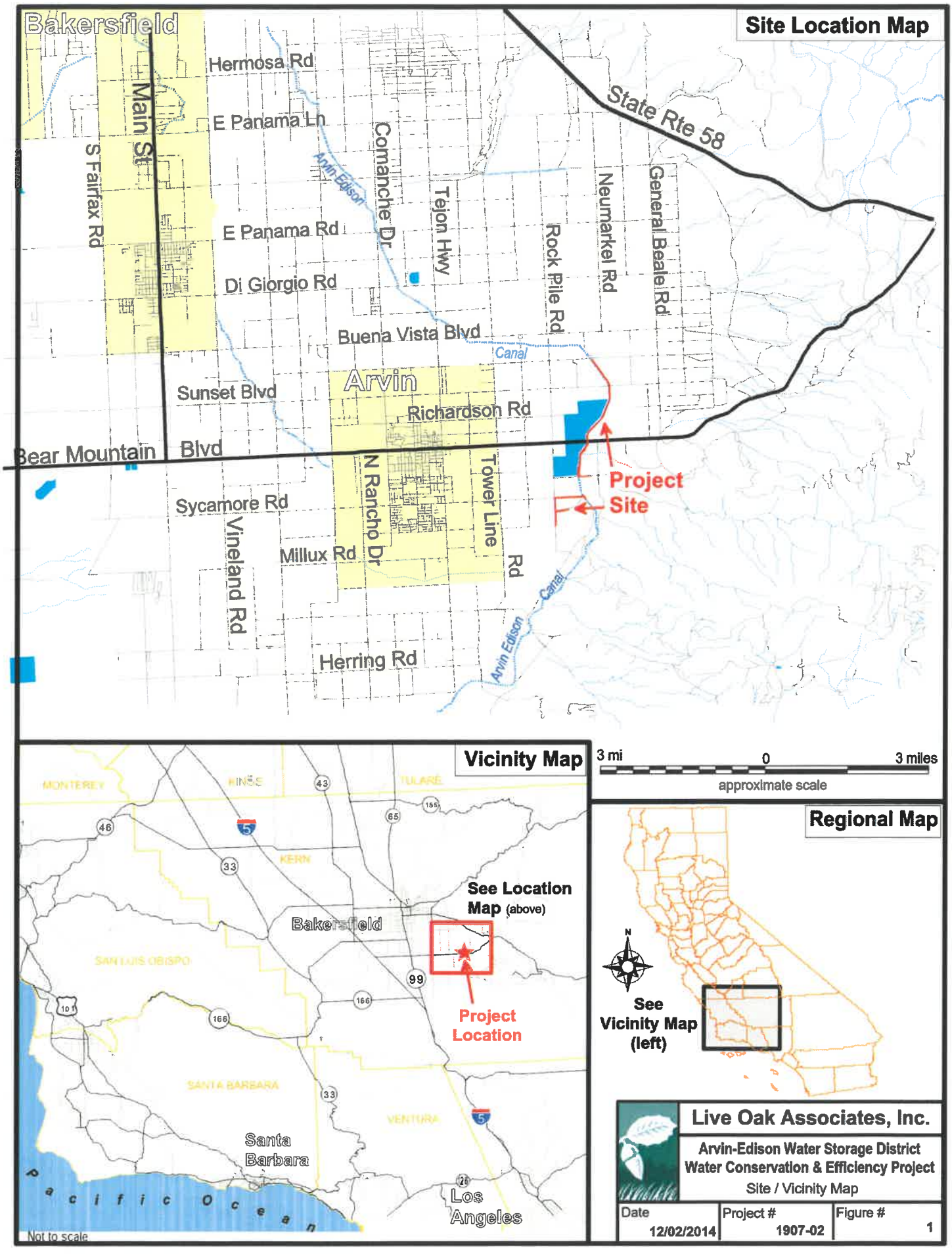
1.0 INTRODUCTION

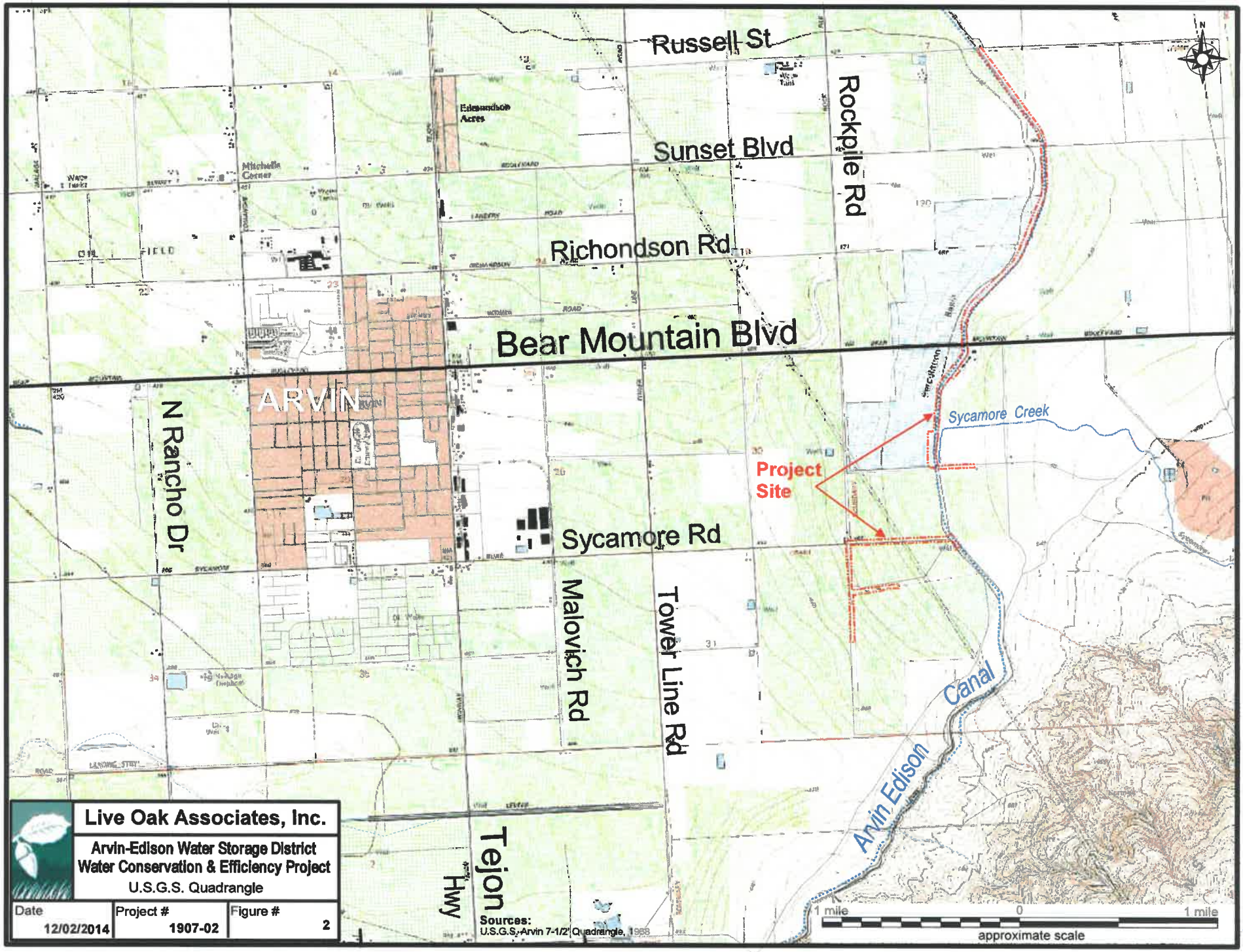
The technical report that follows describes the biotic resources of the Arvin-Edison Water Storage District (AEWSD) Water Conservation and Efficiency Project (WCAEP) site (hereafter referred to as the "project site" or "site"), and evaluates possible impacts to those resources that could result from project implementation. The project is located approximately 2 miles east of the City of Arvin in Kern County, California (Figure 1). The site may be found on the *Arvin* U.S. Geological Survey (USGS) 7.5-minute quadrangle, in Sections 16, 17, 20, 21, 29, and 32 of Township 31 South, Range 30 East, Mount Diablo Base and Meridian (Figure 2).

1.1 PROJECT DESCRIPTION

The project includes two major components. The first component, the Pilot In-lieu Project, would integrate a private landowner's existing irrigation facilities and extraction wells into the AEWSD's irrigation distribution system, resulting in increased groundwater recharge and increased opportunity for banking and recovery of water that would otherwise be lost to evaporation or discharge into the ocean. The second component, the Sycamore Check Structure Improvement Project, would entail reconstruction of the existing water control structure located at the boundary of the AEWSD's North and South Canals and raising of the existing canal liner upstream and downstream of the structure, which would restore original design capacity of the North and South Canals. The two project components are described in greater detail below.

Pilot In-lieu Project. The Pilot In-lieu Project would entail the construction of approximately 1.5 miles of new pipelines linking a private landowner's extraction wells to the AEWSD's South Canal, the construction of three new discharge structures enabling water from these wells to be pumped into the South Canal, and the reconstruction of a pipeline fed from an existing canal turnout for the property to improve surface water delivery into the landowner's existing reservoir system. The Pilot In-lieu Project would increase the amount of AEWSD surface water available to the landowner during wet periods, resulting in a reduction in groundwater pumping for approximately 1,060 acres of vineyards. Reduced groundwater pumping would facilitate increased recharge and "banking" of groundwater for future recovery by the landowner and/or AEWSD during dry periods.


Site Location Map
Bakersfield
Hermosa Rd
E Panama Ln
Main St
S Fairfax Rd
Comanche Dr
Arvin Edison
Tejon Hwy
E Panama Rd
Di Giorgio Rd
Buena Vista Blvd
Canal
Rock Pile Rd
Neumarkel Rd
General Beale Rd
State Rte 58
Arvin
Sunset Blvd
Richardson Rd
Bear Mountain Blvd
N Rancho Dr
Tower Line Rd
Project Site
Sycamore Rd
Vineland Rd
Millux Rd
Canal
Arvin Edison
Herring Rd
Vicinity Map
MONTEREY
KINGS
TULARE
KERN
SAN LUIS OBISPO
SANTA BARBARA
VENTURA
Bakersfield
See Location Map (above)
Project Location
Santa Barbara
Los Angeles
Pacific Ocean
Not to scale
3 mi
0
3 miles
approximate scale
Regional Map
N
See Vicinity Map (left)
Live Oak Associates, Inc.
Arvin-Edison Water Storage District
Water Conservation & Efficiency Project
Site / Vicinity Map
Date
12/02/2014
Project #
1907-02
Figure #
1


Russell St
Rockpile Rd
Sunset Blvd
Richondson Rd
Bear Mountain Blvd
ARVIN
N Rancho Dr
Sycamore Creek
Project Site
Sycamore Rd
Malovich Rd
Tower Line Rd
Arvin Edison Canal
Tejon Hwy
Live Oak Associates, Inc.
Arvin-Edison Water Storage District
Water Conservation & Efficiency Project
U.S.G.S. Quadrangle
Date 12/02/2014
Project # 1907-02
Figure # 2
Sources:
U.S.G.S.-Arvin 7-1/2' Quadrangle, 1988
1 mile 0 1 mile
approximate scale

New pipelines associated with the Pilot In-lieu Project would link four of the landowner's seven wells, identified as Well Nos. 3, 4, 108, and T49N, with the AEWSD canal system. Approximately 7,800 linear feet of new pipelines would connect Well Nos. 3, 108, and T49N to the South Canal. Approximately 1,000 linear feet of new pipeline would link Well No. 4 to the South Canal. The landowner's remaining three wells, identified as Well Nos. 1, 2, and 5, would connect to the AEWSD system via an existing landowner pipeline, which also has an existing connection to the South Canal. New pipelines would be installed approximately 3-4 feet below ground level along Sycamore Road and paved agricultural roads, no more than 10 feet from the edge of pavement. Temporary disturbance associated with pipeline installation would be limited to a corridor 30-40 feet wide. For the purposes of this analysis, a 40-foot disturbance corridor on either side of pavement is assumed; specific location of the pipeline will be determined during final design.

Three new discharge structures will introduce water from the landowner's wells directly into the South Canal. One discharge structure will serve Well No. 4; a second will serve Well Nos. 1 and 5; and a third will serve Well Nos. 3, 108, and T49N. Well No. 2 is currently interconnected with Well Nos. 1 and 4 via existing landowner pipeline, and its waters will either be directed to the proposed discharge for Well No. 4 (preferred option) or to the proposed discharge for Well Nos. 1 and 5 (alternative option). A 15" pipe associated with the Well No. 4 discharge and a 24" pipe associated with the Well Nos. 3, 108, and T49N discharge would cross an engineered flood channel of Sycamore Creek, which flows adjacent to the South Canal throughout the Pilot In-Lieu Project area. The pipes would be buried several feet below the bed of the flood channel, emerging on the canal side of the flood channel to introduce water into the South Canal over the edge of the concrete liner. The Well Nos. 3, 108, and T49N discharge pipe would cross the flood channel at the same excavation site as the SCA-1 turnout modification, while the Well No. 4 discharge pipe would require new excavation in the flood channel. The Well Nos. 1 and 5 discharge would tie into the landowner's existing 12" pipe crossing of the flood channel and the South Canal, and would not require new excavation. A new outlet from the 12" pipe would be added on the east canal bank to allow flow from the two wells to over-pour into the canal. Preliminary size of that pipe and over-pour is 18".

The existing canal turnout, which currently has an 18" diameter pipe after its 24" control valve, would be reconstructed after the valve with a 24" diameter pipe. The existing SCA-1 pipe crosses beneath the flood channel, buried several feet below the channel bed. The approximate width of disturbance for the new discharge structures and pipeline reconstruction is 30-40 feet.

Equipment to be used for the Pilot In-Lieu Project would include excavators, backhoes, water trucks, crew trucks, cement mixer trucks, material delivery tractor trailer rigs, a skip loader, and a grader. Project duration of the various project elements would be 30 to 45 days for pipeline extensions/construction, 15 to 30 days for pipeline discharges to canal, 5 to 10 days for turnout improvements, and 30 to 45 days for well discharge improvements.

Sycamore Check Structure Improvement Project. The Sycamore Check Structure Improvement Project would entail modernizing and automating the existing Sycamore Check Structure and raising the canal liner both upstream and downstream of the structure; collectively, these improvements would restore the original capacity of the Check Structure and South Canals to 500 cubic feet per second (cfs). Check structure improvements would include construction of a modern automated gate structure with overflow type weir gates, and implementation of a supervisory control and data acquisition (SCADA) system. The canal would be temporarily dewatered in the vicinity of the Sycamore Check Structure using one of the following techniques: 1) installation of a temporary dam upstream of the construction site (if minimal flow), 2) installation of a pump and pipe network to divert water around the construction site (if moderate flow), or 3) construction of a bypass through Pond R6P1 of the AEWSD's Sycamore Spreading Works (if large flow). Approximately 2.25 miles of the North Canal upstream of the Sycamore Check Structure and 0.2 mile of the South Canal downstream of the Sycamore Check Structure would be subject to canal liner raising. The cement canal liner would be extended several feet up the banks of the canal. No improvements are proposed for the levee roads or the exterior of the levees.

During project construction, one or more staging areas will be established at the Sycamore Spreading Works and/or AEWSD District Headquarters. The potential staging area at Sycamore Spreading Works would be located in Pond R6P1, and would cover an area of approximately 2 acres. The potential staging area at the AEWSD District Headquarters would be located in a

gravel lot already in use for equipment storage, and would be about 1 acre in size. Following project construction, the staging area(s) will be restored to pre-project conditions.

Equipment to be used for the Sycamore Check Structure Improvement Project would include excavators, water trucks, crew trucks, cement mixer trucks, material delivery tractor trailer rigs, a vibratory compactor, a grader, a hydraulic rough terrain crane, and a dump truck. Project duration of the various project elements would be 60 to 90 days for the reconstruction of the Sycamore Check Structure, 30 days for earthwork associated with raising the canal liner, and 45 days for concrete work associated with raising the canal liner.

1.2 REPORT OBJECTIVES

Irrigation infrastructure projects such as that proposed by the AEWSD may damage or modify biotic habitats used by sensitive plant and wildlife species. In such cases, site development may be regulated by state or federal agencies, subject to review under the California Environmental Quality Act (CEQA) and/or National Environmental Policy Act (NEPA), and/or subject to local policies and ordinances. This report addresses issues related to: 1) sensitive biotic resources occurring on the project site; 2) the federal, state, and local laws regulating such resources; and 3) mitigation measures that may be required to reduce the magnitude of anticipated impacts and/or comply with permit requirements of state and federal resource agencies. As such, the objectives of this report are to:

- Summarize all site-specific information related to existing biological resources.
- Make reasonable inferences about the biological resources that could occur onsite based on habitat suitability and the proximity of the site to a species' known range.
- Summarize all state and federal natural resource protection laws that may be relevant to possible future site development.
- Identify and discuss project impacts to biological resources that may occur on the site within the context of CEQA and NEPA guidelines and relevant state and federal laws.
- Identify avoidance and mitigation measures that would reduce the magnitude of project impacts in a manner consistent with the requirements of CEQA and NEPA and that are generally consistent with recommendations of the resource agencies regulating affected biological resources.

1.3 STUDY METHODOLOGY

A reconnaissance-level field survey of the project site was conducted on November 4, 2014 by Live Oak Associates, Inc. (LOA) biologist Rebekah Jensen. The survey consisted of walking and driving the project site while identifying the principal land uses of the site and the constituent plants and animals of each land use. The field survey conducted for this study was sufficient to assess the significance of possible biological impacts associated with the development plans for the project site.

A full protocol San Joaquin kangaroo rat (*Dipodomys nitratoides*) trapping survey was conducted by LOA biologist Geoff Cline (USFWS Permit #50510A-2 and CDFW Scientific Collecting Permit #5981) from May 11 to 16, 2016, in order to determine whether the Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*), a subspecies of the San Joaquin kangaroo rat, is present on the project site. Two Sherman XLF15 Folding Traps (4" x 4.5" x 15") were placed adjacent to each potential kangaroo rat and California ground squirrel (*Otospermophilus beecheyi*) burrow on the project site. A total of 88 traps were used. Traps were opened each evening approximately one hour before sunset, baited with bird seed mixture, and checked the following morning no later than one hour after sunrise in accordance with the *Survey Protocol for Determining Presence of San Joaquin Kangaroo Rats* (USFWS 2013). All captured animals were identified to species, weighed, sexed, and their reproductive condition was noted. All captured kangaroo rats were measured. A full description of the small mammal trapping methodologies and results are presented in *San Joaquin Kangaroo Rat Trapping Survey 90-day Report, Water Conservation and Efficiency Project* (LOA 2016).

LOA conducted an analysis of potential project impacts based on the known and potential biotic resources of the project site discussed in Section 2.0. Sources of information used in the preparation of this analysis included: (1) results of the November 2014 reconnaissance-level survey and May 2016 protocol trapping survey, (2) the *California Natural Diversity Data Base* (CDFW 2016a), (3) the *Online Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2016), and (4) manuals, reports, and references related to plants and animals of the San Joaquin Valley region.

2.0 EXISTING CONDITIONS

2.1 REGIONAL SETTING

The project site is located along the southeastern margin of the San Joaquin Valley of California, at the base of the Tehachapi foothills. The San Joaquin Valley is bordered by the Sierra Nevada to the east, the Tehachapi Mountains to the south, the California coastal ranges to the west, and the Sacramento-San Joaquin Delta to the north.

Like most of California, the southern San Joaquin Valley (and the project site) experiences a Mediterranean climate. Warm, dry summers are followed by cool, moist winters. Summer temperatures in the project vicinity commonly exceed 100 degrees Fahrenheit, and the relative humidity is generally very low. Winter temperatures rarely exceed 70 degrees Fahrenheit. Annual precipitation in the project vicinity is about 6.5 inches, about 85% of which falls between the months of October and March. Nearly all precipitation falls in the form of rain.

The principal drainage of the project vicinity is the Kern River, which originates in the Sierra Nevada and flows in an east-west direction approximately 13 miles north of the project site at its closest point. Historically, a distributary of the Kern River known as the Kern River Slough flowed south from the main stem to the vicinity of Arvin, where it formed the seasonal Kern Lake. Sycamore Creek, the flood channel, and other minor drainages in the project vicinity may at one time have been tributary to the Kern River Slough. However, since the late 19th century, the Kern River and its tributaries and distributaries have been diverted for irrigation and aquifer recharge. The aquatic and riparian habitat once supported by these drainages has been greatly degraded, or eliminated altogether, by these practices.

Lands surrounding the project site consist of vineyards, orchards, agricultural fields, and AEWSD facilities including the Sycamore Spreading Works and District Headquarters.

2.2 PROJECT SITE

At the time of the November 2014 survey, the project site consisted of agricultural land, the AEWSD North and South Canals and associated infrastructure, the flood channel, a portion of the Sycamore Spreading Works, a portion of the AEWSD District Headquarters property, and

paved and unpaved access roads. The topography of the project site is relatively flat with elevations ranging from approximately 510 feet National Geodetic Vertical Datum (NGVD) along the North and South Canals to 448 feet NGVD at the southwestern extent of the site.

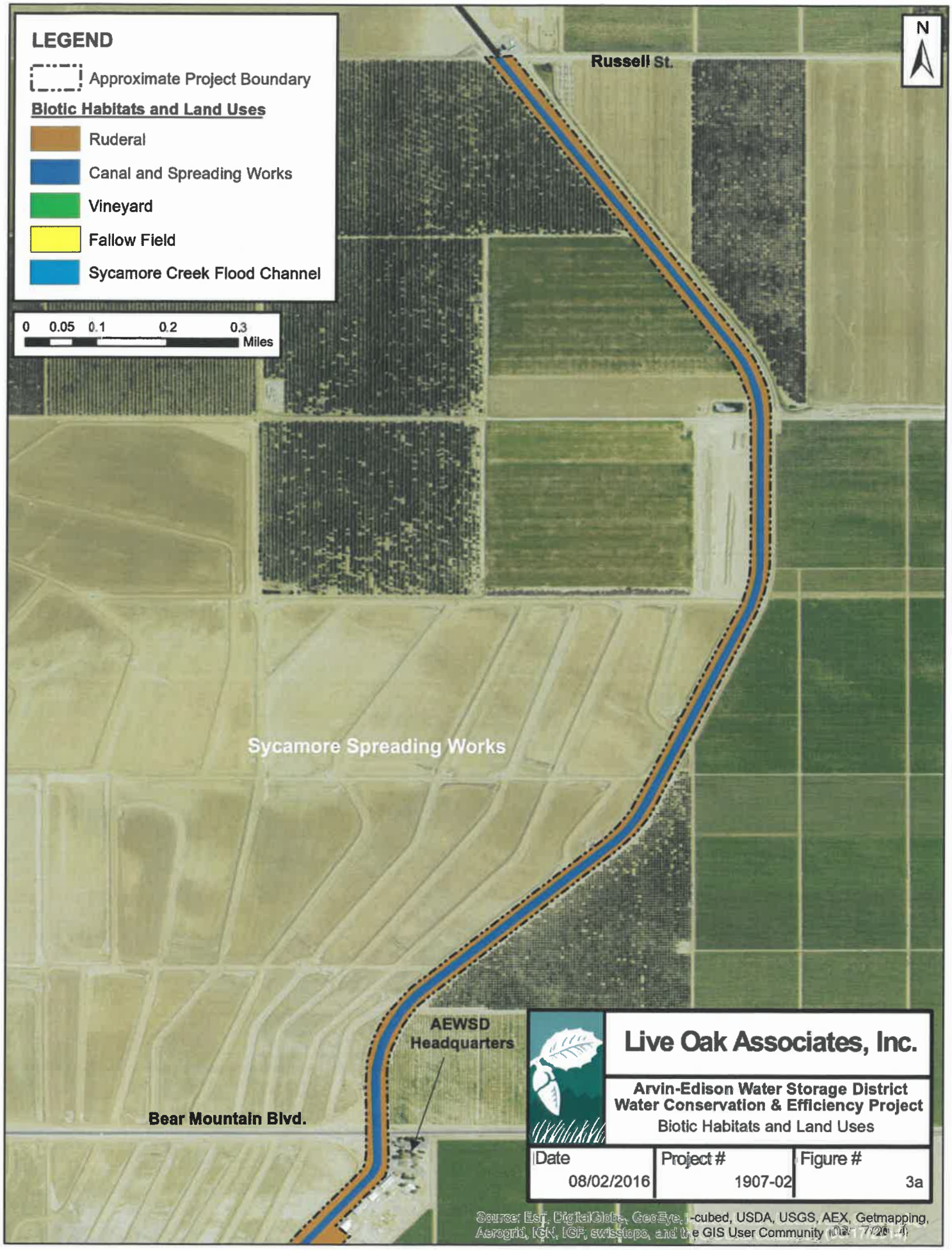
The project site contains four soil mapping units representing two series: Hesperia sandy loam, 0 to 2 percent slopes; Hesperia sandy loam, 2 to 5 percent slopes; Whitewolf loamy sand, 2 to 5 percent slopes; and fluvents, ponded. Of these, only the Hesperia sandy loam, 0 to 2 percent slopes mapping unit is classified as hydric in the California Hydric Soils List. However, all soils of the site have been significantly altered through decades of agricultural and water conveyance practices such as grading, discing, and excavation. As such, any native soil characteristics potentially supporting sensitive biological resources have been destroyed or significantly altered.

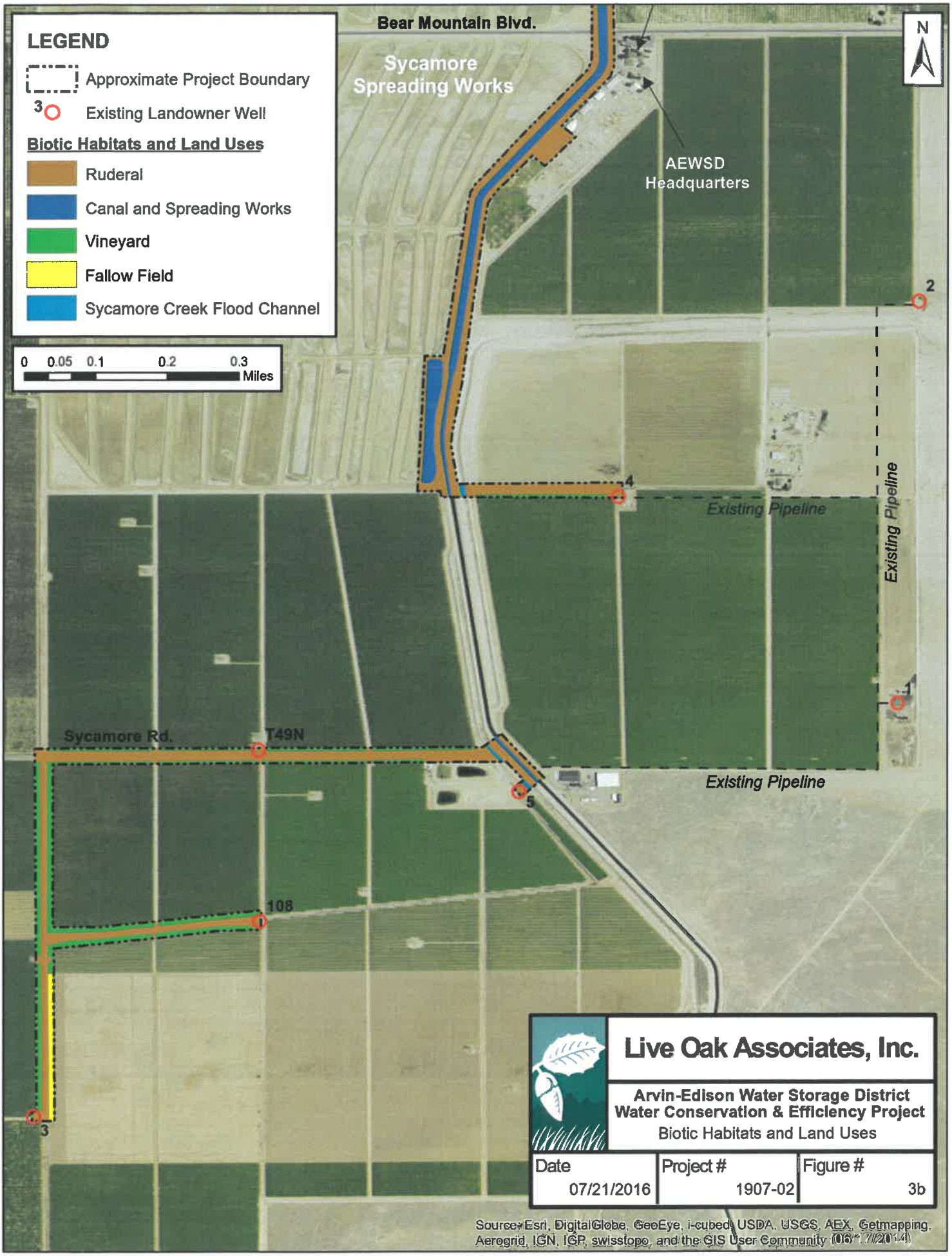
2.3 BIOTIC HABITATS/LAND USES

Five habitat/land use types were observed on the project site during the November 2014 biological field survey; ruderal, vineyard, fallow field, AEWSD Canals and Spreading Works, and flood channel (Figures 3a and 3b). A list of the vascular plant species observed within the project site and the terrestrial vertebrates using, or potentially using, the site are provided in Appendices A and B, respectively. Photos of the project site are presented in Appendix C.

2.3.1 Ruderal

Ruderal (disturbed) areas of the project site consisted of paved and dirt access roads, road shoulders, outer levee banks, cleared areas around landowner wells, and a parcel along the proposed Well No. 4 pipeline that is used for drying raisins. Ruderal habitat also accounted for the entirety of the potential staging area at the AEWSD District Headquarters. Ruderal areas contained no vegetation or a sparse cover of common weeds, which included Bermuda grass (*Cynodon dactylon*), Old Han Schismus (*Schismus barbatus*), annual bursage (*Ambrosia acanthicarpa*), black mustard (*Brassica nigra*), and Russian thistle (*Salsola tragus*).


LEGEND
Approximate Project Boundary
Biotic Habitats and Land Uses
Ruderal
Canal and Spreading Works
Vineyard
Fallow Field
Sycamore Creek Flood Channel
0 0.05 0.1 0.2 0.3 Miles
N
Russell St.
Sycamore Spreading Works
AEWSD Headquarters
Bear Mountain Blvd.
Live Oak Associates, Inc.
Arvin-Edison Water Storage District
Water Conservation & Efficiency Project
Biotic Habitats and Land Uses
Date 08/02/2016
Project # 1907-02
Figure # 3a
Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


LEGEND
Approximate Project Boundary
3 Existing Landowner Well
Biotic Habitats and Land Uses
Ruderal
Canal and Spreading Works
Vineyard
Fallow Field
Sycamore Creek Flood Channel
0 0.05 0.1 0.2 0.3 Miles
Bear Mountain Blvd.
Sycamore Spreading Works
AEWSD Headquarters
N
2
4
Existing Pipeline
Existing Pipeline
Existing Pipeline
1
Sycamore Rd.
T49N
5
108
3
Live Oak Associates, Inc.
Arvin-Edison Water Storage District
Water Conservation & Efficiency Project
Biotic Habitats and Land Uses
Date 07/21/2016
Project # 1907-02
Figure # 3b
Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community (06/17/2014)

Although the wildlife habitat value of ruderal lands within the project site is relatively low, these lands can support some wildlife species. Amphibians such as the Pacific tree frog (*Pseudacris regilla*) and western toad (*Bufo boreas*) may disperse through ruderal lands during the winter and spring. Common reptiles such as the western fence lizard (*Sceloporus occidentalis*) and Pacific gopher snake (*Pituophis catenifer catenifer*) could potentially use ruderal habitats of the project site. Mourning doves (*Zenaida macroura*), northern mockingbirds (*Mimus polyglottos*), and house finches (*Carpodacus mexicanus*) could be expected to occur on these ruderal lands, as could the disturbance-tolerant killdeer (*Charadrius vociferous*), which often nests on gravel or bare ground; all except the mockingbird were observed during the field survey.

Small mammals that would be expected to occur on ruderal lands of the project site include California ground squirrels (*Otospermophilus beecheyi*), Botta's pocket gophers, and Heermann's kangaroo rats (*Dipodomys heermanni*). Potential kangaroo rat burrows were observed in disturbed areas near several of the landowner wells, and California ground squirrel burrows occurred sporadically in the canal levees and along the levee roads. Mammalian predators with the potential to occur on ruderal lands of the site include disturbance-tolerant species such as the raccoon (*Procyon lotor*), coyote (*Canis latrans*), and Virginia opossum (*Didelphis virginiana*).

2.3.2 Vineyard

The Pilot In-lieu Project Area consisted largely of vineyards used for the production of raisin grapes (*Vitis* sp.). Vineyards of the site were mature at the time of the field survey, with foliage forming a dense, continuous canopy along each row. Being highly maintained, the vineyards were barren in the understory.

Due to intensive disturbance and the lack of aquatic habitat, vineyards provide marginal habitat for amphibians; however, Pacific tree frogs and western toads may disperse through vineyards during the winter and spring. A limited number of reptile species would be expected to forage in vineyards of the site due to the lack of sun required by these species for thermal regulation; however, the western fence lizard, Pacific gopher snake, and common kingsnake (*Lampropeltis getulus*) may occasionally occur.

Vineyards provide foraging habitat for several avian species, but are not generally suitable for nesting. Winter migrants such as the white-crowned sparrow (*Zonotrichia leucophrys*) may forage on dormant buds in the site's vineyards, and resident birds such as the European starling (*Sturnus vulgaris*) and house finch would be expected to forage on ripening fruit. House finches were observed flying over vineyards of the site during the field survey.

A few small mammal species would be expected to occur within the vineyards of the site. These include deer mice (*Peromyscus maniculatus*), California voles (*Microtus californicus*), house mice (*Mus musculus*), and Audubon cottontail rabbits (Sy*lvilagus audubonii*). Various species of bat may forage over vineyard habitat for flying insects, or glean insects from the leaves.

Foraging raptors and mammalian predators may occur in the vineyards of the site from time to time. Raptors such as red-tailed hawks (*Buteo jamaicensis*) and American kestrels (*Falco sparverius*) may forage over the vineyards, while mammalian predators such as raccoons, striped skunks (*Mephitis mephitis*), and coyotes may occasionally hunt between the rows.

2.3.3 Fallow Field

The project site contained one fallow field at time of the field survey, located in the southwestern extent of the project site near Well No. 3 (see Figure 3b). Per the landowner, the field is former vineyard from which the grapes were removed approximately one year ago, and will soon be returned to grape production. The field appeared to have recently been deep-ripped, and was entirely devoid of vegetation.

Due to the ground disturbance regime and absence of vegetation noted at the time of the field survey, the fallow field did not offer suitable habitat for most native wildlife species. However, reptiles such as the Pacific gopher snake and common kingsnake may occasionally bask in the field, and bats and certain avian species may forage over the field for flying insects. No evidence of burrowing mammal activity was noted in the fallow field at the time of the field survey.

2.3.4 AEWSD Canals and Spreading Works

The Sycamore Check Structure Improvement Project encompasses approximately 2.5 miles of the AEWSD North and South Canals. Both canals were inundated at the time of the field survey. The North and South Canals within the project site are highly maintained, concrete-lined channels primarily devoid of vegetation; however, weedy species such as sprangletop (*Leptochloa* sp.) and black mustard were occasionally observed on the canals' earthen upper banks.

One of the two potential staging areas for the project is located in Pond R6P1 of the AEWSD's Sycamore Spreading Works, an intensively maintained network of groundwater recharge basins (see Figure 3b). At the time of the field survey, Pond R6P1 was dry and completely devoid of vegetation.

Due to the lack of vegetation in the North and South Canals and Sycamore Spreading Works, this habitat would be of limited value to native wildlife. However, the introduced bullfrog (*Lithobates catesbeianus*) and mosquitofish (*Gambusia affinis*) commonly occur in canals; these and other prey species may attract wading birds such as the great blue heron (*Ardea herodias*) and great egret (*Ardea alba*). Several great egrets were observed along the North Canal during the field survey. Some animal species expected to utilize other habitats of the site may visit the canals and, when inundated, the Spreading Works for water or foraging. Fossorial rodents may burrow in earthen portions of the levees of both the canals and Spreading Works. California ground squirrel burrows were occasionally observed on the upper banks of the canals during the field survey.

2.3.5 Flood Channel

The Pilot In-lieu Project Area includes three short segments of a flood channel of Sycamore Creek (see Figure 3b). The flood channel within the project site is an engineered channel that experiences intermittent flow associated with large rainfall events. The flood channel was dry at the time of the field survey, and vegetated with weedy species such as tamarisk (*Tamarix* sp.), jimsonweed (*Datura stramonium*), and wild gourd (*Cucurbita foetidissima*). Riparian trees and shrubs were absent.

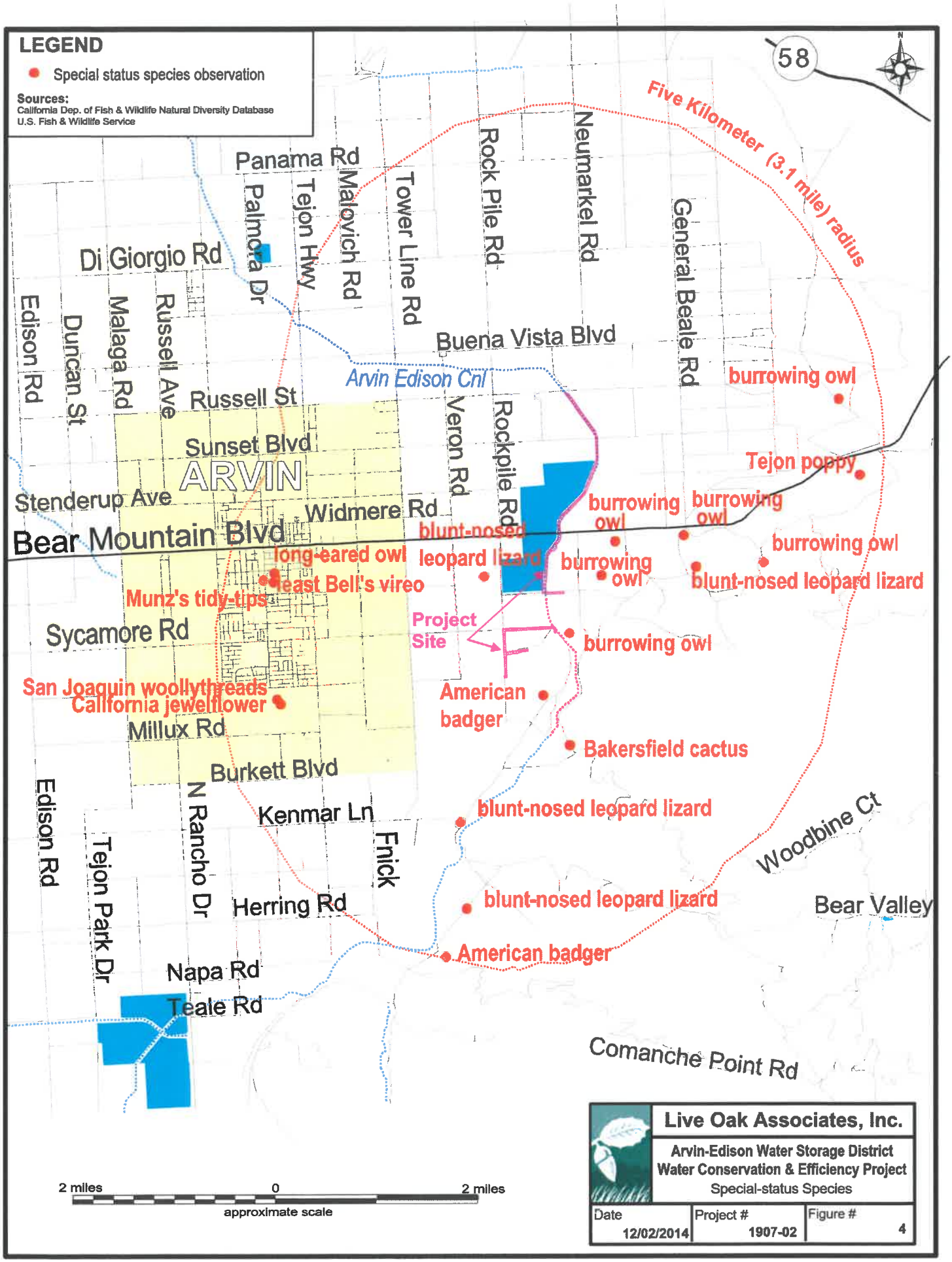
Wildlife with the potential to use the flood channel would include those species described for other habitats of the project site. California ground squirrel burrows were occasionally observed in the banks of the flood channel.

2.4 SPECIAL STATUS PLANTS AND ANIMALS

Several species of plants and animals within the state of California have low populations and/or limited distributions. Such species may be considered "rare" and are vulnerable to extirpation as the state's human population grows and the habitats these species occupy are converted to agricultural and urban uses. As described more fully in Section 3.2, state and federal laws have provided the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting the diversity of plant and animal species native to the state. A sizable number of native plants and animals have been formally designated as "threatened" or "endangered" under state and federal endangered species legislation. Others have been designated as candidates for such listing. Still others have been designated as "species of special concern" by the CDFW. The California Native Plant Society (CNPS) has developed its own set of lists of native plants considered rare, threatened, or endangered (CNPS 2016). Collectively, these plants and animals are referred to as "special status species."

The *California Natural Diversity Data Base* (CDFW 2016a) was queried for special status species occurrences in the nine USGS 7.5-minute quadrangles containing and surrounding the project site (*Arvin*, *Weed Patch*, *Lamont*, *Edison*, *Bena*, *Bear Mountain*, *Tejon Ranch*, *Tejon Hills*, and *Mettler*). An official species list was obtained using the USFWS Information for Planning and Conservation (IPaC) system for federally listed species with the potential to be affected by the project (USFWS 2016). These species, and their potential to occur on the project site, are listed in Table 1 on the following pages. Sources of information for this table included *California's Wildlife, Volumes I, II, and III* (Zeiner et. al 1988-1990), *Special Animals* (CDFW 2016b), *Special Vascular Plants, Bryophytes, and Lichens* (CDFW 2016c), and *The California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2016).

Special status species occurrences within 3.1 miles (5 kilometers) of the project site are depicted in Figure 4, and San Joaquin kit fox (*Vulpes macrotis mutica*) occurrences within 10 miles of the project site are depicted in Figure 5.


LEGEND
Special status species observation
Sources:
California Dep. of Fish & Wildlife Natural Diversity Database
U.S. Fish & Wildlife Service
58
Five Kilometer (3.1 mile) radius
Panama Rd
Palmora Dr
Tejon Hwy
Malovich Rd
Tower Line Rd
Rock Pile Rd
Neumarkel Rd
General Beale Rd
Di Giorgio Rd
Edison Rd
Duncan St
Malaga Rd
Russell Ave
Russell St
Buena Vista Blvd
Arvin Edison Cnl
Veron Rd
Rockpile Rd
Sunset Blvd
ARVIN
Stenderup Ave
Widmere Rd
Bear Mountain Blvd
Sycamore Rd
Millux Rd
Burkett Blvd
Kenmar Ln
Fnick
N Rancho Dr
Herring Rd
Edison Rd
Tejon Park Dr
Napa Rd
Teale Rd
Woodbine Ct
Bear Valley
Comanche Point Rd
burrowing owl
Tejon poppy
burrowing owl
burrowing owl
blunt-nosed leopard lizard
burrowing owl
burrowing owl
blunt-nosed leopard lizard
long-eared owl
least Bell's vireo
Munz's tidy-tips
Project Site
burrowing owl
San Joaquin woolythreads
California jewelflower
American badger
Bakersfield cactus
blunt-nosed leopard lizard
blunt-nosed leopard lizard
American badger
2 miles
0
2 miles
approximate scale
Live Oak Associates, Inc.
Arvin-Edison Water Storage District
Water Conservation & Efficiency Project
Special-status Species
Date 12/02/2014
Project # 1907-02
Figure # 4

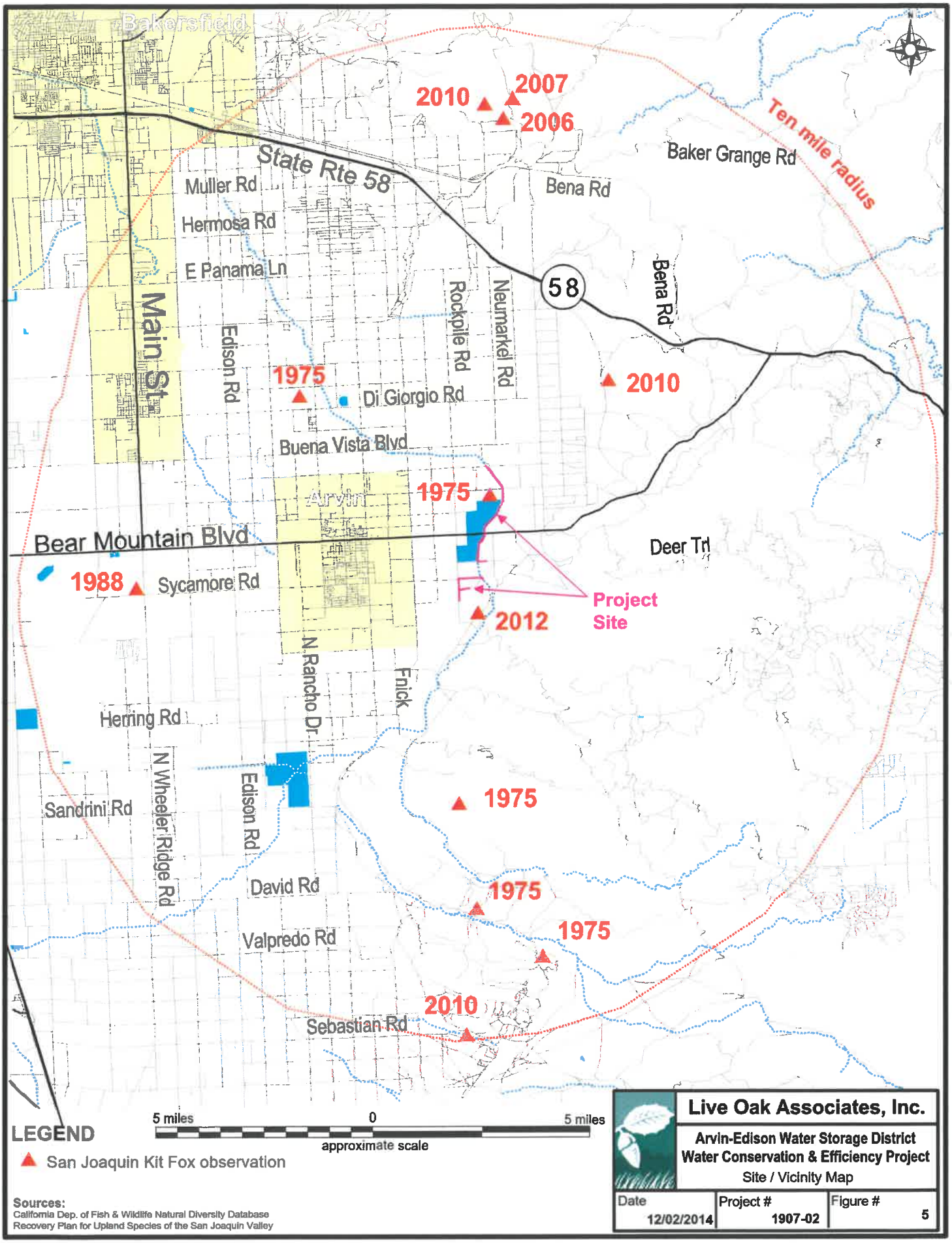

Bakersfield
2010
2007
2006
Ten mile radius
Baker Grange Rd
State Rte 58
Muller Rd
Bena Rd
Hermosa Rd
E Panama Ln
58
Bena Rd
Main St
Edison Rd
Rockpile Rd
Neumarkel Rd
1975
Di Giorgio Rd
2010
Buena Vista Blvd
Arvin
1975
Bear Mountain Blvd
Deer Trl
1988
Sycamore Rd
Project Site
2012
N Rancho Dr
Fnick
Herring Rd
N Wheeler Ridge Rd
Edison Rd
Sandrini Rd
1975
David Rd
1975
Valpredo Rd
1975
2010
Sebastian Rd
LEGEND
San Joaquin Kit Fox observation
5 miles
0
5 miles
approximate scale
Sources:
California Dep. of Fish & Wildlife Natural Diversity Database
Recovery Plan for Upland Species of the San Joaquin Valley
Live Oak Associates, Inc.
Arvin-Edison Water Storage District
Water Conservation & Efficiency Project
Site / Vicinity Map
Date 12/02/2014
Project # 1907-02
Figure # 5

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

PLANTS (adapted from CDFW 2016a and CNPS 2016)

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

Species	Status	Habitat	*Occurrence on the Project Site
Bakersfield Smallscale (*Atriplex tularensis*)	CE CNPS 1A	Occurs in alkaline soils at the shores of the Kern Lake Bed. Blooms October - July.	**Absent.** Suitable habitats for this species are absent from the project site.
California Jewel-Flower (*Caulanthus californicus*)	FE, CE CNPS 1B	Occurs in chenopod scrub and valley and foothill grassland at elevations below 3,300 feet. Blooms February-May.	**Absent.** Past and ongoing disturbance of the site has created conditions unsuitable for this plant species.
Kern Mallow (*Eremalche kernensis*)	FE, CNPS 1B	Occurs in chenopod scrub and valley and foothill grassland between 230 and 4,200 feet in elevation. Blooms March – May.	**Absent.** Past and ongoing disturbance of the site has created conditions unsuitable for this plant species.
Striped Adobe-lily (*Fritillaria striata*)	CT CNPS 1B	Occurs in cismontane woodland and valley and foothill grassland habitats with clay soils. Blooms February-April.	**Absent.** Past and ongoing disturbance of the site has created conditions unsuitable for this plant species, and suitable soils are absent.
San Joaquin Woollythreads (*Monolopia congdonii*)	FE CNPS 1B	Occurs in chenopod scrub and valley and foothill grassland habitats between 200 and 2,600 feet in elevation. Blooms February-May.	**Absent.** Past and ongoing disturbance of the site has created conditions unsuitable for this plant species.
Bakersfield Cactus *(Opuntia basilaris var. treleasei)*	FE, CE CNPS 1B	Occurs in chenopod scrub, cismontane woodland, valley and foothill grassland in sandy or gravelly soils between 400 and 850 feet in elevation. Blooms in May. Endemic to Kern County.	**Absent.** Past and ongoing disturbance of the site has created conditions unsuitable for this plant species.

CNPS-Listed Plants

Species	Status	Habitat	*Occurrence on the Project Site
Horn's Milk Vetch (*Astagalus hornii var. hornii*)	CNPS 1B	Occurs in alkaline meadows, seeps, and lake margins. Blooms October-May.	**Absent.** Suitable habitats for this species are absent from the project site.
Alkali Mariposa-lily (*Calochortus striatus*)	CNPS 1B	Occurs in alkaline meadows and ephemeral washes within chaparral and scrub habitats between 230 and 5,200 feet in elevation. Blooms April-June.	**Absent.** Suitable habitats for this species in the form of alkaline meadows and washes are absent from the project site.
Lemmon's Jewelflower (*Caulanthus lemmonii*)	CNPS 1B	Occurs in pinyon-juniper woodland, valley and foothill grassland between 260 and 4,000 feet in elevation. Blooms March-May.	**Absent.** Past and ongoing disturbance of the site has created conditions unsuitable for this plant species.

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

PLANTS (cont'd)

CNPS-Listed Plants

Species	Status	Habitat	*Occurrence on the Project Site
Hispid Salty Bird's Beak (*Chloropyron molle ssp. hispidum*)	CNPS 1B	Occurs in in damp alkaline soils, especially in alkaline meadows and alkali sinks with *Distichlis spicata*. Blooms June–Sept.	**Absent.** Suitable habitats for this species are absent from the project site.
Vasek's Clarkia *(Clarkia tembloriensis ssp. calientensis)*	CNPS 1B	Occurs in valley and foothill grassland on north-facing slopes between 900 and 1,640 feet in elevation. Blooms in April.	**Absent.** The site is situated outside of this species' elevational range, and is otherwise unsuitable for this species due to intensive human uses.
Tejon Poppy *(Eschscholzia lemmonii ssp. kernensis)*	CNPS 1B	Occurs in valley and foothill grassland and chenopod scrub between 525 and 3,280 feet in elevation. Blooms March–May.	**Absent.** Past and ongoing disturbance of the site has created conditions unsuitable for this plant species.
Pale-yellow Layia (*Layia heterotricha*)	CNPS 1B	Occurs in cismontane woodland, pinyon and juniper woodland, and alkaline or clay soils in valley and foothill grassland between 1,000 and 5,600 feet in elevation. Blooms March-June	**Absent.** Suitable soils and habitats for this species are absent from the project site, and the site is situated outside of the species' elevational range.
Comanche Point Layia *(Layia leucopappa)*	CNPS 1B	Occurs in chenopod scrub and valley and foothill grassland between 325 and 1,150 feet in elevation. Blooms March – April.	**Absent.** Past and ongoing disturbance of the site has created conditions unsuitable for this plant species.
Munz's Tidy-tips *(Layia munzii)*	CNPS 1B	Occurs on hillsides, in white-gray alkaline clay soils between 500 and 2,300 feet in elevation. Blooms March – April.	**Absent.** Sloping topography required by this species is absent from the project site, and the site is otherwise unsuitable due to intensive human uses.
Coulter's Goldfields (Lasthenia glabrata spp. coulteri)	CNPS 1B	Occurs in alkaline soils of playas and vernal pools; elevations below 4,000 ft. Blooms February-June.	**Absent.** Suitable habitat in the form of vernal pools and playas are absent from the project site.
Madera Leptosiphon (*Leptosiphon serrulatus*)	CNPS 1B	Occurs in oak woodland, cismontane woodland, and coniferous forest between 1,000 and 4,260 feet in elevation. Blooms April-May.	**Absent.** Suitable habitats for this species are absent from the project site, and the site is situated outside of the species' elevational range.
Calico Monkeyflower (*Mimulus pictus*)	CNPS 1B	Occurs in broadleafed upland forest and cismontane woodland in granitic soils 330-4,270 feet in elevation. May occur in disturbed areas. Blooms March-May.	**Absent.** Suitable soils and habitat for this species are absent from the project site.

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

PLANTS (cont'd)

CNPS-Listed Plants

Species	Status	Habitat	*Occurrence on the Project Site
Piute Mountains Navarretia *(Navarretia setiloba)*	CNPS 1B	Occurs in clay or gravelly loam in cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland between 1,000 and 6,900 feet in elevation. Blooms April – July.	**Absent.** Suitable soils and habitats for this species are absent from the project site, and the site is situated outside of the species' elevational range.
California Alkali Grass (*Puccinellia simplex*)	CNPS 1B	Occurs in alkali sinks and flats within grassland and chenopod scrub habitats of the Central Valley, San Francisco Bay area and western Mojave Desert; elevations below 3,000 feet. Blooms March-May.	**Absent.** Suitable alkali habitats for this species are absent from the project site.

ANIMALS (adapted from CDFW 2016a and USFWS 2016)

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

Species	Status	Habitat	*Occurrence on the Project Site
Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)	FT	Occurs in vernal pools, clear to tea-colored water in grass or mud-bottomed swales, and basalt depression pools.	**Absent.** Vernal pools are absent from the project site and immediately adjacent lands.
Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)	FT	Mature elderberry shrubs of California's Central Valley and Sierra Foothills.	**Absent.** The newly revised range of this species by the USFWS does not include Kern County.
Delta Smelt (*Hypomesus transpacificus*)	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.	**Absent.** The project site is situated well outside of the known distribution of this species.
California Red-Legged Frog (*Rana draytonii*)	FT	Occurs in permanent aquatic habitats such as creeks and ponds with emergent vegetation. Has been extirpated from drainages of the Sierra foothills south of Tuolumne County as a result of habitat loss, pollution, and the proliferation of exotic predators.	**Absent.** The project site lies well outside of the current known distribution of this species. There are no documented observations, historical or otherwise, within 10 miles of the study area.

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS (cont'd.)

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

Species	Status	Habitat	*Occurrence on the Project Site
Blunt-Nosed Leopard Lizard (BNLL) (*Gambelia sila*)	FE, CE, CFP	Frequents grasslands, alkali meadows and chenopod scrub of the San Joaquin Valley.	**Unlikely.** All habitats of the project site are intensively maintained and unsuitable for the BNLL. Surrounding lands consist of orchards, vineyards, agricultural fields, and AEWSD infrastructure that would also be unsuitable for this species. The CNDDB lists four occurrences of this species within a 3-mile radius of the site. Three of these were documented in annual grassland on Tejon Ranch and the fourth in an orchard west of the site; the latter was likely incorrectly mapped.
Giant Garter Snake (*Thamnophis gigas*)	FT, CT, CFP	Occurs in marshes, sloughs, drainage canals, irrigation ditches, rice fields, and adjacent uplands. Prefers locations with emergent vegetation for cover and open areas for basking.	**Absent.** The highly-maintained North and South Canals would be marginal, at best, for the giant garter snake. The project site is situated outside of the known current distribution of this species; the closest occurrences are more than 30 miles west of the site, and were documented in the 1940s and 1950s.
Swainson's Hawk (*Buteo swainsoni*)	CT	Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah. Requires adjacent suitable foraging areas such as grasslands or alfalfa fields supporting rodent populations.	**Unlikely.** The project site does not offer suitable breeding or foraging habitat for this species; however, Swainson's hawks may pass over the site from time to time. The closest documented occurrences of Swainson's hawk are approximately 6 miles northeast of the site.
California Condor (*Gymnogyps californianus*)	FE, CE, CFP	Requires vast expanses of open savannah, grasslands, and foothill chaparral. Forages on large, dead animals. Nests on cliffs, often within deep canyons. Occurs in many habitats of the southern half of California.	**Unlikely.** The project site does not offer suitable breeding habitat for this species, nor would it serve as a source of the large animal carcasses the condor feeds on. However, condors may occasionally fly over the site. The closest documented occurrence is a 2013 sighting of two condors flying over Tejon Creek, more than 12 miles southeast of the site.
Southwestern Willow Flycatcher (*Empidonax traillii extimus*)	FE	Breeds in dense riparian habitats along streams or wetlands, generally within 20 yards of water. Winters in Central America.	**Absent.** Riparian habitat is absent from the project site and surrounding lands.
Least Bell's Vireo (*Vireo bellii ssp. pusillus*)	FE, CE	Breeds in dense early successional riparian vegetation. Winters in Mexico and Central America.	**Absent.** Riparian habitat is absent from the project site and surrounding lands.

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS – cont'd.

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

Species	Status	Habitat	*Occurrence on the Project Site
Tipton Kangaroo Rat (*Dipodomys nitratoides nitratoides*)	FE	Inhabits grassland on gentle slopes generally less than 10°, with friable, sandy-loam soils, east of the California Aqueduct.	**Absent.** Intensive human uses of the project site and adjacent properties have rendered these lands unsuitable for this species. A full protocol trapping survey conducted by LOA in May 2016 found no Tipton kangaroo rats on the project site.
San Joaquin Kit Fox (*Vulpes macrotis mutica*)	FE	Frequents desert alkali scrub and annual grasslands and may forage in adjacent agricultural habitats. Utilizes enlarged (6 to 10 inches in diameter) ground squirrel burrows as denning habitat.	**Possible.** The project site offers marginal habitat, at best, for this species due to intensive human uses. However, kit fox may occasionally pass through the project site or den temporarily in burrows in ruderal habitat of the site. The CNDDB lists 12 occurrences of kit fox within a 10-mile radius of the site. The closest such occurrence was recorded in 1975 approximately 1/3 mile west of the AESWD North Canal.

State Species of Special Concern

Species	Status	Habitat	*Occurrence on the Project Site
Western Spadefoot (*Spea hammondii*)	CSC	Occurs in grasslands of San Joaquin Valley. Vernal pools or other temporary wetlands are required for breeding. Aestivates in underground refugia such as rodent burrows, typically within 1200 ft. of aquatic habitat.	**Absent.** Suitable breeding habitat is absent from the project site and surrounding lands. The closest known occurrence of this species is approximately 7 miles northeast of the project site.
Yellow-blotched Salamander (*Ensatina eschscholtzii croceator*)	CSC	Inhabits forests and well-shaded canyons, as well as oak woodlands and old chaparral.	**Absent.** Habitat required by this species is absent from the project site.
San Joaquin Coachwhip (*Coluber flagellum ruddocki*)	CSC	Occurs in open, dry areas including grassland and saltbush scrub. Takes refuge in rodent burrows and under shaded vegetation.	**Unlikely.** The disturbed habitats of the site are marginal to unsuitable for this species. The closest known occurrence of this species was documented 7 miles southwest of the site in 2012.
Coast Horned Lizard (*Phrynosoma blainvillii*)	CSC	Occurs in the lower Sierra foothills and throughout the central and southern California coast in relatively open areas.	**Unlikely.** The disturbed habitats of the site are marginal to unsuitable for this species. The closest known occurrence of this species was documented approximately 8 miles northeast of the site in 1963.

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS – cont'd.

State Species of Special Concern

Species	Status	Habitat	*Occurrence on the Project Site
Burrowing Owl (*Athene cunicularia*)	CSC	Frequents open, dry annual or perennial grasslands, deserts, and scrublands characterized by low growing vegetation. Dependent upon burrowing mammals, most notably the California ground squirrel, for nest burrows.	**Possible.** California ground squirrel burrows of suitable dimensions for the burrowing owl were observed in the earthen upper banks and levee roads of the North and South Canals. The CNDDB lists five burrowing owl occurrences within a 3-mile radius of the project site; the closest was documented in annual grassland approximately 700 feet east of the site in 1990.
Long-eared Owl (*Asio otus*)	CSC	Frequents riparian woodlands and forests of California.	**Absent.** Breeding and foraging habitat are absent from the project site.
Purple Martin (*Progne subis*)	CSC	Inhabits woodlands and low-elevation coniferous forests, where it nests primarily in old woodpecker cavities. May also use human-made structures.	**Absent.** Habitats suitable for this species are absent from the project site.
Tricolored Blackbird (*Agelaius tricolor*)	CSC	Breeds near fresh water, primarily emergent wetlands, with tall thickets. Forages in grassland and agricultural fields.	**Absent.** Breeding and foraging habitat are absent from the project site.
Tulare Grasshopper Mouse (*Onychomys torridus*)	CSC	Occurs in hot, arid grassland and scrub desert associations in the Southern San Joaquin Valley.	**Absent.** Suitable habitat for this species is not present on the project site. The CNDDB lists only two occurrences of Tulare grasshopper mouse within a 10-mile radius of the project site; the reports were made in 1918 and 1925, and may not reflect current populations of this species.
Western Mastiff Bat (*Eumops perotis* ssp. *californicus*)	CSC	Frequents open, semi-arid to arid habitats, including conifer, and deciduous woodlands, coastal scrub, grasslands, palm oasis, chaparral and urban. Roosts in cliff faces, high buildings, trees and tunnels.	**Possible.** This species may forage over the site, and could potentially roost on the bridges over the flood channel and the North and South Canals.
Pallid Bat (*Antrozous pallidus*)	CSC	Roosts in rocky outcrops, cliffs, and crevices with access to open habitats for foraging. May also roost in caves, mines, hollow trees and buildings.	**Possible.** This species may forage over the site, and could potentially roost on the bridges over the flood channel and the North and South Canals.

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS – cont'd.

State Species of Special Concern

Species	Status	Habitat	*Occurrence on the Project Site
American Badger (*Taxidea taxus*)	CSC	Found in drier open stages of most shrub, forest and herbaceous habitats with friable soils.	**Possible.** The disturbed habitats of the project site are marginal to unsuitable for this species. However, badgers may pass through the site from time to time. The CNDDB lists two 2012 occurrences of American badger within 3 miles of the site; the closest of these was in annual grassland habitat approximately ½ mile southeast of Well No. 3.

***EXPLANATION OF OCCURRENCE DESIGNATIONS AND STATUS CODES**

Present: Species observed on the sites 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 sites, but it could occur there from time to time.
Unlikely: Species not observed on the sites, and would not be expected to occur there except, perhaps, as a transient.
Absent: Species not observed on the sites, and precluded from occurring there because habitat requirements not met.

STATUS CODES

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
FPE	Federally Endangered (Proposed)	CFP	California Protected
FC	Federal Candidate	CSC	California Species of Special Concern
CNPS	California Native Plant Society Listing		
1A	Plants Presumed Extinct in California	3	Plants about which we need more information – a review list
1B	Plants Rare, Threatened, or Endangered in California and elsewhere	4	Plants of limited distribution – a watch list
2	Plants Rare, Threatened, or Endangered in California, but more common elsewhere		

2.5 ENDANGERED, THREATENED, OR SPECIAL STATUS PLANT AND ANIMAL SPECIES MERITING FURTHER DISCUSSION

2.5.1 Blunt-Nosed Leopard Lizard (*Gambelia sila*). Federal Listing Status: Endangered; State Listing Status: Endangered and Fully Protected

Ecology of the species. Endemic to the San Joaquin Valley of California, the blunt-nosed leopard lizard (BNLL) typically inhabits open, sparsely vegetated areas of low relief on the San Joaquin Valley floor and in the surrounding foothills. Due to widespread agricultural development of natural habitat in the San Joaquin Valley, the current distribution of BNLL is restricted to less than 15 percent of its historic range. It was listed by the USFWS as federally endangered in 1967, by the State of California as "fully protected" in the 1960s before the

passage of the California Endangered Species Act (CESA), and by the State of California as endangered under CESA in 1971.

The BNLL feeds primarily on insects and other lizards. It uses small rodent burrows, typically those of California ground squirrels or kangaroo rats (*Dipodomys* spp.), for shelter from predators and temperature extremes. In areas of low rodent burrow density, the BNLL may construct shallow, simple tunnels in earth berms or under rocks (Montanucci 1965). BNLL activity varies seasonally. It hibernates in the winter, emerging from its burrows in March or April (Williams et al. 1993). Breeding activity begins within a month of emergence and continues through June. The female lays her eggs in June or July, and the young hatch in July or August (Montanucci 1965). Adults retreat to their burrows to hibernate in August or September, but hatchlings are generally active through October.

Potential to occur onsite. The project site consists of, and is surrounded by, intensively maintained agricultural lands, roads, and irrigation infrastructure unsuitable for occupation by the blunt-nosed leopard lizard. BNLL are known to occur in the annual grassland habitats of Tejon Ranch south and east of the project site; the CNDDB lists three occurrences of BNLL in grassland habitat within 3 miles of the site, the closest being a 2004 occurrence approximately 1.5 miles east of Well No. 4. Grassland habitat is located approximately 350 feet from the project site at its closest point (near Well No. 5), but is separated from this portion of the site by an agricultural loading facility, and elsewhere is separated from the site by vineyards and residences. Given the abundance of suitable habitat for BNLL in the annual grassland south and east of the site, it is highly unlikely that individual BNLL would traverse incompatible land uses to access the project site, which itself is unsuitable for the species.

In addition to the three grassland occurrences of BNLL within 3 miles of the project site, the CNDDB lists a 1990 occurrence of BNLL approximately 0.7 mile west of the Sycamore Check Structure on land that has, since the time of the occurrence, been in continuous operation as an orchard or vineyard. The notes for the occurrence indicate that it was generally mapped, and may not be depicted in the correct location. Moreover, the location is given as Tejon Ranch, which suggests that the occurrence should be plotted in the annual grassland east of the project site, rather than in agricultural lands to the west. Due to these apparent inconsistencies, this

CNDDB record is not considered evidence that BNLL occur in the matrix of agricultural and industrial lands that characterize the project site and its immediate vicinity.

2.5.2 Tipton Kangaroo Rat (*Dipodomys nitratoides nitratoides*). Federal Listing Status: Endangered; State Listing Status: Endangered

Ecology of the species. The Tipton kangaroo rat is one of three subspecies of the San Joaquin kangaroo rat (*Dipodomys nitratoides*). Historically, this subspecies occurred within an area marked by the southern margin of Tulare Lake to the north, the edge of the valley floor to the east, the Tehachapi foothills to the south, and the marshes and open water of Kern and Buena Vista Lakes to the west. By 1985, the subspecies occupied only about 4 percent of its historical range. Today, the Tipton kangaroo rat is primarily limited to natural lands associated with the Pixley National Wildlife Refuge, the Allensworth Ecological Reserve, Allensworth State Historical Park, Kern National Wildlife Refuge, Coles Levee Ecosystem Preserve, and other scattered units (Williams 1985).

Tipton kangaroo rats occur in arid-land communities on the valley floor in level or nearly level terrain. They are primarily associated with scrub habitats characterized by sparsely scattered woody shrubs with a ground cover of grasses and forbs; for example, Valley Sink Scrub and Valley Saltbush Scrub (Griggs et al. 1992). They also occupy grassland habitats devoid of shrubs, but sparse to moderate shrub cover is associated with populations of high density. Woody shrubs commonly associated with the Tipton kangaroo rat include iodine bush (*Allenrolfea occidentalis*), arrowscale (*Atriplex phyllostegia*), quailbush (*Atriplex lentiformis*), and various types of saltbush (*Atriplex* sp.).

Tipton kangaroo rats live in underground burrows, usually dug by themselves or another member of the species. Burrow systems tend to be located in open areas, and are often slightly elevated above surrounding terrain. Burrows may be located on anthropogenic features such as road berms, canal embankments, and railroad beds. Tipton kangaroo rats rarely appear aboveground during daylight hours. At night, they emerge from their burrows to forage, primarily on seeds but occasionally also on green, herbaceous vegetation and insects. They breed in the winter and spring, and females typically have just one litter per year.

Potential to occur onsite. The project site consists of, and is surrounded by, lands that are intensively managed for agriculture, water conveyance, and other human uses. These lands are not suitable as habitat for the Tipton kangaroo rat. As discussed, a full protocol trapping survey was conducted by LOA biologist Geoff Cline in May 2016. Animals captured during this survey comprised four Heermann's kangaroo rats, 35 deer mice, three house mice, one San Joaquin pocket mouse (*Perognathus inornatus*), one Audubon cottontail, and one western toad. The survey found no Tipton kangaroo rats on the project site.

2.5.3 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 black-tailed hares, desert cottontails, rodents, insects, reptiles, and some birds.

Potential to occur onsite. The project site consists of highly-disturbed lands that would be marginal, at best, for the San Joaquin kit fox. Surrounding properties are similarly unsuitable, consisting of a matrix of intensively-managed agricultural and industrial lands offering limited foraging and denning opportunities for this species. However, an expanse of annual grassland habitat owned by Tejon Ranch occurs to the south and east of the project site, and is 350 feet outside of project boundaries at its closest point. Plentiful rodent burrows were observed in the annual grassland habitat at the time of the field survey, suggesting both a sufficient prey base and ample denning opportunities. One or more kit foxes were detected in this habitat during a 2012 camera survey; the occurrence is approximately ½ mile southeast of Well No. 3.

Kit fox are well-documented in the project vicinity. In addition to the 2012 detection, there are eleven other CNDDB occurrences of kit fox within a ten-mile radius of the project site. Based on the documented presence of kit fox in the project vicinity, it is likely that individual foxes pass through the site from time to time. Foxes could also make temporary use of burrows in the levee roads and earthen upper banks of the canals or the flood channel; however, these habitats are highly maintained and regularly disturbed, and are therefore unlikely to be used for natal denning. No burrows of suitable dimensions for the San Joaquin kit fox were observed on the project site at the time of the field survey.

2.5.4 Burrowing Owl (*Athene cunicularia*). Federal Listing Status: None; State Listing Status: Species of Special Concern.

Ecology of the species. The burrowing owl is primarily a grassland species, but may also occur in open shrub lands, grazed pastures, and occasionally agricultural lands. The primary indicators of suitable habitat appear to be burrows for roosting and nesting and relatively short vegetation, with only sparse areas of shrubs or taller vegetation. Burrowing owls roost and nest in the burrows of California ground squirrels, and occasionally also badger, coyote, or fox. The burrowing owl diet includes a broad array of arthropods, small rodents, birds, reptiles, and amphibians. The burrowing owl was designated a California Species of Special Concern in 1978 following long-term population decline, primarily due to loss of habitat to development and agricultural practices.

Potential to occur onsite. Burrowing owls could theoretically roost or nest in those portions of the project site containing burrows of suitable size, and forage in open areas supporting a sufficient prey base. At the time of the field survey, burrows of suitable size for burrowing owl were sporadically observed in the earthen upper banks of the North and South Canals, in the banks of the flood channel, and along the levee roads. The project site does not offer suitable foraging habitat for burrowing owl, and the intensively-managed agricultural and industrial lands bordering the project site would be marginal, at best, as foraging habitat for this species. The CNDDB lists five occurrences of burrowing owl within a three-mile radius of the project site; the closest of these was documented approximately 700 feet east of the site in 1990. All five occurrences are in annual grassland habitat of Tejon Ranch, which is located approximately 350 feet from the project site at its closest point.

2.5.5 American Badger (*Taxidea taxus).* Federal Listing Status: None; State Listing Status: Species of Special Concern

Ecology of the species. The American badger is a burrowing member of the mink family that resides in grasslands, savannahs and prairies throughout much of the western United States. Badgers prey primarily on small mammals including ground squirrels, pocket gophers, and mice, which they capture by digging out the animals' burrows. Adult badgers are primarily nocturnal, foraging at night and remaining underground in sleeping dens during the day. Badgers may reuse sleeping dens, or dig a new sleeping den each day. Badgers mate in late summer to early fall, and the young are born in natal dens in March and April. Both sleeping dens and natal dens are dug in dry, friable soils with sparse overstory cover. While badgers rarely remain in a sleeping den for more than a day, natal dens may be used for a period of 4-8 weeks as the female gives birth to and raises her young.

Potential to occur onsite. The project site consists of highly-disturbed lands that would be marginal, at best, for the American badger. Surrounding properties are similarly unsuitable, consisting of a matrix of intensively-managed agricultural and industrial lands offering limited foraging and denning opportunities for this species. However, as described for other species in this section, the American badger has a relatively high potential for occurrence in the annual grassland habitat of Tejon Ranch, which is located 350 feet outside of project boundaries at its

closest point. The CNDDB lists a 2012 occurrence of American badger in grassland habitat approximately ½ mile southeast of Well No. 3. Another occurrence from that year was documented in similar habitat approximately three miles south of the project site. Based on the documented presence of badgers in the project vicinity, it is likely that badgers pass through the site from time to time. Badgers may also dig sleeping dens in the levee roads and earthen upper banks of the canals or the flood channel; however, these habitats are highly maintained and regularly disturbed, and are therefore unlikely to be used for natal dens.

2.6 JURISDICTIONAL WATERS

As will be discussed in greater detail in Section 3.2.8, the U.S. Army Corps of Engineers (USACE) has regulatory authority over certain rivers, creeks, lakes, ponds, reservoirs, wetlands, and in some cases irrigation canals ("Waters of the U.S." or "jurisdictional waters"). The extent of USACE jurisdiction is defined in the Code of Federal Regulations and has been further clarified in federal courts. Generally, Waters of the U.S. are navigable waters that cross state or national boundaries, are used in or somehow influence interstate or foreign commerce, or are impoundments or tributaries of such waters.

The project site includes three short segments of an engineered flood channel of Sycamore Creek. Sycamore Creek initiates near the summit of Bear Mountain, approximately 8 miles east of the project site, and flows through Sycamore Canyon to the floor of the San Joaquin Valley. Approximately 0.7 mile east of the project site, Sycamore Creek enters an engineered channel constructed to divert its flood waters around vineyards and the Sycamore Spreading Works. This channel approaches the eastern boundary of the project site at the location of the existing Sycamore Check Structure, whereupon it turns south and parallels the South Canal for a distance of approximately 1 mile, crossing under the canal via two siphons along the way. Approximately one-half mile south of Sycamore Road, the channel turns southwest, then west, away from the project site, resuming its meandering course. It traverses grassland for about 1.5 miles before entering agricultural lands, at which point it splits into a network of on-farm ditches that do not appear to connect to any traditional navigable waters. Sycamore Creek currently lacks connectivity to Waters of the U.S., and possibly never connected; the historical maps accessed for the preparation of this report depict all of the drainages in the project vicinity

(Caliente Creek, Sycamore Creek, Little Sycamore Creek, Tejon Creek) as flowing only a short distance into the San Joaquin Valley; none are depicted as flowing all the way to the Kern River Slough. For these reasons, and for the purposes of this report, it is assumed that Sycamore Creek is not a Water of the U.S.

The project site also includes approximately 2.25 linear miles of the AEWSD North Canal and 0.2 linear mile of the AEWSD South Canal. These canals are contiguous with one another; the North Canal becomes the South Canal downstream of the Sycamore Check Structure. The North and South Canals are part of a larger, 45-mile canal distribution system extending from the terminus of the Friant-Kern Canal in Bakersfield. The South Canal terminates at Highway 99 near Mettler, where the Intertie Pipeline then extends to the California Aqueduct. Although the North and South Canals have upstream connectivity to the Friant-Kern Canal, a waterway that the USACE has asserted jurisdiction over, they do not discharge to any natural drainages or other waters likely to be claimed by the USACE. The USACE has disclaimed the California Aqueduct. Moreover, the North and South Canals are engineered, concrete-lined channels that do not represent or replace natural drainages, and do not possess the characteristics of a wetland. For these reasons, the AEWSD North and South Canals do not meet the criteria of a jurisdictional water.

It is important to note that the USACE is the final arbiter of the jurisdictional status of water features within a project site. A jurisdictional determination is made by the USACE upon review and verification of a wetland delineation prepared for the site.

2.7 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(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection.

Designated critical habitat is absent from the project site and immediately surrounding lands. The closest unit of critical habitat is located approximately seven miles southeast of the site in

the Tehachapi Mountains, and is designated for the protection of the California condor (*Gymnogyps californianus*).

2.8 NATURAL COMMUNITIES OF SPECIAL CONCERN

Natural communities of special concern are those that are of limited distribution, distinguished by significant biological diversity, home to special status species, etc. CDFW is responsible for the classification and mapping of all natural communities in California. Natural communities are assigned state and global ranks according to their degree of imperilment. Any natural community with a state rank of 3 or lower (on a 1-5 scale) is considered of special concern. Examples of natural communities of special concern in the vicinity of the PPSA include vernal pools and various types of riparian forest (Sawyer, Keeler-Wolf and Evens 2012).

All of the vegetation associations present on the project site are human-altered and dominated by non-native species, and therefore would not be considered natural communities of special concern.

2.9 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. Neither the flood channel nor the AEWSD canals within the project site support riparian vegetation, and therefore are unlikely to function as important movement corridors for terrestrial wildlife. The North and South Canal likely facilitate the movement of certain exotic fish and American bullfrogs, but would not be expected to serve as an important conduit for native aquatic species. The Pacific flyway, one of four major bird migration routes in North America, passes over the project site and much of the rest of California.

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 Kern County

The Kern County General Plan (2009) provides the County direction in project planning and approval with respect to transportation, housing, energy, noise, safety, land use, open space, conservation, and the Kern River corridor. The Plan is implemented via a number of goals and corresponding policies. Goals and policies relevant to the current project are derived primarily from the Land Use, Open Space, and Conservation element of the General Plan, and include provisions to minimize the alteration of natural drainage areas, conserve areas along rivers and streams, protect threatened and endangered species, and educate property owners about endangered species laws and associated mitigation programs.

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 responding 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 California Fully Protected Species

The classification of certain animal species as "fully protected" was the State of California's initial effort in the 1960s, prior to the passage of the California Endangered Species Act, to identify and provide additional protection to those species that were rare or faced possible extinction. Following CESA enactment in 1970, many fully protected species were also listed as

California threatened or endangered. The list of fully protected species are identified, and their protections stipulated, in California Fish and Game Code Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and fish (5515). Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take, except in conjunction with necessary scientific research and protection of livestock.

3.2.4 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.

3.2.5 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 Wetlands and Other Jurisdictional Waters

Natural drainage channels and adjacent wetlands may be considered "Waters of the United States" 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. Waters of the U.S. 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 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 Waters of the U.S. 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 dredge or fill material into Waters of the U.S. 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 Regional Water Quality Control Board (RWQCB) issues a Section 401 Water Quality Certification (or waiver of such certification) verifying that the proposed activity will meet state water quality standards.

3.3 POTENTIALLY SIGNIFICANT PROJECT IMPACTS AND ASSOCIATED MITIGATION

The project considered in this evaluation of impacts to biological resources is the construction of approximately 1.5 miles of new pipeline linking/integrating private irrigation infrastructure to the AEWSD canal system, construction of three new discharge structures into the AEWSD South Canal, reconstruction of a canal-side turnout pipeline, reconstruction of the Sycamore Check Structure, and raising of the canal liner and levee roads along approximately 2.5 miles of the AEWSD North and South Canals. Potentially significant project impacts to biological resources and associated mitigations to reduce the magnitudes of these impacts are discussed below.

3.3.1 Construction Mortality of the San Joaquin Kit Fox

Potential Impacts. As discussed, the project site is highly disturbed and offers only marginal habitat for the San Joaquin kit fox. However, kit fox are known to use the grassland habitats of nearby Tejon Ranch, and are expected to pass through the project site from time to time. Although no burrows of suitable dimensions for the San Joaquin kit fox were observed on the project site at the time of the field survey, kit fox have the potential to enlarge, and temporarily use, rodent burrows in the levee roads and earthen upper banks of the AEWSD canals and the flood channel. However, the highly maintained areas of the project site are unlikely to be used for natal denning by this species.

If one or more kit foxes were present on 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 NEPA.

Mitigation. Prior to construction, the following measures adapted from the USFWS 2011 *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* (Appendix D) will be implemented.

Mitigation Measure 3.3.1a (Pre-construction Surveys). Pre-construction surveys shall be conducted by a USFWS-approved biologist 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 2011 *Standardized Recommendations*. When surveys identify potential dens (defined as burrows at least four inches in diameter which open up within two feet), potential den entrances shall be dusted for three calendar days to register and track activity of any San Joaquin kit fox present. 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 3.3.1b (Avoidance). If kit fox dens are found on the project site, exclusion zones shall be placed, in consultation with the USFWS and CDFW, at the following radii:

Potential den: 50 feet
Known den: 100 feet
Natal/pupping den (occupied and unoccupied): Contact the USFWS
Atypical den: 50 feet

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 3.3.1c (Minimization). Construction activities shall be carried out in a manner that minimizes disturbance to kit foxes. Minimization measures include:

1. Project-related vehicles shall observe a 20 mph speed limit in all project areas during construction, except on country roads and state and federal highways; this is particularly important at night when kit foxes are most active. To the extent possible, nighttime construction should be avoided. Off-road traffic outside of designated project areas should be prohibited during construction.

2. All excavated steep-walled holes or trenches more than two feet deep shall be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Areas that are covered will be inspected daily, for as long as they are covered, to ensure that no kit fox have become trapped despite the presence of covers. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals.

3. 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 shall 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 shall not be moved until the USFWS has been consulted.

4. In the case of trapped animals, escape ramps or structures should be installed immediately to allow the animal(s) to escape, or the USFWS should be contacted for guidance.

5. 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.

6. All food related trash items shall be disposed of in closed containers and removed at least once a week from the project site.

7. No firearms shall be allowed on the project site.

8. To prevent harassment, mortality of kit foxes, or destruction of dens by dogs or cats, no pets shall be permitted on the project site during construction.

9. Use of rodenticides and herbicides in project areas will be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. If it is later determined that the use of rodenticides and herbicides is needed, consultation with the USFWS must be reinitiated.

Mitigation Measure 3.3.1d (Employee Education Program). Prior to the start of construction, the applicant will retain a USFWS-approved 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 3.3.1e (Mortality Reporting). 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 USFWS. 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 this representative.

Implementation of these measures will reduce potential project impacts to the San Joaquin kit fox to a less than significant level under CEQA and NEPA, and ensure compliance with state and federal laws protecting this species.

3.3.2 Construction Mortality/Disturbance of the Burrowing Owl

Potential Impacts. The project site is intensively maintained, and offers relatively low-quality roosting/nesting habitat, and no foraging habitat, for burrowing owls. However, burrowing owls

do have the potential to roost or nest in those areas of the site containing suitably-sized rodent burrows, and forage on adjacent lands. California ground squirrel burrows suitable for the burrowing owl were observed in the levee roads and earthen upper banks of the North and South Canals and the flood channel. If burrowing owls were to occupy burrows of the project site at the time of construction, they would be at risk of construction-related injury or mortality. Burrowing owls roosting or nesting on adjacent lands would not be at risk of direct mortality, but might be disturbed such that they would abandon their nests. Burrowing owls are protected under the federal Migratory Bird Treaty Act and California Fish and Game Code. Construction-related mortality of burrowing owls, or disturbance of burrowing owls leading to nest abandonment, would be a violation of state and federal law, and constitute a potentially significant impact of the project as defined by NEPA and CEQA.

Mitigation. Prior to the start of construction, the following measures will be implemented, adapted from the *Staff Report on Burrowing Owl Mitigation* (CDFG 1995 and 2012).

> ***Mitigation Measure 3.3.2a (Take Avoidance Survey).*** A take avoidance survey for burrowing owls will be conducted by a qualified biologist within 30 days of the start of construction. This take avoidance survey will be conducted according to methods described in the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). The survey area will include all suitable habitat within and up to 500 feet outside of project impact areas, where accessible.
>
> ***Mitigation Measure 3.3.2b (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 3.3.2c (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. 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.

Implementation of these measures will reduce potential project impacts to the burrowing owl to a less than significant level under CEQA and NEPA and ensure compliance with state and federal laws protecting this species.

3.3.3 Construction Mortality of the American Badger

Potential Impacts. Although habitats of the project site are marginal to unsuitable for the American badger, badgers may occasionally pass through the site, and possibly den along the levee roads and in the earthen upper banks of the North and South Canals and the flood channel. In the event that one or more badgers were denning on the site at the time of construction, these individuals would be at risk of construction-related injury or mortality. Construction mortality of American badgers is a potentially significant impact of the project.

Mitigation. The following measures will be implemented to avoid and minimize the potential for project-related mortality of American badgers.

Mitigation Measure 3.3.3a (Preconstruction Surveys). A preconstruction survey for American badgers will be conducted by a qualified biologist within 30 days of the onset of construction. Preconstruction surveys will be conducted in all suitable denning habitat of the project site.

Mitigation Measure 3.3.3b (Avoidance). Should an active sleeping den be identified during the preconstruction surveys, the den shall be identified in the field with brightly-colored fencing or flagging, and avoided until a qualified biologist has determined that it has been abandoned. Should an active natal den be identified, a suitable disturbance-free buffer will be established around the den and maintained until a qualified biologist has determined that the cubs have dispersed or the den has been abandoned.

Implementation of these measures will reduce potential project impacts to the American badger to a less than significant level under CEQA and NEPA.

3.3.4 Construction Mortality/Disturbance of Nesting Migratory Birds

Potential Impacts. Habitats of the project site are generally not suitable for avian nesting, owing to regular maintenance associated with vineyard operation and AEWSD practices, and the absence of trees and shrubs. However, disturbance-tolerant species such as the killdeer often nest on bare ground and gravel surfaces, and could potentially nest in ruderal habitats of the project site. Cliff swallows (*Petrochelidon pyrrhonota*) commonly nest on bridges and other human-made structures of the San Joaquin Valley, and could potentially nest within the project site on bridges over the flood channel or the AEWSD canals. Nearly all native bird species are protected by the federal Migratory Bird Treaty Act and related state laws. If migratory birds are nesting within the project site at the time of construction, they would have the potential to be injured or killed by project activities. In addition to direct "take" of nesting birds, project activities could disturb birds nesting within or 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 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 3.3.4a (Avoidance*).** If feasible, all construction activities will occur outside of the typical avian nesting season, or between September 1 and January 31, in order to avoid impacts to nesting migratory birds.

***Mitigation 3.3.4b* (*Pre-construction Surveys*).** If construction must occur between February 1 and August 31, a qualified biologist will conduct pre-construction surveys for active migratory bird nests within 30 days of the onset of these activities. The survey will include the proposed work area(s) and surrounding lands within 500 feet, where accessible.

***Mitigation 3.3.4c* (*Establish Buffers*).** Should any active nests be discovered in or near proposed construction zones, the biologist will identify a suitable construction-free buffer around the nest. This buffer will be identified on the ground with flagging or fencing, 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 and ensure compliance with state and federal laws protecting these species.

3.4 LESS THAN SIGNIFICANT PROJECT IMPACTS

3.4.1 Project Impacts to Special Status Plants

Potential Impacts. Twenty special status vascular plant species are known to occur in the vicinity of the project site (see Table 1). These plant species are absent from the site due to current and past land use practices and/or the site's being situated outside of the elevational range of the species. Therefore, the proposed project would have no effect on regional populations of these special status plant species.

Mitigation. The project will have no effect on special status plant species that are absent from the site. Mitigation measures are not warranted.

3.4.2 Project Impacts to Special Status Animals Absent or Unlikely to Occur on the Site

Potential Impacts. Of the 24 special status animal species potentially occurring in the region, 19 species would be absent or unlikely to occur on the site due to the absence of suitable habitat and/or the distance of the site from the known distribution of the species. These species include the vernal pool fairy shrimp, valley elderberry longhorn beetle, Delta smelt, California red-legged frog, blunt-nosed leopard lizard, giant garter snake, Swainson's hawk, California condor, southwestern willow flycatcher, least Bell's vireo, Tipton kangaroo rat, western spadefoot, yellow-blotched salamander, San Joaquin coachwhip, coast horned lizard, long-eared owl, purple martin, tricolored blackbird, and Tulare grasshopper mouse. Since there is little to no likelihood that these species would use the site, disturbance from future development of the project site is not likely to adversely affect these species.

Mitigation. The project will not adversely affect special status animal species that are absent from, or unlikely to occur on, the project site. Mitigation measures are not warranted.

3.4.3 Loss of Habitat for Special Status Animals

Potential Impacts. Of the 24 special status animal species potentially occurring in the region, five species have the potential to occur on the project site. These species include the San Joaquin kit fox, burrowing owl, American badger, pallid bat, and western mastiff bat. Habitats of the project site are intensively managed and marginal, at best, for the San Joaquin kit fox, burrowing owl, and American badger. Although these species may occasionally pass through the site or make temporary use of on-site habitats, the site does not represent an important component of their individual home ranges, nor is it regionally important for any of these species. The western mastiff bat and pallid bat may forage in flight over the project site, and could roost on the site's bridges. The project will not affect the availability of flying insects and will not impact any bridges; therefore, special status bats will not experience loss of habitat as a result of project implementation.

Mitigation. The project is not likely to adversely affect habitat for special status species. Mitigation measures are not warranted.

3.4.4 Project Impacts to Roosting Bats

Potential Impacts. A number of bat species, including the special-status western mastiff bat and pallid bat, have the potential to roost within the project site on the bridges over the flood channel and the North and South Canal. The project will not impact any bridges; therefore, bat roosts will not be impacted.

Mitigation. The project will have no effect on roosting bats. Mitigation measures are not warranted.

3.4.5 Project Impacts to Fish or Wildlife Movement Corridors

Potential Impacts. The flood channel and the AEWSD canals are not expected to function as important movement corridors for native wildlife. The project site contains no other geographic elements characteristic of a movement corridor. The project will have no effect on the Pacific flyway; birds using the flyway will continue to do so during and following project development.

Mitigation. The project will have no effect on wildlife movement corridors. Mitigation measures are not warranted.

3.4.6 Project Impacts to Riparian Habitat, other Sensitive Habitats, or Designated Critical Habitat

Potential Impacts. No riparian or other sensitive habitats occur on the project site. The nearest unit of designated critical habitat is located approximately seven miles southeast of the project site. Because these habitats are absent from the project site, they will not be impacted by project activities.

Mitigation. The project will have no effect on riparian habitat, other sensitive habitats, or designated critical habitat. Mitigation measures are not warranted.

3.4.7 Project Impacts to Waters of the U.S.

Potential Impacts. The USACE is not expected to assert jurisdiction over the flood channel or the AEWSD North and South Canals. It is therefore assumed that Waters of the U.S. are absent from the project site. The project will have no effect on Waters of the U.S.

Mitigation. Mitigations are not warranted.

3.4.8 Local Policies or Habitat Conservation Plans

Potential Impacts. The projects will be implemented in accordance with the goals and policies of the Kern County General Plan. No known HCPs or NCCPs are in effect for the area. Therefore, the projects are not expected to conflict with local policies or habitat conservation plans.

Mitigation. No mitigation is warranted.

3.5 CUMULATIVE EFFECTS/MITIGATION

Impact. Due to the disturbed nature of the project site and the measures that will be taken to avoid and/or minimize impacts to special status species and other sensitive biological resources, project impacts to such resources are expected to be minimal. As such, the AEWSD Water Conservation and Efficiency Project will have little or no contribution to cumulative effects on sensitive biological resources of the region.

Mitigation. Mitigations are not warranted.

4.0 LITERATURE REFERENCED OR CITED

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D. G. Wilken, editors. 2012. The Jepson Manual: Vascular Plants of California, second edition. University of California Press, Berkeley.

Bell, H.M. and J.A. Alvarez. 1994. Distribution and Abundance of San Joaquin Kit Fox. Draft Final Report to the Department of Fish and Game. 76 pp.

California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation. The Resources Agency, Sacramento, CA.

_____. 2002. California Fish and Game Code. Gould Publications. Binghamton, NY.

_____. 1995. Staff Report on Burrowing Owl Mitigation. The Resources Agency, Sacramento, CA.

California Department of Fish and Wildlife (CDFW). 2016a. California Natural Diversity Database. The Resources Agency, Sacramento, CA.

_____. 2016b. Special Animals List. The Resources Agency, Sacramento, CA.

_____. 2016c. Special Vascular Plants, Bryophytes, and Lichens List. The Resources Agency, Sacramento, CA.

California Native Plant Society. 2016. Inventory of Rare and Endangered Vascular Plants of California (online: http://cnps.site.aplus.net/cgi-bin/inv/inventory.cgi).

Cypher, B. L., S. E. Phillips, and P. A. Kelly. 2013. Quantity and distribution of suitable habitat for endangered San Joaquin kit foxes: conservation implications. Canid Biology and Conservation 16:25-31.

Griggs, F.T., J.M. Zaninovich, and G.D. Werschkull. 1992. Historic native vegetation map of the Tulare Basin, California. Pp. 111-118, *in* Endangered and sensitive species of the San Joaquin Valley, California: their biology, management, and conservation (D.F. Williams, S. Byrne, and T.A. Rado, eds.). California Energy Commission, Sacramento, 388 pp.

Live Oak Associates, Inc. 2016. San Joaquin Kangaroo Rat Trapping Survey 90-day Report, Water Conservation and Efficiency Project (USFWS Reference Number 2015-TA-1267).

Montanucci, R. R. 1965. Observations of the San Joaquin leopard lizard, *Crotaphytus wislizenii silus* Stejneger. Herpetologica 21:270-283.

Natural Resources Conservation Service (NRCS). 2007. Soil Survey of Kern County, Southeastern Part, California.

U.S. Fish and Wildlife Service (USFWS). 2016. Official Species List, Arvin-Edison Water Storage District Water Conservation and Efficiency Project. Consultation Code 08ESMF00-2016-SLI-1886. Sacramento Fish and Wildlife Office. July 25, 2016.

_____. 2013. Survey Protocol for Determining Presence of San Joaquin Kangaroo Rats. Sacramento Field Office. March 2013.

_____. 2011. Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance. Sacramento Fish and Wildlife Office.

Williams, D.F. 1985. A review of the population status of the Tipton kangaroo rat, *Dipodomys nitratoides nitratoides*. U.S. Fish and Wildlife Service, Sacramento, Endangered Species Office, CA, Final Rep., 44 pp.

Williams, D. F., D. J. Germano, and W. Tordoff III. 1993. Population studies of endangered kangaroo rats and blunt-nosed leopard lizards in the Carrizo Plain Natural Area, California. California Department of Fish and Game, Sacramento, 62 pp.

Zeiner, David C., William F. Laudenslayer, Kenneth E. Mayer and Marshal White. Ed. 1988. California's wildlife, volume I, amphibians and reptiles. Department of Fish and Wildlife. Sacramento, CA. 272 pp.

_____. 1988. California's wildlife, volume II, birds. Department of Fish and Wildlife. Sacramento, CA. 731 pp.

_____. 1988. California's wildlife, volume III, mammals. Department of Fish and Wildlife. Sacramento, CA. 407 pp.

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 4, 2014. 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
+/- - Higher/lower end of category
NR - No review
NA - No agreement
NI - No investigation

ASTERACEAE – Sunflower Family		
Ambrosia acanthicarpa	Annual Bursage	UPL
Erigeron canadensis	Horseweed	FACU
BORAGINACEAE - Borage Family		
Amsinckia sp.	Fiddleneck	UPL
BRASSICACEAE – Mustard Family		
Brassica nigra	Black Mustard	UPL
CHENOPODIACEAE – Goosefoot Family		
Atriplex lentiformis	Big Saltbush	FAC
Salsola tragus	Russian Thistle	FACU
CUCURBITACEAE – Gourd Family		
Cucurbita foetidissima	Wild Gourd	UPL
MALVACEAE – Mallow Family		
Malva sp.	Mallow	UPL
POACEAE – Grass Family		
Bromus diandrus	Ripgut Brome	UPL
Cynodon dactylon	Bermuda Grass	FACU
Leptochloa sp.	Sprangletop	FACW
Poa annua	Annual Bluegrass	FACU
Schismus barbatus	Old Han Schismus	UPL
POLYGONACEAE – Buckwheat Family		
Rumex crispus	Curly Dock	FAC
SOLANACEAE – Nightshade Family		
Datura stramonium	Jimsonweed	UPL
TAMARICACEAE – Tamarisk Family		
Tamarix sp.	Tamarisk	FAC

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

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

The species listed below are those that may reasonably be expected to use the habitats of the project site routinely or from time to time. The list was not intended to include birds that are vagrants or occasional transients. Terrestrial vertebrate species observed in or adjacent to the project site during surveys conducted by Live Oak Associates, Inc. in November 2014 and/or May 2016 have been noted with an asterisk.

CLASS: AMPHIBIA (Amphibians)
ORDER: ANURA
FAMILY: BUFONIADE
*Western Toad (*Bufo boreas*)
FAMILY: HYLIDAE
Pacific Tree Frog (*Pseudacris regilla*)

CLASS: REPTILIA (Reptiles)
ORDER: SQUAMATA (Lizards and Snakes)
SUBORDER: SAURIA (Lizards)
FAMILY: CROTAPHYTIDAE
Blunt-nosed Leopard Lizard (*Gambelia sila*)
FAMILY: PHRYNOSOMATIDAE
Side-blotched Lizard (*Uta stansburiana*)
Western Fence Lizard (*Sceloporus occidentalis*)
SUBORDER: SERPENTES (Snakes)
FAMILY: COLUBRIDAE (Colubrids)
Pacific Gopher Snake (*Pituophis catenifer catenifer*)
Common Kingsnake (*Lampropeltis getulus*)

CLASS: AVES (Birds)
ORDER: ANSERIFORMES (Ducks, Geese, and Swans)
FAMILY: ANATIDAE (Ducks, Geese, and Swans)
*Mallard (*Anas platyrhynchos*)
ORDER: CICONIIFORMES (Herons, Storcks, Ibises and Relatives)
FAMILY: ARDEIDAE (Herons and Bitterns)
*Great Egret (*Ardea alba*)
Great Blue Heron (*Ardea herodias*)
ORDER: FALCONIFORMES (Vultures, Hawks, and Falcons)
FAMILY: CATHARTIDAE (American Vultures)
Turkey Vulture (*Cathartes aura*)
FAMILY: ACCIPITRIDAE (Hawks, Old World Vultures, and Harriers)
*Red-tailed Hawk (*Buteo jamaicensis*)
FAMILY: FALCONIDAE (Caracaras and Falcons)
*American Kestrel (*Falco sparverius*)
ORDER: GRUIFORMES (Cranes and Rails)
FAMILY: RALLIDAE (Rails, Gallinules, and Coots)

*American Coot (*Fulica americana*)
ORDER: CHARADRIIFORMES (Shorebirds, Gulls, and relatives)
FAMILY: CHARADRIIDAE (Plovers and relatives)
*Killdeer (*Charadrius vociferus*)
ORDER: COLUMBIFORMES (Pigeons and Doves)
FAMILY: COLUMBIDAE (Pigeons and Doves)
Rock Pigeon (*Columba livia*)
Eurasian Collared Dove (*Streptopelia decaocto*)
*Mourning Dove (*Zenaida macroura*)
ORDER: STRIGIFORMES (Owls)
FAMILY: STRIGIDAE (Typical Owls)
Burrowing Owl (*Athene cunicularia*)
ORDER: APODIFORMES (Swifts and Hummingbirds)
FAMILY: TROCHILIDAE (Hummingbirds)
Anna's Hummingbird (*Calypte anna*)
ORDER: PASSERIFORMES (Perching Birds)
FAMILY: TYRANNIDAE (Tyrant Flycatchers)
*Black Phoebe (*Sayornis nigricans*)
Say's Phoebe (*Sayornis saya*)
Western Kingbird (*Tyrannus verticalis*)
FAMILY: CORVIDAE (Jays, Magpies, and Crows)
Western Scrub Jay (*Aphelocoma coerulescens*)
*American Crow (*Corvus brachyrhynchos*)
*Common Raven (*Corvus corax*)
FAMILY: ALAUDIDAE (Larks)
Horned Lark (*Eremophila alpestris*)
FAMILY: HIRUNDINIDAE (Swallows)
Cliff Swallow (*Hirundo pyrrhonota*)
Barn Swallow (*Hirundo rustica*)
FAMILY: TURDIDAE
American Robin (*Turdus migratorius*)
*Mountain Bluebird (*Sialia currucoides*)
Western Bluebird (*Sialia mexicana*)
FAMILY: MIMIDAE (Mockingbirds and Thrashers)
Northern Mockingbird (*Mimus polyglottos*)
FAMILY: STURNIDAE (Starlings)
European Starling (*Sturnus vulgaris*)
FAMILY: MOTACILLIDAE (Wagtails and Pipits)
American Pipit (*Anthus rubescens*)
FAMILY: PARULIDAE (Wood Warblers and Relatives)
Yellow-rumped Warbler (*Dendroica coronata*)
FAMILY: EMBERIZIDAE (Sparrows and Relatives)
Savannah Sparrow (*Passerculus sandwichensis*)
White-crowned Sparrow (*Zonotrichia leucophrys*)
FAMILY: ICTERIDAE (Blackbirds, Orioles and Allies)
Western Meadowlark (*Sturnella neglecta*)

Brewer's Blackbird (*Euphagus cyanocephalus*)
Brown-headed Cowbird (*Molothrus ater*)
FAMILY: FRINGILLIDAE (Finches and Allies)
*House Finch (*Carpodacus mexicanus*)
FAMILY: PASSERIDAE (Old World Sparrows)
House Sparrow (*Passer domesticus*)

CLASS: MAMMALIA (Mammals)
ORDER: DIDELPHIMORPHIA (Marsupials)
FAMILY: DIDELPHIDAE (Opossums)
Virginia Opossum (*Didelphis virginiana*)
ORDER: CHIROPTERA (Bats)
FAMILY: PHYLLOSTOMIDAE (Leaf-nosed Bats)
Southern Long-nosed Bat (*Leptonycteris curasoae*)
FAMILY: VESPERTILIONIDAE (Evening Bats)
Yuma Myotis (*Myotis yumanensis*)
California Myotis (*Myotis californicus*)
Western Pipistrelle (*Pipistrellus hesperus*)
Big Brown Bat (*Eptesicus fuscus*)
Hoary Bat (*Lasiurus cinereus*)
ORDER: LAGOMORPHA (Rabbits, Hares, and Pikas)
FAMILY: LEPORIDAE (Rabbits and Hares)
*Audubon Cottontail Rabbit (*Sylvilagus audubonii*)
Black-tailed Jackrabbit (*Lepus californicus*)
ORDER: RODENTIA (Rodents)
FAMILY: SCIURIDAE (Squirrels, Chipmunks, and Marmots)
*California Ground Squirrel (*Otospermophilus beecheyi*)
FAMILY: GEOMYIDAE (Pocket Gophers)
*Botta's Pocket Gopher (*Thomomys bottae*)
FAMILY: HETEROMYIDAE (Kangaroo Rats and Pocket Mice)
*Heermann's Kangaroo Rat (*Dipodomys heermanni*)
*San Joaquin Pocket Mouse (*Perognathus inornatus*)
FAMILY: MURIDAE (Old World Rats and Mice)
*House Mouse (*Mus musculus*)
FAMILY: CRICETIDAE (Voles and New World Rats and Mice)
Western Harvest Mouse (*Reithrodontomys megalotis*)
*Deer Mouse (*Peromyscus maniculatus*)
California Vole (*Microtus californicus*)
ORDER: CARNIVORA (Carnivores)
FAMILY: CANIDAE (Foxes, Wolves, and relatives)
Coyote (*Canis latrans*)
Feral Dog (*Canis lupus familiaris*)
Red Fox (*Vulpes vulpes*)
FAMILY: PROCYONIDAE (Raccoons and relatives)
Raccoon (*Procyon lotor*)
FAMILY: MEPHITIDAE (Skunks)

Striped Skunk (*Mephitis mephitis*)

FAMILY: FELIDAE (Cats)

Feral Cat (*Felis domesticus*)

APPENDIX C: SELECTED SITE PHOTOGRAPHS

Photo 1 (above): Disturbed shoulder of Sycamore Road, one of the proposed routes for new pipeline installation. **Photo 2 (below):** One of seven wells to be integrated into AEWSD's irrigation distribution system.

Photo 3 (above): The existing SCA-1 turnout stand pipe and flood channel, which flows adjacent to the South Canal for approximately 1 mile. **Photo 4 (below):** Reconstruction of the SCA-1 turnout will entail replacing the existing 18" pipe with a 24" pipe; pictured is the approximate location of the existing pipe under the flood channel.

Photo 5 (above): Proposed crossing location of the Well No. 4 discharge structure under the flood channel. **Photo 6 (below):** The existing Sycamore Check Structure, with the North Canal upstream (left) and South Canal downstream (right).

Photo 7 (above): The North and South Canals are engineered, concrete-lined channels; pictured is the South Canal, facing south. **Photo 8 (below):** The engineered channel of Sycamore Creek that flows through and adjacent to the project site offers limited habitat for native wildlife. Riparian vegetation is absent.

P

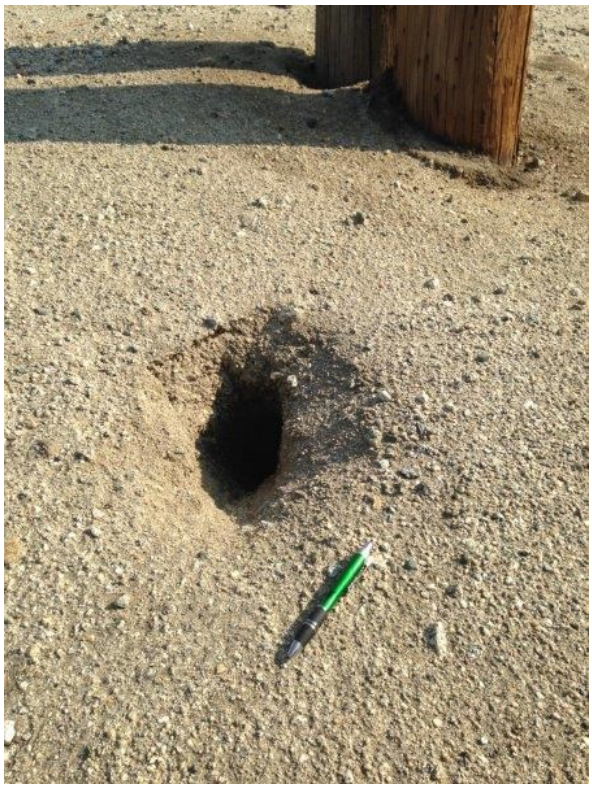


Photo 11 (above): Small mammal burrows were sporadically observed in ruderal areas of the project site. Pictured is a California ground squirrel burrow in the canal levee road. **Photo 12 (below):** Likely Heermann's kangaroo rat burrows in the ruderal area surrounding one of the landowner's wells.

APPENDIX D: U.S. FISH AND WILDLIFE SERVICE STANDARDIZED RECOMMENDATIONS FOR 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 an6y 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 and 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 (CNDDB). 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 B Indian Trust Assets

Indian Trust Assets
Request Form (MP Region)

Submit your request to your office's ITA designee or to MP-400, attention Kevin Clancy.

Date:

Requested by (office/program)	Doug Kleinsmith
Fund	17XR0680A1
WBS	RX021489451000000
Fund Cost Center	2015200
Region # (if other than MP)	
Project Name	Arvin-Edison Water Storage District Water-Energy Conservation & Efficiency Project
CEC or EA Number	
Project Description (attach additional sheets if needed and include photos if appropriate)	The Bureau of Reclamation proposes to provide an Agricultural Water-Energy Conservation and Efficiency Grant to Arvin-Edison Water Storage District (District) for constructing the District's Water-Energy Conservation and Efficiency Project (Proposed Action). The District would implement the WECAEP to conserve water, conserve energy, and reduce greenhouse gas emissions through implementation of three independent sub-projects: 1. Pilot In-lieu Project (also known as Sycamore In-lieu Project): a project to increase delivery of wet-period water to approximately 1,062 acres of vineyards that currently rely on groundwater and to integrate the existing groundwater wells used for those vineyards into the District's irrigation and power systems with installation of new pipelines and canal turnout improvements. 2. Sycamore Check Improvement Project: a project to modernize and replace an existing 50-year old check structure and restore capacity upstream of a key check structure by extending the canal liner along an approximately 2.25 mile of the District's North Canal and 0.2 mile of the South Canal, which will improve the District's ability to receive, regulate, and conserve water. 3. NRCS Promotion: District will increase promotion of NRCS' EQIP program to District customers.

*Project Location (Township, Range, Section, e.g., T12 R5E S10, or Lat/Long cords, DD-MM-SS or decimal degrees). Include map(s)	See map below T 118.78 R35.21

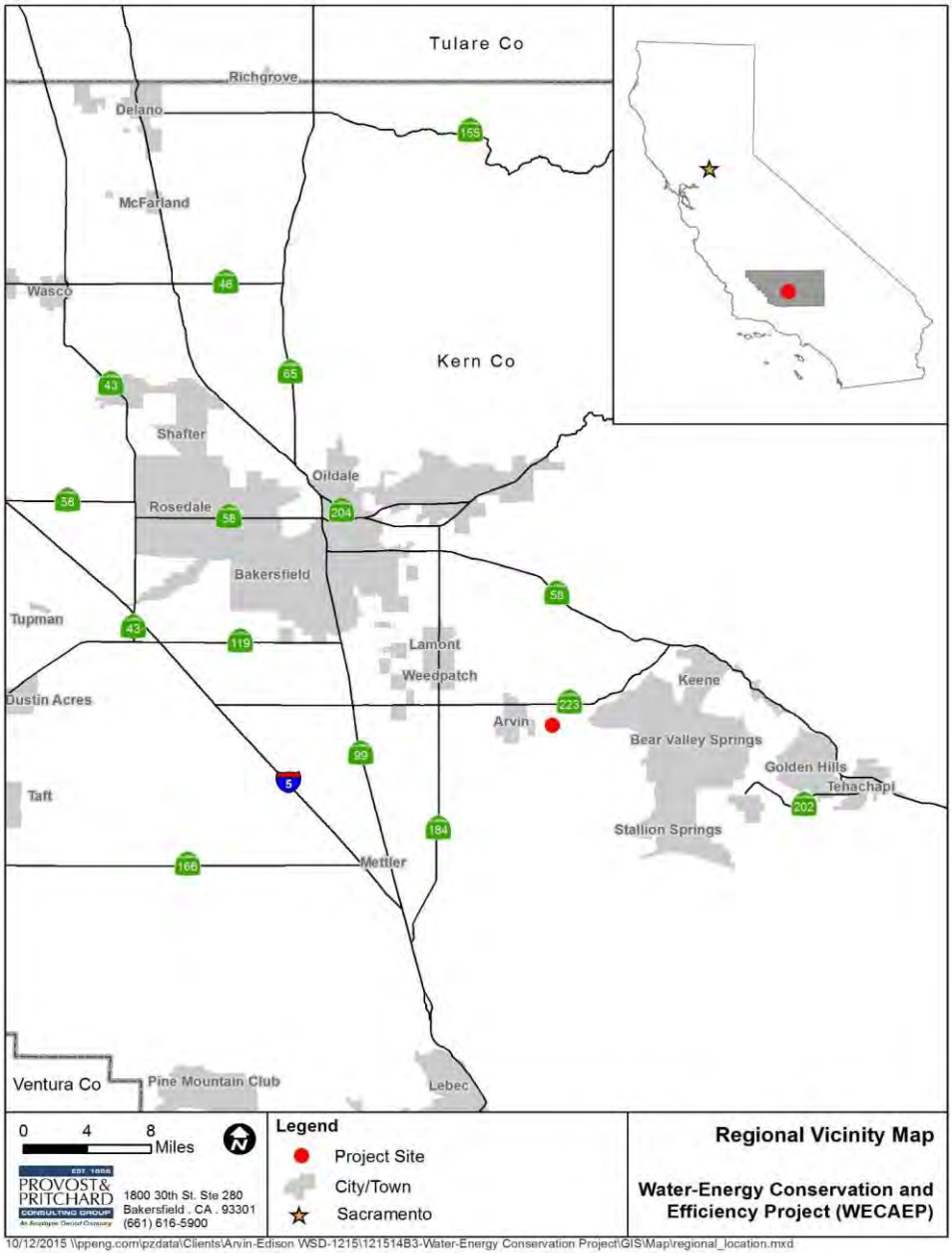
/s/ Doug Kleinsmith	Doug Kleinsmith	9/19/17
Signature	Printed name of preparer	Date

ITA Determination:

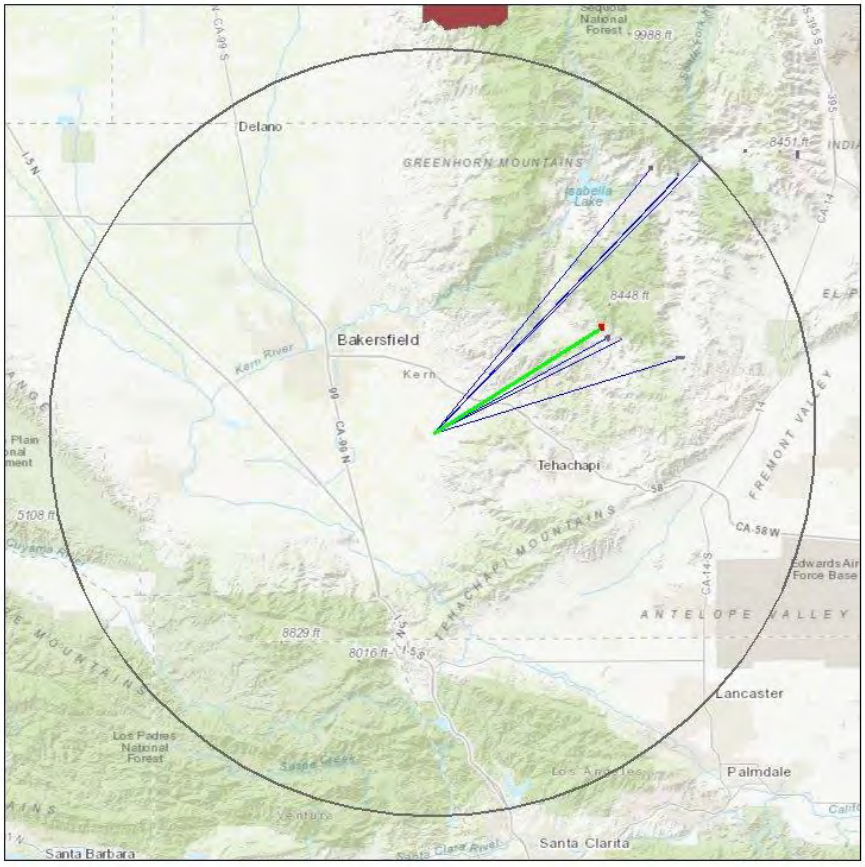
The closest ITA to the Proposed Action is 50HIN106 which is about 29.69 miles to the northeast. This is a land allocation that is either owned by a Tribe, or in the process of being put in trust. (See attached image).

Based on the nature of the planned work it **does not** appear to be in an area that will impact Indian hunting or fishing resources or water rights nor is the proposed activity on actual Indian lands. It is reasonable to assume that the proposed action **will not** have any impacts on ITAs.

Kevin Clancy	Kevin Clancy	9/20/2017
Signature	Printed name of approver	Date


Tulare Co
Richgrove
Delano
McFarland
Wasco
Kern Co
Shafter
Oildale
Rosedale
Bakersfield
Tupman
Lamont
Weedpatch
Keene
Dustin Acres
Arvin
Bear Valley Springs
Golden Hills
Tehachapi
Taft
Stallion Springs
Mettler
Ventura Co
Pine Mountain Club
Lebec
0 4 8 Miles
PROVOST& PRITCHARD CONSULTING GROUP
1800 30th St. Ste 280
Bakersfield . CA . 93301
(661) 616-5900
Legend
Project Site
City/Town
Sacramento
Regional Vicinity Map
Water-Energy Conservation and Efficiency Project (WECAEP)
10/12/2015 \\ppeng.com\pzdata\Clients\Arvin-Edison WSD-1215\121514B3-Water-Energy Conservation Project\GIS\Map\regional_location.mxd

Indian Trust Assets Near Arvin- Edison Project



Native American Lands FL
PDA
Reservation

0 5 10 20 Miles

RECLAMATION
Managing Water in the West

Appendix C - Cultural Resources Compliance Letters

CULTURAL RESOURCES COMPLIANCE
Division of Environmental Affairs
Cultural Resources Branch (MP-153)

MP-153 Tracking Number: 14-MPRO-227

Project Name: Arvin Edison Water Storage District (AEWSD), Water Conservation Project, Relining of the North and South Canals, Sycamore Check Structure Improvements, Kern County, California

NEPA Contact: Douglas Kleinsmith, Natural Resource Specialist

MP 153 Cultural Resources Reviewer: Scott Williams, Archaeologist

Date: December 4, 2015

Reclamation proposes to grant funding to the AEWSD for a water conservation project that involves lining portions of the North and South Canals, and improvements to the Sycamore Check Structure in Kern County, California. This action constitutes an undertaking with the potential to cause effects to historic properties, assuming such properties are present, requiring compliance with Section 106 of the National Historic Preservation Act (NHPA) as amended.

Based on reporting provided by Provost and Pritchard Consulting Group retained Applied Earthworks, Inc. (AE) to assist in the identification of historic properties for this undertaking, on behalf of AEWD, Reclamation consulted with, and received concurrence from, the State Historic Preservation Officer (SHPO) on a finding of no historic properties affected pursuant to 36 CFR §800.4(d)(1). Consultation correspondence between Reclamation and the SHPO has been provided with this cultural resources compliance document for inclusion in the administrative record for this action.

This document serves as notification that Section 106 compliance has been completed for this undertaking. Please note that if project activities subsequently change, additional NHPA Section 106 review, including further consultation with the SHPO, may be required.

Attachments:

Letter: Reclamation to SHPO dated November 3, 2015
Letter: SHPO to Reclamation dated December 4, 2015

United States Department of the Interior

BUREAU OF RECLAMATION
Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, CA 95825-1898

IN REPLY REFER TO:

NOV 0 3 2015

MP-153
ENV-3.00

CERTIFIED – RETURN RECEIPT REQUESTED

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

Subject: National Historic Preservation Act (NHPA) Section 106 Consultation for the Arvin Edison Water Storage District (AEWSD), Water Conservation Project, Relining of the North and South Canals, Sycamore Check Structure Improvements, Kern County, California (Project 14-MPRO-227)

Dear Ms. Polanco:

The Bureau of Reclamation is initiating consultation under Title 54 USC § 306108, commonly known as Section 106 of the NHPA, and its implementing regulations found at 36 CFR Part 800, for a proposed grant funding to the AEWSD for a water conservation project that involves lining portions of the North and South Canals, and improvements to the Sycamore Check Structure in Kern County, California (Enclosure 1). Reclamation has determined that the use of Federal appropriations for the proposed project constitutes an undertaking as defined in 36 CFR § 800.16(y) and involves the type of activity with the potential to cause effects on historic properties under 36 CFR § 800.3(a). We are entering into consultation with you on this undertaking and notifying you of a finding of no historic properties affected.

AEWSD is proposing to reline 2.3 miles of the North Canal and 0.3 miles of the South Canal, and to reconstruct the Sycamore Check Structure. The canal relining portion of the project will raise the canal liner height from 0.3 miles south of the Sycamore Check Structure to the southeast corner of the Sycamore Spreading Works, at Sycamore Road (Enclosure 2). The relining will increase/extend the existing concrete canal liner elevation upward along the canal's existing dirt embankments. Some scarifying and compaction of the existing bank material would be required to accept the extended concrete liner. No improvements are proposed for the levee roads or the exterior of the levees. The Sycamore Check Structure, its radial gate, and controls have reached the end of their useful life and need to be replaced with a new and improved gate and controls. Improvements to the Sycamore Check Structure will include reconstruction of the structure with a modern automated gate structure with overflow type weir gates and a supervisory control and data acquisition system.

The area of potential effect (APE) for the project includes a 60-foot wide corridor along the canal alignment, which includes the Sycamore Check Structure. The vertical APE will be confined to the existing canal prism and all subsurface activity (grubbing and scarifying for the relining) will be conducted within the canal itself. The project is located just east of the town of Arvin, which is approximately 20 miles southeast of Bakersfield. The project APE is situated in Sections 16, 17, 20, 21 and 29, T. 31 S., R. 30 E., as depicted on the U.S. Geological Survey (USGS) 1992 Arvin, California 7.5-minute topographic quadrangle (Enclosures 1 and 2).

On behalf of AEWD, Provost and Pritchard Consulting Group retained Applied Earthworks, Inc. (AE) to assist in the identification of historic properties for this undertaking (Enclosure 3). Identification included a comprehensive records search completed at the California Historical Resources Information System through the Southern San Joaquin Valley Information Center on October 24, 2014 (Enclosure 3: Appendix C). AE also completed a cultural resource pedestrian survey of the project area. The Arvin-Edison Canal System, consisting of the North and South Canals which are a continuous linear resource separated by the Sycamore Check Structure, is the only identified cultural resource within the APE. The site record for the canal system and recommendations for eligibility to the National Register of Historic Places (National Register) are provided in the enclosed report (Enclosure 3). For evaluative purposes, the entire AEWSD water distribution and storage system was considered as a whole, with the subject portions of the Arvin-Edison Canal System evaluated within this larger system, and within the context of local (Arvin-Edison) and regional (Kern County and southern San Joaquin Valley) history. AE concluded that the Arvin-Edison Canal System (North and South Canals and the Sycamore Check Structure) does not meet NRHP Criteria A-D, under 36 CFR § 60.4, as an individual resource or as a contributor to the larger AEWSD water delivery, recharge, and storage system. Reclamation reviewed AE's documentation and identification efforts, finds the level of effort employed appropriate to the scope and nature of the project, and agrees with the findings.

The California Native American Heritage Commission (NAHC) provided the results to AE for the search of the sacred land file search and updated Native American Contacts List for the project area on November 7, 2014. The sacred lands file search resulted in negative results. Pursuant to 36 CFR § 800.3(f)(2) and § 800.4(a)(4), Reclamation contacted the Cortina Band of Indians, the Santa Rosa Rancheria Tachi, Yokut Tribe, Table Mountain Rancheria, and the Tule River Indian Tribe to invite their participation in the Section 106 process and request their assistance in the identification of sites of religious and cultural significance or historic properties that may be affected by the proposed undertaking. In addition, Reclamation notified Mr. Stan Alec of the Kings River Choinumni Farm Tribe and Mr. Kenneth Woodrow, Chairperson Wuksache Indian Tribe, Eshorn Valley Band, of Reclamation's involvement in the project and requested their assistance in the identification of any known cultural resources of concern that may be affected by the undertaking, pursuant to 36 CFR § 800.4(a)(3). Reclamation has not received any response to date, but if any concerns about the project are subsequently identified, we will work to resolve them and notify your office as appropriate.

Based on the information provided above and in the enclosed report (Enclosure 3), Reclamation has reached a finding of no historic properties affected for the proposed undertaking. We invite your comments on the delineation of the APE and the appropriateness of the historic properties identification efforts. We request your concurrence that the Arvin-Edison Canal System (North

Appendix B Indian Trust Assets

Indian Trust Assets
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/s/ Doug Kleinsmith	Doug Kleinsmith	9/19/17
Signature	Printed name of preparer	Date

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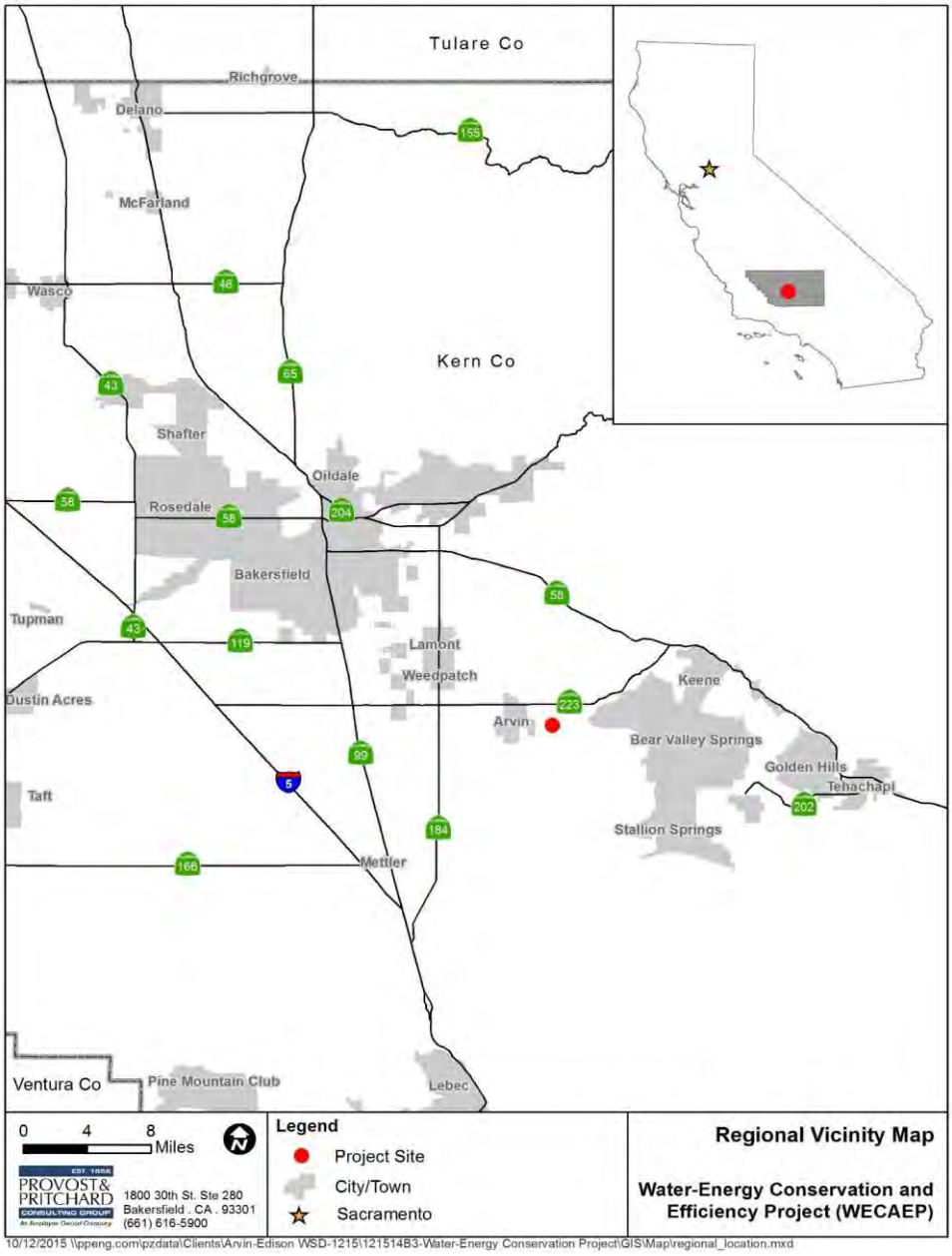
Kevin Clancy	Kevin Clancy	9/20/2017
Signature	Printed name of approver	Date


Tulare Co
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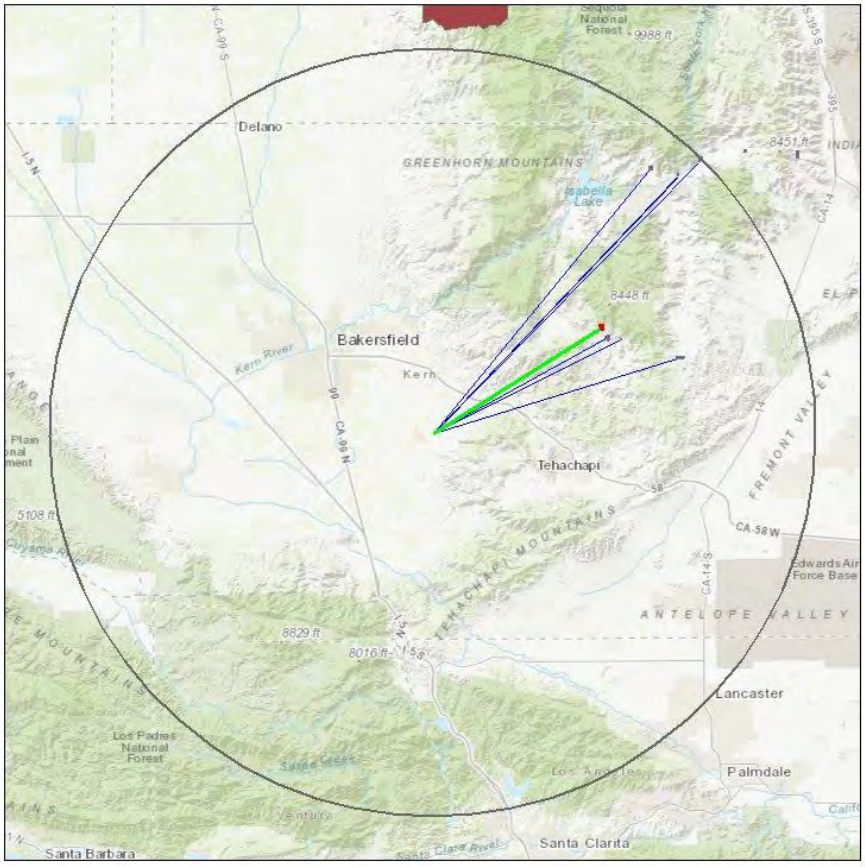
Delano
McFarland
Wasco
Kern Co
Shafter
Oildale
Rosedale
Bakersfield
Tupman
Lamont
Weedpatch
Keene
Dustin Acres
Arvin
Bear Valley Springs
Golden Hills
Tehachapi
Taft
Stallion Springs
Mettler
Ventura Co
Pine Mountain Club
Lebec
0 4 8 Miles
PROVOST& PRITCHARD CONSULTING GROUP
1800 30th St. Ste 280
Bakersfield . CA . 93301
(661) 616-5900
Legend
Project Site
City/Town
Sacramento
Regional Vicinity Map
Water-Energy Conservation and Efficiency Project (WECAEP)
10/12/2015 \\ppeng.com\pzdata\Clients\Arvin-Edison WSD-1215\121514B3-Water-Energy Conservation Project\GIS\Map\regional_location.mxd

Indian Trust Assets Near Arvin- Edison Project



Native American Lands FL
PDA
Reservation

0 5 10 20 Miles

RECLAMATION
Managing Water in the West

Appendix C - Cultural Resources Compliance Letters

The area of potential effect (APE) for the project includes a 60-foot wide corridor along the canal alignment, which includes the Sycamore Check Structure. The vertical APE will be confined to the existing canal prism and all subsurface activity (grubbing and scarifying for the relining) will be conducted within the canal itself. The project is located just east of the town of Arvin, which is approximately 20 miles southeast of Bakersfield. The project APE is situated in Sections 16, 17, 20, 21 and 29, T. 31 S., R. 30 E., as depicted on the U.S. Geological Survey (USGS) 1992 Arvin, California 7.5-minute topographic quadrangle (Enclosures 1 and 2).

On behalf of AEWD, Provost and Pritchard Consulting Group retained Applied Earthworks, Inc. (AE) to assist in the identification of historic properties for this undertaking (Enclosure 3). Identification included a comprehensive records search completed at the California Historical Resources Information System through the Southern San Joaquin Valley Information Center on October 24, 2014 (Enclosure 3: Appendix C). AE also completed a cultural resource pedestrian survey of the project area. The Arvin-Edison Canal System, consisting of the North and South Canals which are a continuous linear resource separated by the Sycamore Check Structure, is the only identified cultural resource within the APE. The site record for the canal system and recommendations for eligibility to the National Register of Historic Places (National Register) are provided in the enclosed report (Enclosure 3). For evaluative purposes, the entire AEWSD water distribution and storage system was considered as a whole, with the subject portions of the Arvin-Edison Canal System evaluated within this larger system, and within the context of local (Arvin-Edison) and regional (Kern County and southern San Joaquin Valley) history. AE concluded that the Arvin-Edison Canal System (North and South Canals and the Sycamore Check Structure) does not meet NRHP Criteria A-D, under 36 CFR § 60.4, as an individual resource or as a contributor to the larger AEWSD water delivery, recharge, and storage system. Reclamation reviewed AE's documentation and identification efforts, finds the level of effort employed appropriate to the scope and nature of the project, and agrees with the findings.

The California Native American Heritage Commission (NAHC) provided the results to AE for the search of the sacred land file search and updated Native American Contacts List for the project area on November 7, 2014. The sacred lands file search resulted in negative results. Pursuant to 36 CFR § 800.3(f)(2) and § 800.4(a)(4), Reclamation contacted the Cortina Band of Indians, the Santa Rosa Rancheria Tachi, Yokut Tribe, Table Mountain Rancheria, and the Tule River Indian Tribe to invite their participation in the Section 106 process and request their assistance in the identification of sites of religious and cultural significance or historic properties that may be affected by the proposed undertaking. In addition, Reclamation notified Mr. Stan Alec of the Kings River Choinumni Farm Tribe and Mr. Kenneth Woodrow, Chairperson Wuksache Indian Tribe, Eshorn Valley Band, of Reclamation's involvement in the project and requested their assistance in the identification of any known cultural resources of concern that may be affected by the undertaking, pursuant to 36 CFR § 800.4(a)(3). Reclamation has not received any response to date, but if any concerns about the project are subsequently identified, we will work to resolve them and notify your office as appropriate.

Based on the information provided above and in the enclosed report (Enclosure 3), Reclamation has reached a finding of no historic properties affected for the proposed undertaking. We invite your comments on the delineation of the APE and the appropriateness of the historic properties identification efforts. We request your concurrence that the Arvin-Edison Canal System (North

and South Canals and Sycamore Check Structure) is not eligible for the National Register under any criteria. Pursuant to 36 CFR § 800.4(d)(1), we are also notifying you of a finding of no historic properties affected. If you have any comments or questions, please contact Mr. Scott Williams, Archaeologist, at 916-978-5042 or sawilliams@usbr.gov. Thank you for your consideration.

Sincerely,

Anastasia T. Leigh
Regional Environmental Officer

Enclosures - 3

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
calshpo@parks.ca.gov
www.ohp.parks.ca.gov

December 4, 2015

Reply in Reference To: BUR_2015_1109_002

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

Re: National Historic Preservation Act (NHPA) Section 106 Consultation for the Arvin Edison Water Storage District, Water Conservation Project, Relining of the North and South Canals, Sycamore Check Structure Improvements, Kern County, California (Project 14-MPRO-227)

Dear Ms. Leigh:

Thank you for your November 3, 2015 letter initiating consultation with the State Historic Preservation Officer (SHPO) for the above referenced undertaking. The Bureau of Reclamation (Reclamation) is consulting with the SHPO to comply with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f), as amended, and it's implementing regulations 36 CFR 800. Your letter requests SHPO concurrence on the Reclamation's determination of eligibility (36 CFR §800.4(c)(2)) and also notifies the SHPO on the Reclamation's finding of no historic properties affected (36 CFR §800.4(d)(1)).

Reclamation proposes to provide grant funding to the Arvin Edison Water Storage District (AEWSD) for a water conservation project that involves lining portions of the North and South Canals and improvements to the Sycamore Check Structure. Reclamation has identified the area of potential effects (APE) to include a 60-foot wide corridor along the canal alignment, which includes the Sycamore Check Structure. The vertical APE will be confined to the existing canal prism and all subsurface activity will be conducted within the canal itself. I find the Reclamation's determination and documentation of the APE to be sufficient (36 CFR §800.4(a)(1)).

Supporting documentation (36 CFR §800.11(a)) submitted with your letter includes the *Cultural Resources Survey and Evaluation for the Arvin-Edison Water Storage District Water Conservation and Efficiency Project, Kern County, California* report (Smallwood, Asselin and Lloyd 2015).

Efforts to identify historic properties within the APE (36 CFR §800.4(b)(1)) were conducted by Applied Earthworks, Inc. These efforts are detailed in Smallwood, Asselin and Lloyd 2015 and consisted of a record search and an intensive pedestrian survey of the entire APE. Identification efforts resulted in the documentation of one cultural resource within the APE, the Arvin-Edison Canal System. The Arvin-Edison Canal System consists of the North and South Canals which are a continuous linear resource separated by the Sycamore Check Structure.

Reclamation also sought information from any Indian tribe or organization identified pursuant to 36 CFR §800.3(f)(2) and 36 CFR §§800.4(a)(4) to assist in identifying properties which may be of religious and cultural significance to them and may be eligible for listing in the National Register of Historic Places (NRHP). Reclamation also sought information from Indian tribes pursuant to 36 CFR §800.4(a)(3). I find the Reclamation's level of effort in identifying historic properties within the APE to be sufficient (36 CFR §800.4(b)(1)).

Reclamation has determined that the Arvin-Edison Canal System is not eligible for listing on the NRHP under Criteria A, B, C and/or D as either an individual resource or as a contributor to the larger AEWSD water delivery, recharge, and storage system. Based on my review of the submitted documentation, I concur.

Based on the Reclamation's level of effort, they have determined a finding of no historic properties affected as a result of this undertaking (36 CFR §800.4(d)(1)). I do not object to your finding.

Thank you for seeking my comments and considering historic properties as part of your undertaking. Please be advised that under certain circumstances, such as post-review discoveries or a change in the undertaking description, you may have future responsibilities for this undertaking under 36 CFR Part 800. If you require further information, please contact Alicia Perez at 916-445-7020 or at Alicia.Perez@parks.ca.gov or Kathleen Forrest at 916-445-7022 or at Kathleen.Forrest@parks.ca.gov.

Sincerely,

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State Historic Preservation Officer

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Appendix D - U.S. Fish & Wildlife Concurrence

Appendix B Indian Trust Assets

Indian Trust Assets
Request Form (MP Region)

Submit your request to your office's ITA designee or to MP-400, attention Kevin Clancy.

Date:

Requested by (office/program)	Doug Kleinsmith
Fund	17XR0680A1
WBS	RX021489451000000
Fund Cost Center	2015200
Region # (if other than MP)	
Project Name	Arvin-Edison Water Storage District Water-Energy Conservation & Efficiency Project
CEC or EA Number	
Project Description (attach additional sheets if needed and include photos if appropriate)	The Bureau of Reclamation proposes to provide an Agricultural Water-Energy Conservation and Efficiency Grant to Arvin-Edison Water Storage District (District) for constructing the District's Water-Energy Conservation and Efficiency Project (Proposed Action). The District would implement the WECAEP to conserve water, conserve energy, and reduce greenhouse gas emissions through implementation of three independent sub-projects: 1. Pilot In-lieu Project (also known as Sycamore In-lieu Project): a project to increase delivery of wet-period water to approximately 1,062 acres of vineyards that currently rely on groundwater and to integrate the existing groundwater wells used for those vineyards into the District's irrigation and power systems with installation of new pipelines and canal turnout improvements. 2. Sycamore Check Improvement Project: a project to modernize and replace an existing 50-year old check structure and restore capacity upstream of a key check structure by extending the canal liner along an approximately 2.25 mile of the District's North Canal and 0.2 mile of the South Canal, which will improve the District's ability to receive, regulate, and conserve water. 3. NRCS Promotion: District will increase promotion of NRCS' EQIP program to District customers.

*Project Location (Township, Range, Section, e.g., T12 R5E S10, or Lat/Long cords, DD-MM-SS or decimal degrees). Include map(s)	See map below T 118.78 R35.21

/s/ Doug Kleinsmith	Doug Kleinsmith	9/19/17
Signature	Printed name of preparer	Date

ITA Determination:

The closest ITA to the Proposed Action is 50HIN106 which is about 29.69 miles to the northeast. This is a land allocation that is either owned by a Tribe, or in the process of being put in trust. (See attached image).

Based on the nature of the planned work it **does not** appear to be in an area that will impact Indian hunting or fishing resources or water rights nor is the proposed activity on actual Indian lands. It is reasonable to assume that the proposed action **will not** have any impacts on ITAs.

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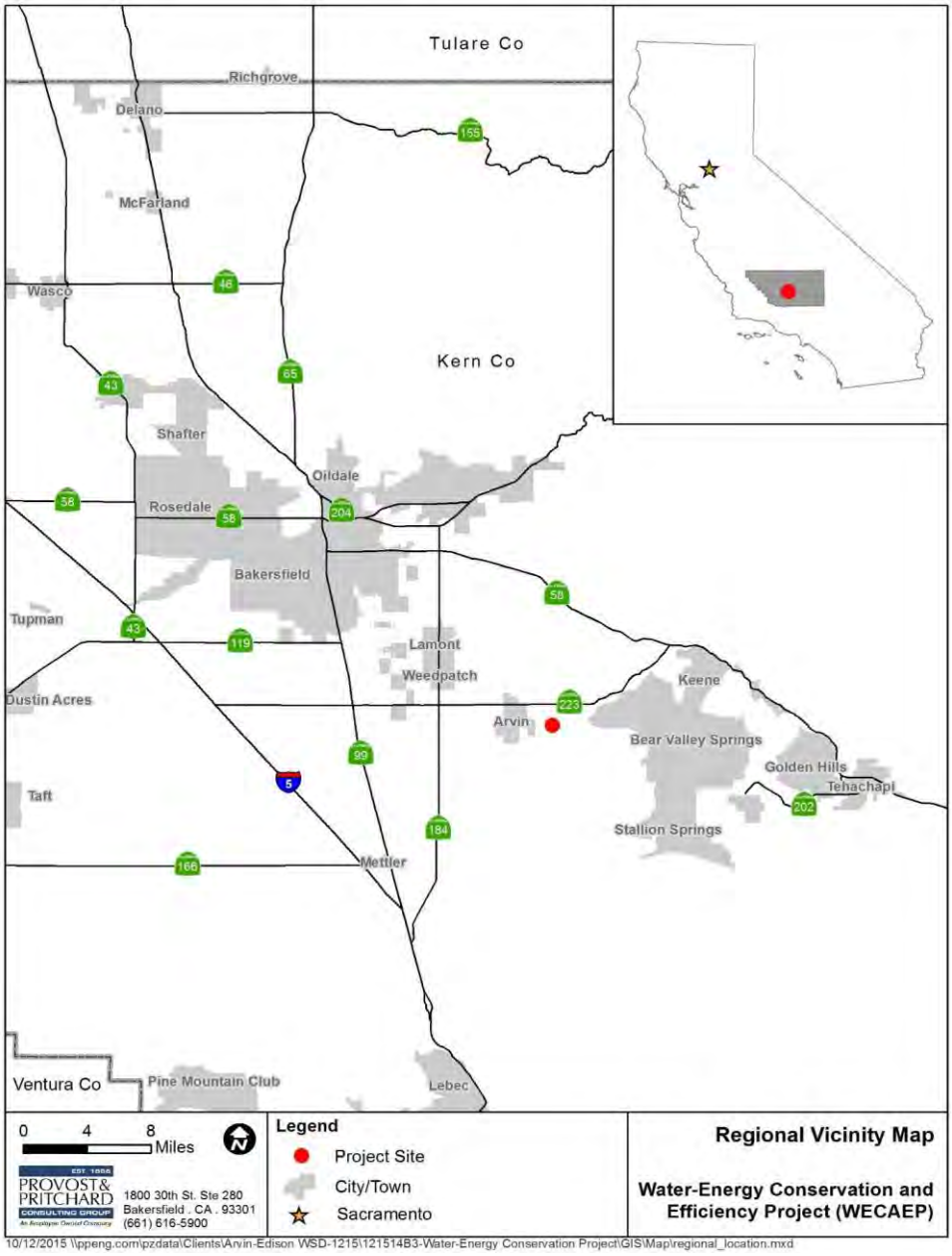
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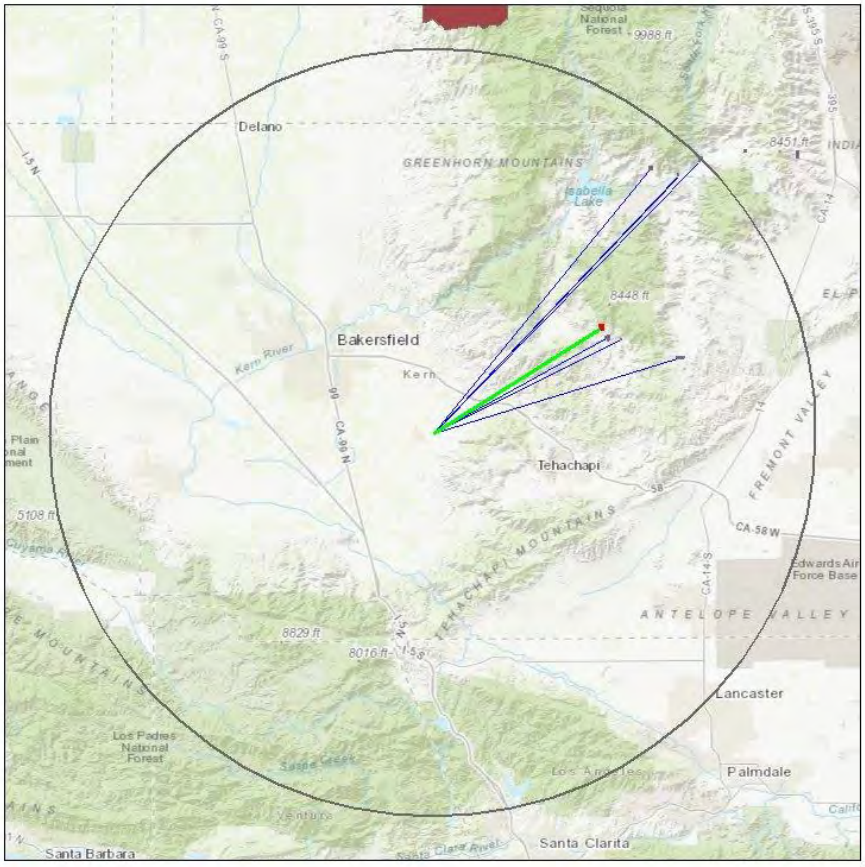

Native American Lands FL
PDA
Reservation

0 5 10 20 Miles

RECLAMATION
Managing Water in the West

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/s/ Doug Kleinsmith	Doug Kleinsmith	9/19/17
Signature	Printed name of preparer	Date

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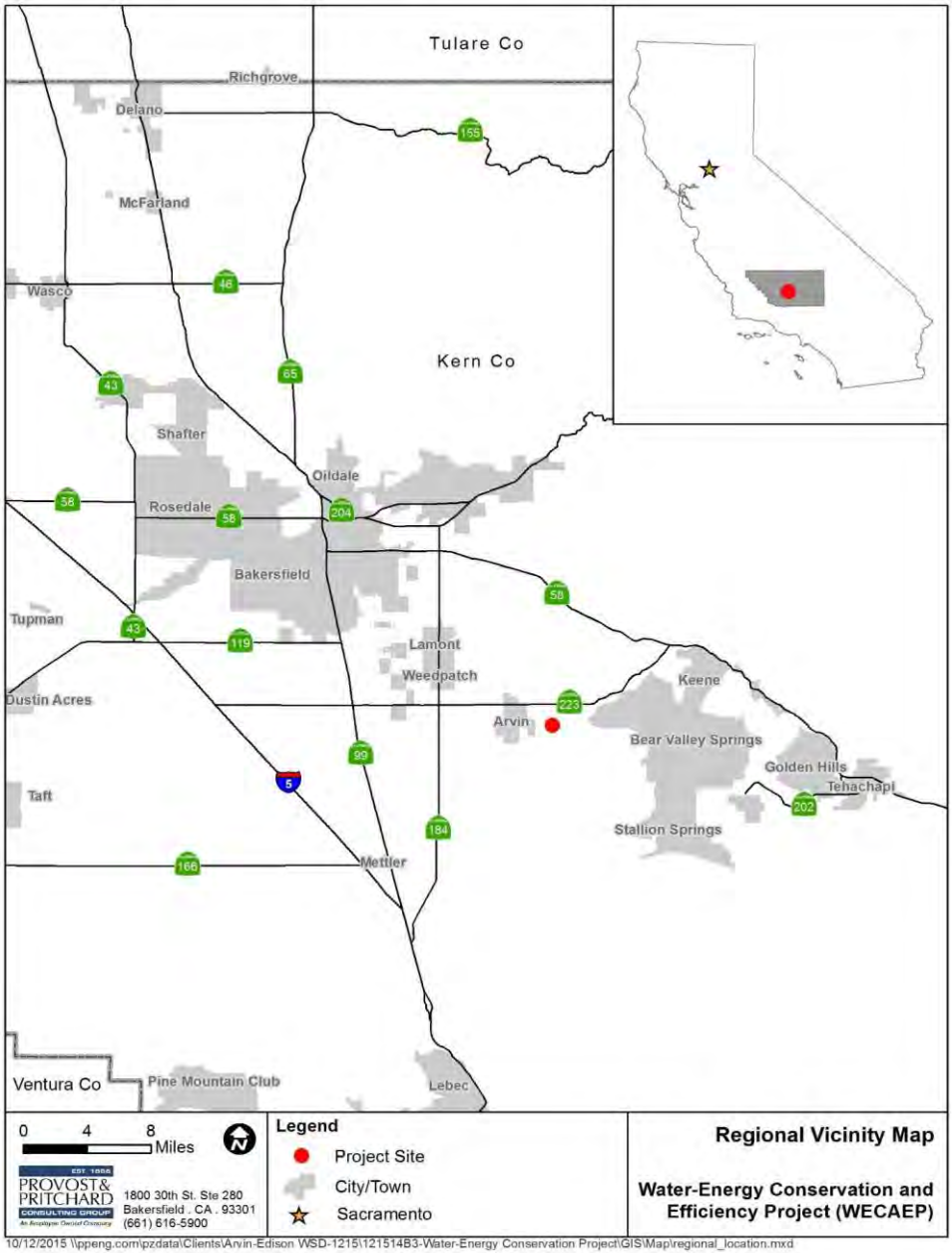
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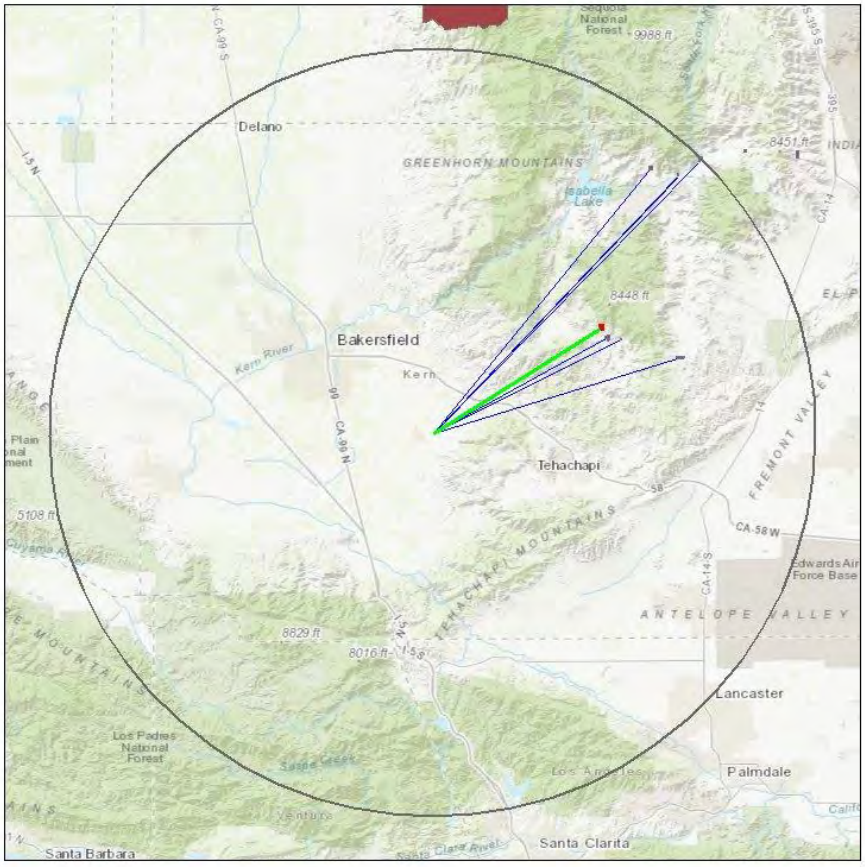

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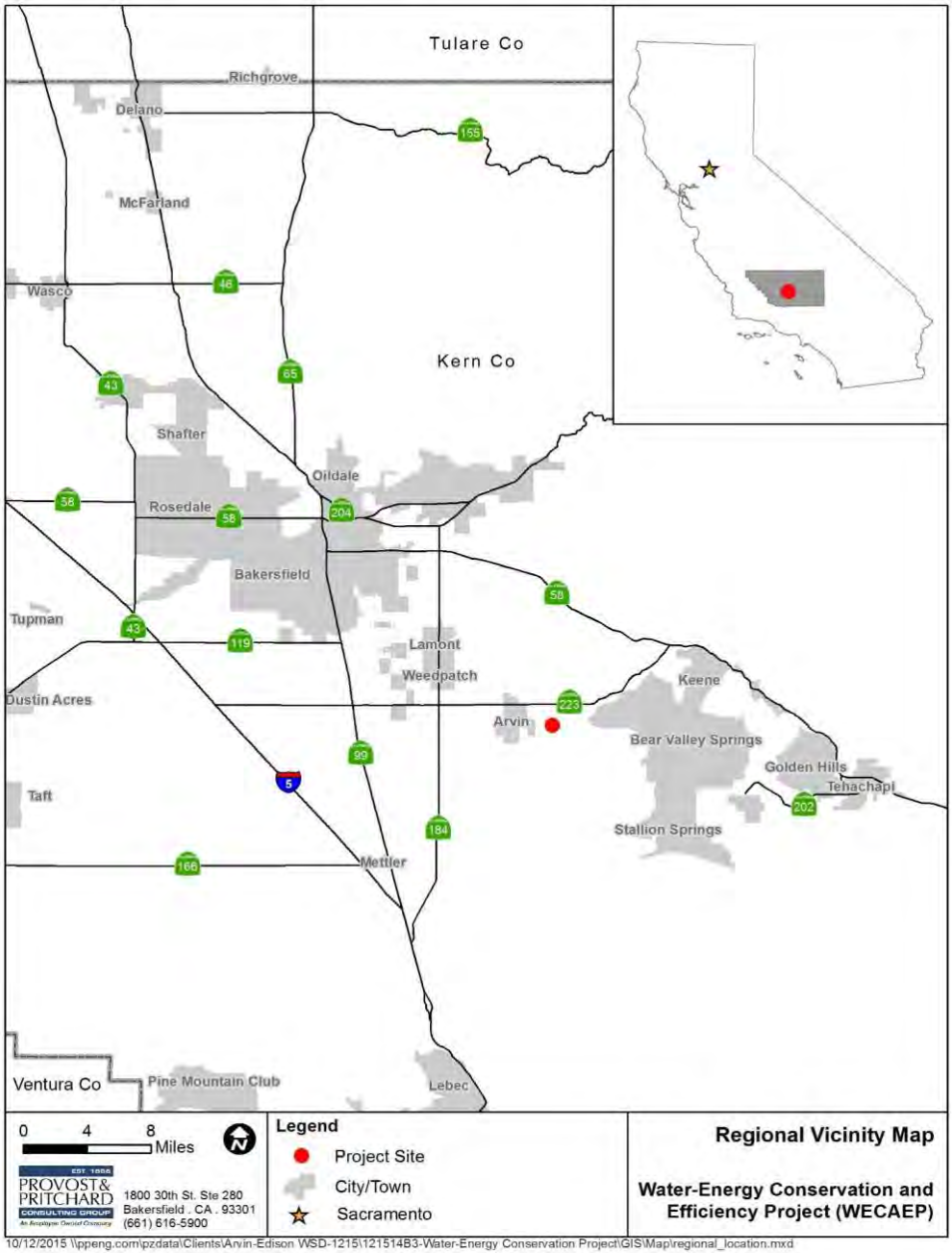
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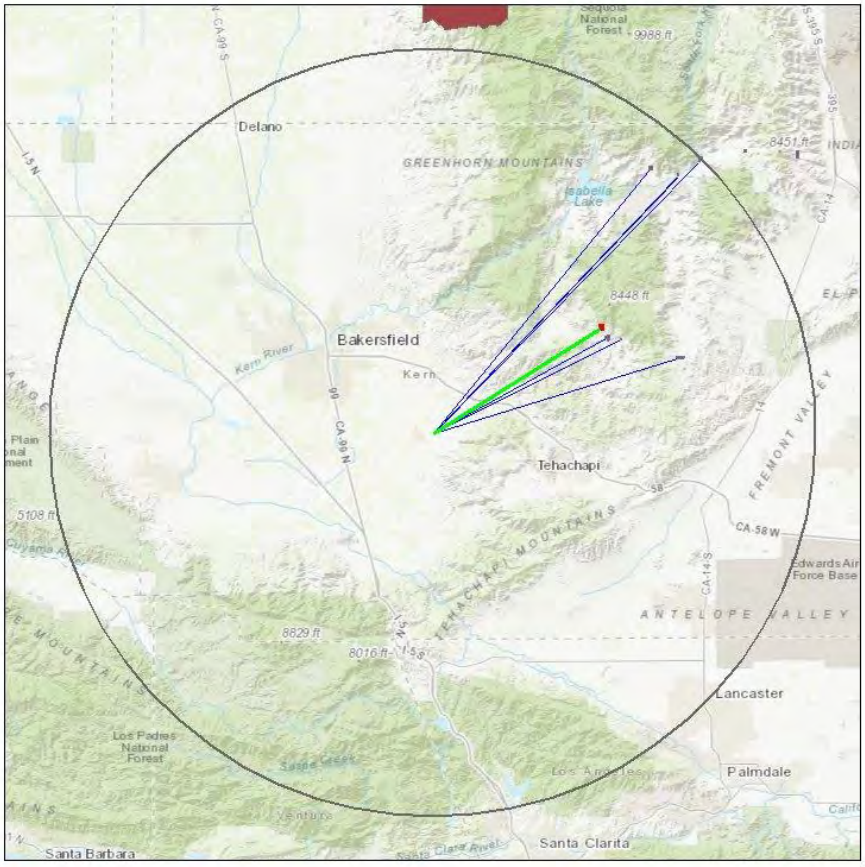

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RECLAMATION
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Appendix C - Cultural Resources Compliance Letters

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

In Reply Refer to:
08ESMF00-
2015-I-1267

AUG 30 2016

Memorandum

To: Anastasia T. Leigh, Regional Environmental Officer, Mid-Pacific Regional Office
Bureau of Reclamation, Sacramento, California

From: for Thomas Leeman, Chief, San Joaquin Valley Division, Sacramento Fish and Wildlife Office, Sacramento, California

Subject: Informal Consultation for the Arvin-Edison Water Storage District Water Conservation and Efficiency Program Project

Dear Ms. Leigh:

This memorandum is in response to the Bureau of Reclamation's (Reclamation) September 14, 2015, memo requesting informal consultation with the U.S. Fish and Wildlife Service's (Service) on the proposed Arvin-Edison Water Storage District (AEWSD) Water Conservation and Efficiency Program Project (proposed project). The proposed project is located 2 miles east of the City of Arvin in Kern County, California. Your request was received by the Service on September 17, 2015. Using Department of the Interior WaterSMART Program Grant financing, the proposed project will integrate a private landowner's existing irrigation facilities and extraction wells into AEWSD's system, resulting in increased groundwater recharge and increased opportunity for banking and recovery of water. In addition, the proposed project calls for improvements to the existing water control structure located at the boundary of the AEWSD's North and South Canals, and raising of the existing canal liner.

Reclamation has determined that the proposed project may affect, but is not likely to adversely affect the federally listed as endangered San Joaquin kit fox (*Vulpes macrotis mutica*) (kit fox) and is seeking concurrence from the Service on this determination.

This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (Act) and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402). The findings and recommendations presented in this document are based on: (1) Reclamation's September 14, 2015, memorandum requesting informal consultation (2) the February 23, 2015, *Water Conservation and Efficiency Project Biological Evaluation/Biological Assessment, Arvin-Edison Water Storage District, Kern County, California* (biological assessment) prepared by Live Oak Associates, Inc. (Live Oak), (3) the May 26, 2016, *San Joaquin Kangaroo Rat Trapping Survey 90-day Report* prepared by Live Oak; documenting negative trapping results for Tipton kangaroo rat (*Dipodomys nitratoides nitratoides)*, and (5) the July 22, 2016, email from Live Oak addressing the Service's October 7, 2015, request for additional information regarding the proposed project.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

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Memorandum

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Project Description

Pilot In-lieu Project

The Pilot In-lieu Project will integrate a private landowner's existing irrigation facilities and extraction wells into AEWSD's irrigation distribution system. This will increase the amount of AEWSD surface water available to the landowner during wet periods, resulting in a reduction in groundwater pumping for approximately 1,060 acres of vineyards.

The Pilot In-Lieu Project will entail (1) the construction of approximately 1.5 miles of new pipelines linking the landowner's extraction wells to the AEWSD's South canal, (2) the construction of three new discharge structures enabling water from these wells to be pumped into the South Canal, and (3) the reconstruction of a pipeline fed from an existing canal turnout to improve surface water delivery into the landowner's existing reservoir system.

New pipelines will link four of the landowner's seven wells, identified as Well Nos. 3, 4, 108, and T49N, with the AEWSD canal system. Approximately 7,800 linear feet of new pipelines will connect Well Nos. 3, 108, and T49N to the South Canal. Approximately 1,000 linear feet of new pipelines will link Well No. 4 to the South Canal. The landowner's remaining three wells will connect to the AEWSD system via an existing landowner pipeline, which also has an existing connection to the South Canal. New pipelines will be either 15 or 24 inches in width and installed approximately 3-4 feet below ground level along Sycamore Road and paved agricultural roads, no more than 10 feet from the edge of the pavement. Temporary disturbance associated with pipeline installation will be limited to a 30-40 foot wide corridor.

Three new discharge structures will introduce water from the landowner's wells directly into the South Canal. A 15-inch pipe associated with Well No. 4 and a 24-inch pipe associated with Well Nos. 3, 108, and T49N will cross an engineered flood channel of Sycamore Creek, which flows adjacent to the South Canal throughout the proposed project area. These pipes will be buried several feet below the bed of the flood channel, emerging on the canal side of the channel to introduce water into the South Canal over the edge of the concrete liner. Discharge from the landowner's remaining three wells will tie into the landowner's existing 12-inch pipe crossing of the flood channel and the South Canal and will not require new excavation. However, a new, 18-inch outlet will be added to the existing 12-inch pipe to allow flow from the wells to over pour into the canal. The approximate width of disturbance for the new discharge structures is 30-40 feet.

The existing canal turnout, which currently has an 18-inch pipe after its 24-inch control valve, will be reconstructed with a 24-inch pipe. The existing pipe crosses beneath the flood channel, buried several feet below the channel bed. The approximate width of disturbance for the pipeline reconstruction is 30-40 feet.

Sycamore Check Structure Improvement Project

The Sycamore Check Structure Improvement Project will entail (1) automating and modernizing the existing Sycamore Check Structure and (2) raising the canal liner both upstream and downstream of the structure. Collectively, these improvements will restore the original capacity of the Check Structure and South Canals to 500 cubic feet per second.

Improvements to the Sycamore Check Structure will include construction of a modern automated gate structure with overflow type weir gates, and implementation of a supervisory control and data acquisition system. The canal will be temporarily dewatered in the vicinity of the Sycamore Check Structure using one of the following techniques: 1) installation of a temporary dam upstream of the construction site (if minimal flow), 2) installation of a pump and pipe network to divert water around the construction site (if moderate flow), or 3) construction of a bypass through Pond R6P1 of the AEWSD's Sycamore Spreading Works (if large flow). Approximately 2.25 miles of the North Canal upstream of the Sycamore Check Structure and 0.2 mile of the South Canal downstream of the Sycamore Check Structure will be subject to canal liner raising. The cement canal liner will be extended several feet up the banks of the canal.

For both the Sycamore Check Structure Improvement Project and the Pilot In-lieu Project, staging areas will be established at the Sycamore Spreading Works and/or AEWSD District Headquarters. The potential staging area at Sycamore Spreading Works will be located in Pond R6P1, and will cover an area of approximately 2 acres. The potential staging area at the AEWSD District Headquarters will be located in a gravel lot already in use for equipment storage, and will be about one acre in size. Following project construction, the staging area(s) will be restored to pre-project conditions.

Equipment to be used during construction will include excavators, backhoes, water trucks, crew trucks, graders, cement mixer trucks, material delivery tractor trailer rigs, a vibratory compactor, a skip loader, a hydraulic rough terrain crane, and a dump truck. Some project components will be constructed simultaneously, such that overall construction duration is expected to last 3-4 months, or 90 to 120 calendar days.

Conservation Measures

No suitable kit fox dens were found during the November 2014 reconnaissance level survey conducted by Live Oak in the proposed project area. The AEWSD will implement the following avoidance and minimization measures, obtained from the Service's 2011 *Standard Recommendations for the Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* (2011 Recommendations), during construction of all components of the proposed project; including within staging areas:

1. Pre-construction surveys shall be conducted by a qualified biologist 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 Service's 2011 Recommendations. When surveys identify potential dens (defined as burrows at least four inches in diameter which open up within two feet), potential den entrances shall be dusted for four consecutive calendar days to register and track activity of any kit fox present. If an active kit fox den is detected within or immediately adjacent to the area of work, the Service and the California Department of Fish and Wildlife (CDFW) shall be contacted immediately.

2. The surveyor shall thoroughly check the project site for kit fox dens and, if found, exclusion zones shall be placed, in consultation with the Service and CDFW, at the following radii: 50-feet for a potential den, 100-feet for a known den, and 50-feet for an atypical den. If a natal/pupping den is found, the Service will be contacted for guidance. Known kit fox dens may not be destroyed.

3. Prior to the start of construction, the applicant will retain a qualified biologist to conduct an employee education program. 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 agency personnel involved in the project. The program should include the following: 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 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.

4. Project-related vehicles shall observe a 20-mph speed limit in all project areas during construction, except on county roads and State and federal highways; this is particularly important at night when kit foxes are most active. To the extent possible, nighttime construction should be avoided. Off-road traffic outside of designated project areas should be prohibited during construction.

5. All excavated steep-walled holes or trenches more than two feet deep shall be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Areas that are covered will be inspected daily, for as long as they are covered, to ensure that no kit fox have become trapped despite the presence of covers. 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 procedures under numbers 10, 11 and 12 must be followed.

6. All construction pipes, culverts, or similar structures with a diameter of four inches or greater that are stored at a construction site for one or more overnight periods shall 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 shall not be moved until the Service has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved once to remove it from the path of construction activity, until the fox has escaped.

7. All food-related trash items shall be disposed of in closed containers and removed at least once a week from a construction or project site.

8. No firearms shall be allowed on the project site.

9. To prevent harassment, mortality of kit foxes, or destruction of dens by dogs or cats, no pets shall be permitted on project sites during construction.

10. In the case of trapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape, or the Service shall be contacted for advice.

11. A representative shall be appointed by AEWSD 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. Any contractor, employee, or agency personnel who inadvertently kills or injures a kit fox shall immediately report the incident to their representative.

12. In the case of an accidental death of or injury to a kit fox during project-related activities, the Sacramento Fish and Wildlife Office and CDFW shall be notified immediately by telephone or email, and project activities will cease until the agencies provide guidance. In addition, the Board

would need to reinitiate consultation. 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.

13. Use of rodenticides and herbicides in project areas will be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. If it is later determined that the use of rodenticides and herbicides is needed, the Board would need to reinitiate consultation.

14. 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.

Determination

Although the Service believes the probability of encountering a kit fox within the action area is low, it cannot be dismissed entirely. According to the California Natural Diversity Database, there are 12 occurrences of kit fox within 10 miles of the proposed project site; the closest occurrence was recorded in 2012, approximately ½ mile from the proposed project site. Furthermore, the site abuts a large expanse of grassland habitat to the south and east which provides suitable foraging and denning habitat for kit fox. However, while there is potential for kit fox to pass through the project site, the site itself consists of highly-disturbed lands that are surrounded by a matrix of intensively-managed agricultural and industrial lands that offer limited foraging and denning opportunities for this species. Therefore, due to the applicant's commitment to adhere to the Service's 2011 Recommendations, the temporary nature of the disturbance, and the low likelihood of encountering a kit fox within the action area, it is the Service's opinion that the effects of the action on the kit fox will be of an insignificant and discountable nature.

Based on the information you have provided, The Service concurs with your determination that the project may affect, but is not likely to adversely affect San Joaquin kit fox. This concludes the Service's review of the proposed project. No further coordination with the Service under the Act is necessary at this time. Please note, however, this letter does not authorize take of listed species. As provided in 50 CFR §402.14, initiation of formal consultation is required where there is discretionary Federal involvement or control over the action (or is authorized by law) and if: 1) new information reveals the effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this review; 2) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this review; or 3) a new species is listed or critical habitat designated that may be affected by the action.

If you have any questions regarding this biological opinion, please contact Dana Herman, Fish and Wildlife Biologist, or Thomas Leeman, San Joaquin Division Chief, at the letterhead address or at (916) 414-6683, and (916) 414-6544, respectively.

cc:
Julie Vance, Regional Manager, California Department of Fish and Wildlife