RECLAMATION

Managing Water in the West

Arvin-Edison Water Storage District

Water-Energy Conservation & Efficiency Project

Environmental Assessment

U.S. Department of the Interior
Bureau of Reclamation
Mid Pacific Region
Sacramento, California

November 2017

Mission Statements

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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LIST OF ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
AB 32	Assembly Bill 32
AB 1493	Assembly Bill 1493
AF	Acre Feet
AFY	Acre Feet per year
Air Basin	San Joaquin Valley Air Basin
APE	Area of Potential Effects
BNLL	Blunt-Nosed Leopard Lizard
CARB	California Air Resource Board
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal regulations
cfs	Cubic-Feet Per Second
CH_4	Methane
CNDDB	California Natural Diversity Data Base
CNPS	California Native Plant Society
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CRHR	California Register of Historic Places
CVP	Central Valley [Water] Project
District	Arvin-Edison Water Storage District
EA	Environmental Assessment
EO	Executive Order
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
FKC	Friant Kern Canal
GHG	Greenhouse Gases
GWSA	Ground Water Service Area
ITA	Indian Trust Assets
ITS	Intelligent Transportation Systems
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_x	Oxides of Nitrogen
NO_2	Nitrogen Dioxide
NRCS	Natural Resources Conservation Services
NRHP	National Register of Historic Places
O_3	Ozone
$PM_{2.5}$	Particulate Matter Less Than 2.5 Microns in Diameter
PM_{10}	Particulate Matter Less Than 10 Microns in Diameter
PWRPA	Power and Water Resources Pooling Authority
Reclamation	U.S. Bureau of Reclamation

ROG	Reactive Organic Gases
SCADA	Supervisory Control and Data Acquisition
SHPO	California State Historic Preservation Officer
SJKF	San Joaquin Kit Fox
SJRRP	San Joaquin River Restoration Program
SJVAPCD	San Joaquin Valley Air Pollution Control District
SLR	San Luis Reservoir
SO_x	Sulfur Oxides
State	State of California
SWP	State Water Project
U.S.	United States
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile Organic Compounds

Section 1 Introduction

This Environmental Assessment (EA) was prepared by the Bureau of Reclamation (Reclamation) to satisfy the requirements of the National Environmental Policy Act (NEPA) for providing 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 Board of Directors approved a California Environmental Quality Act Negative Declaration (ND) for the Project on July 14, 2015 (no comments were received).

1.1 Proposed Action Overview

The Proposed Action facilities would be located approximately two miles east of the City of Arvin, within the District. The District lies within central Kern County, California, southeast of Bakersfield (Figure 2 and 2).

With the Proposed Action, the District may purchase and receive water (including floodwater) that otherwise would be lost to beneficial use during times of abundance ("wet periods"). The District and its growers have a history of conserving water and energy through various means, including but not limited to programs such as the Natural Resources Conservation Service's (NRCS) Environmental Quality Incentive Program (EQIP). The EQIP program provides both technical and financial support to growers for implementing resource conservation practices that benefit the environment and growers.

The District would implement the Proposed Action 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 would improve the District's ability to receive, regulate, and conserve water.
3. NRCS Promotion: District would increase promotion of NRCS' EQIP program to District customers.

The location of the Pilot In-lieu Project and Sycamore Check Improvement Project is shown in Figure 3. Both the District and the landowners in the District own and operate groundwater extraction facilities that consume large amounts of power. The water conservation would reduce

pumping within the District, conserving energy and, by extension, reducing the amount of greenhouse gases emitted by power generation facilities that would otherwise produce electricity to operate the facilities.

The Proposed Action would be funded in part by a United States Bureau of Reclamation Agricultural Water Efficiency and Conservation Grant. The remaining funding would be provided by the District.

1.2 Need for Proposed Action

The large groundwater basin the District shares with others (the Kern County portion of the Tulare Lake Groundwater Basin) is currently in a state of overdraft, which could become worse with continued pumping of groundwater, exteneded periods of drought, and inability to make beneifical use of surface water supplies during wet periods.

The Proposed Action has the following objectives:

1. Maximize the use of surface water while decreasing groundwater extractions.
2. Water conservation by improved water management.
3. Increase energy efficiency from reduced reliance on pumped groundwater and implementation of on-farm conservation practices.

Without the Proposed Action, groundwater level decline in the groundwater basin would worsen, decreasing well capacities, and potentially causing subsidence and water quality issues in the region. The District's level of service would decrease, its costs would increase, and revenue would need to be raised to maintain the District. These impacts hurt agricultural businesses, could result in loss of jobs, fallowing otherwise productive lands, or increasing the prices of agricultural products, and related worsening of secondary economic conditions for disadvantaged communities.

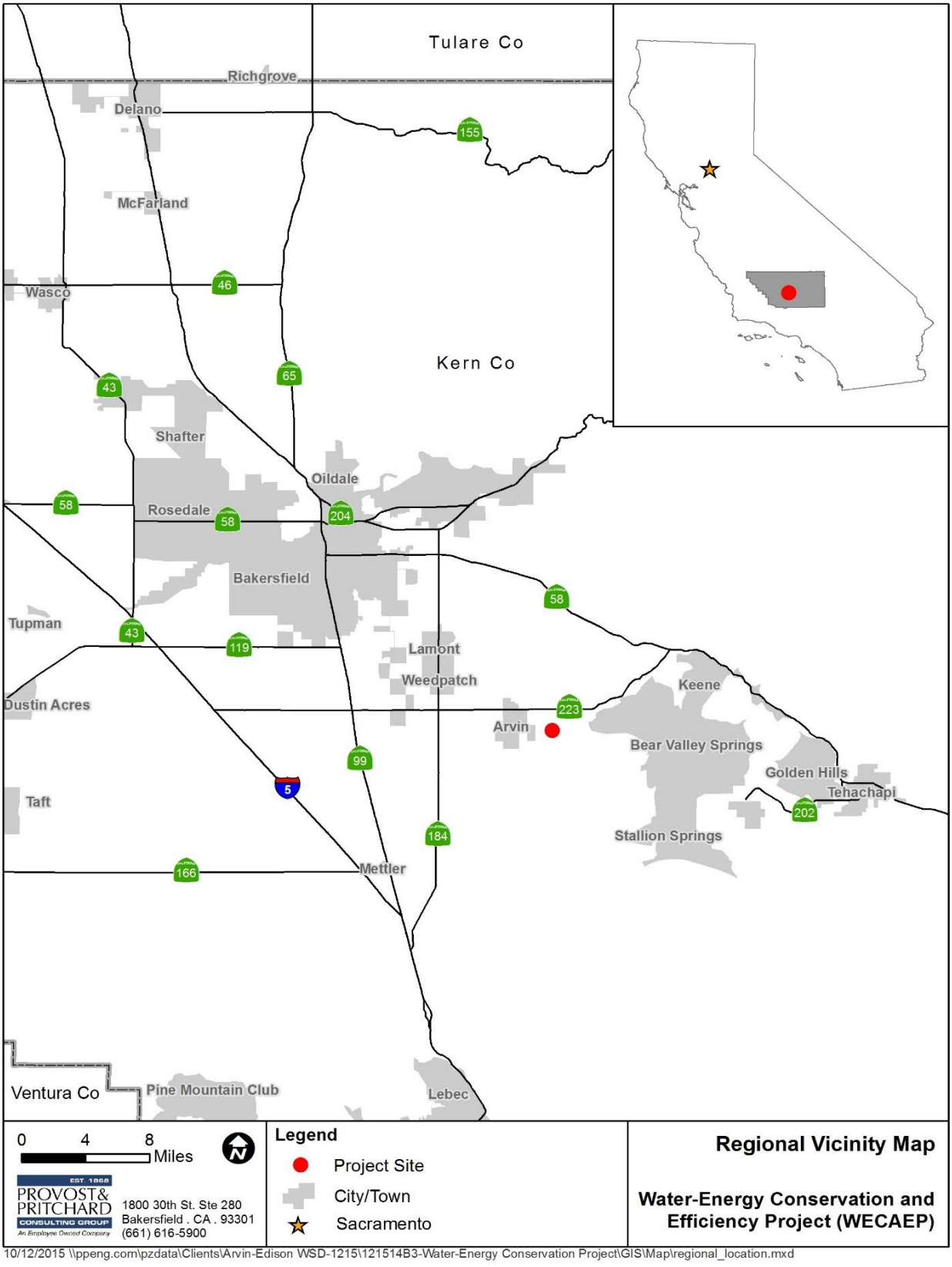

Figure 1 Regional Vicinity Map

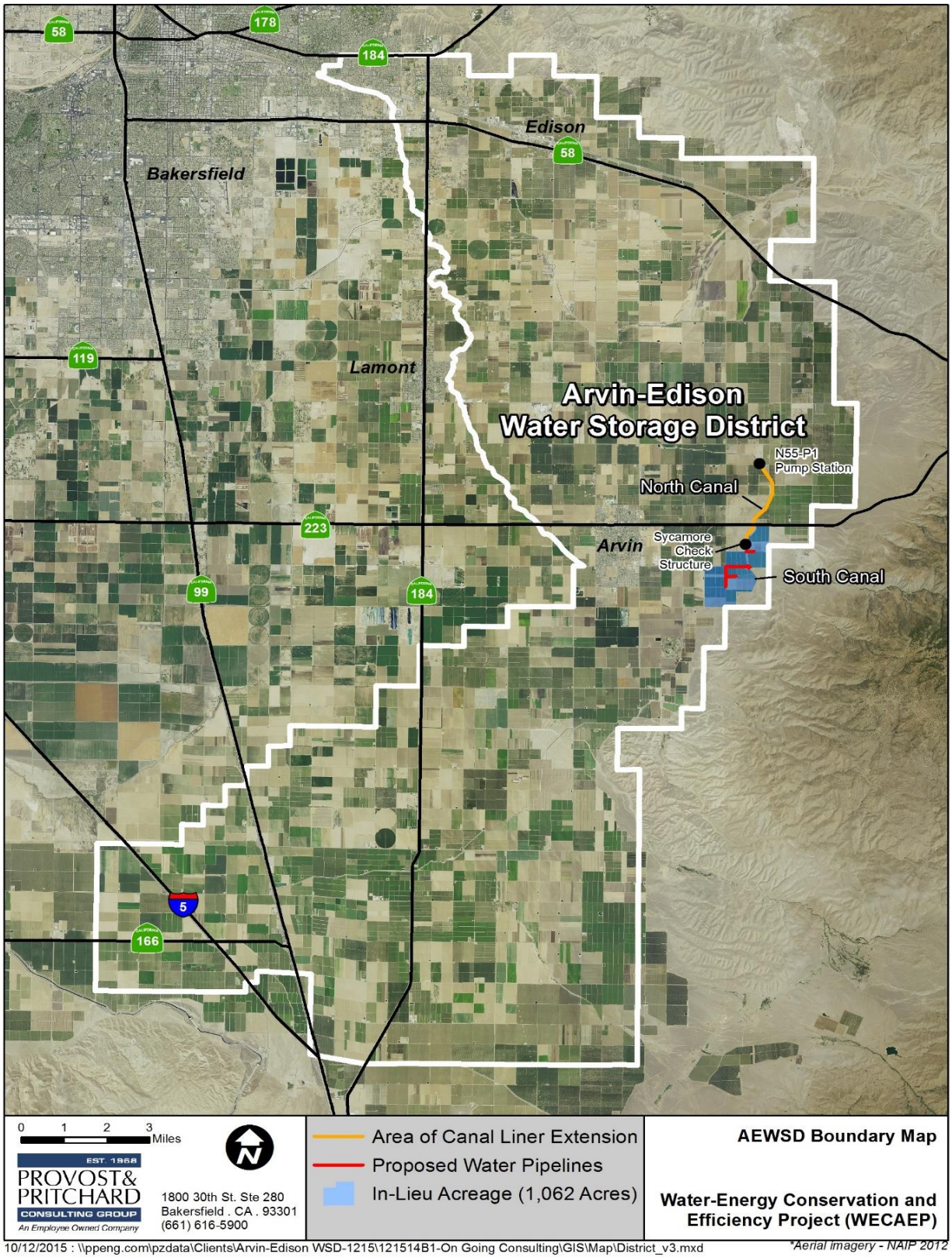

Figure 2 District Boundary Map

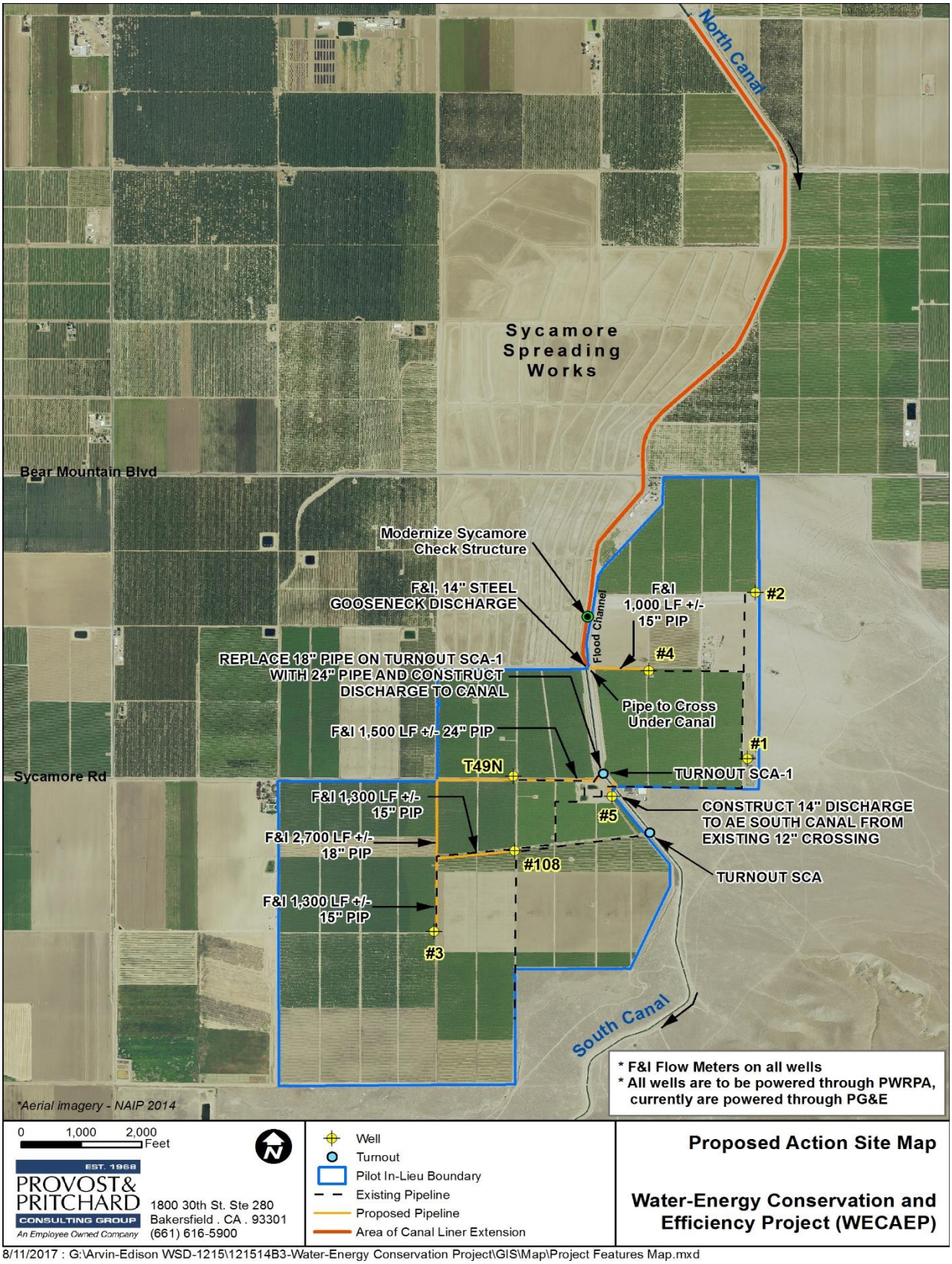

Figure 3 Proposed Action Site Map

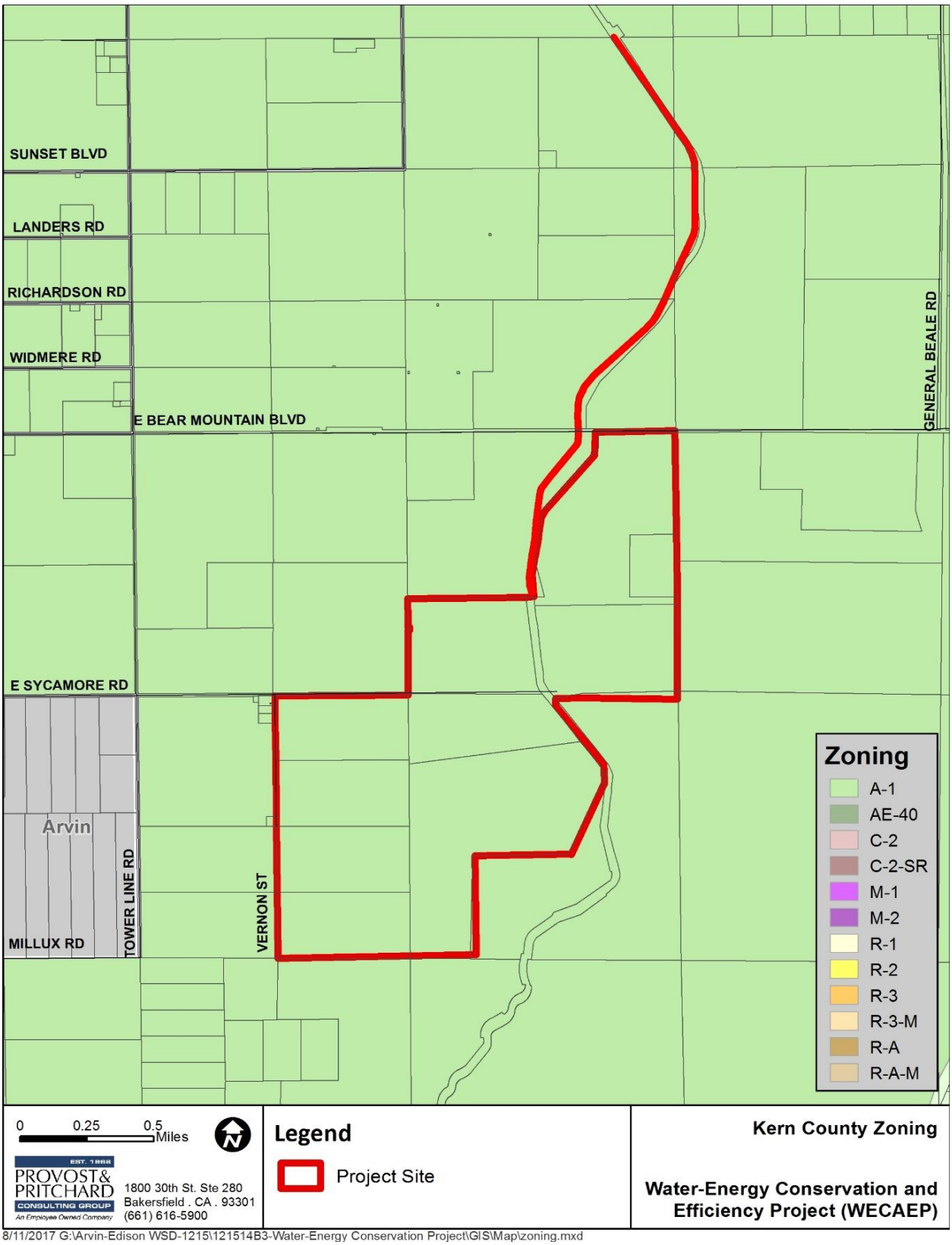

Figure 4 Kern County Zoning Map

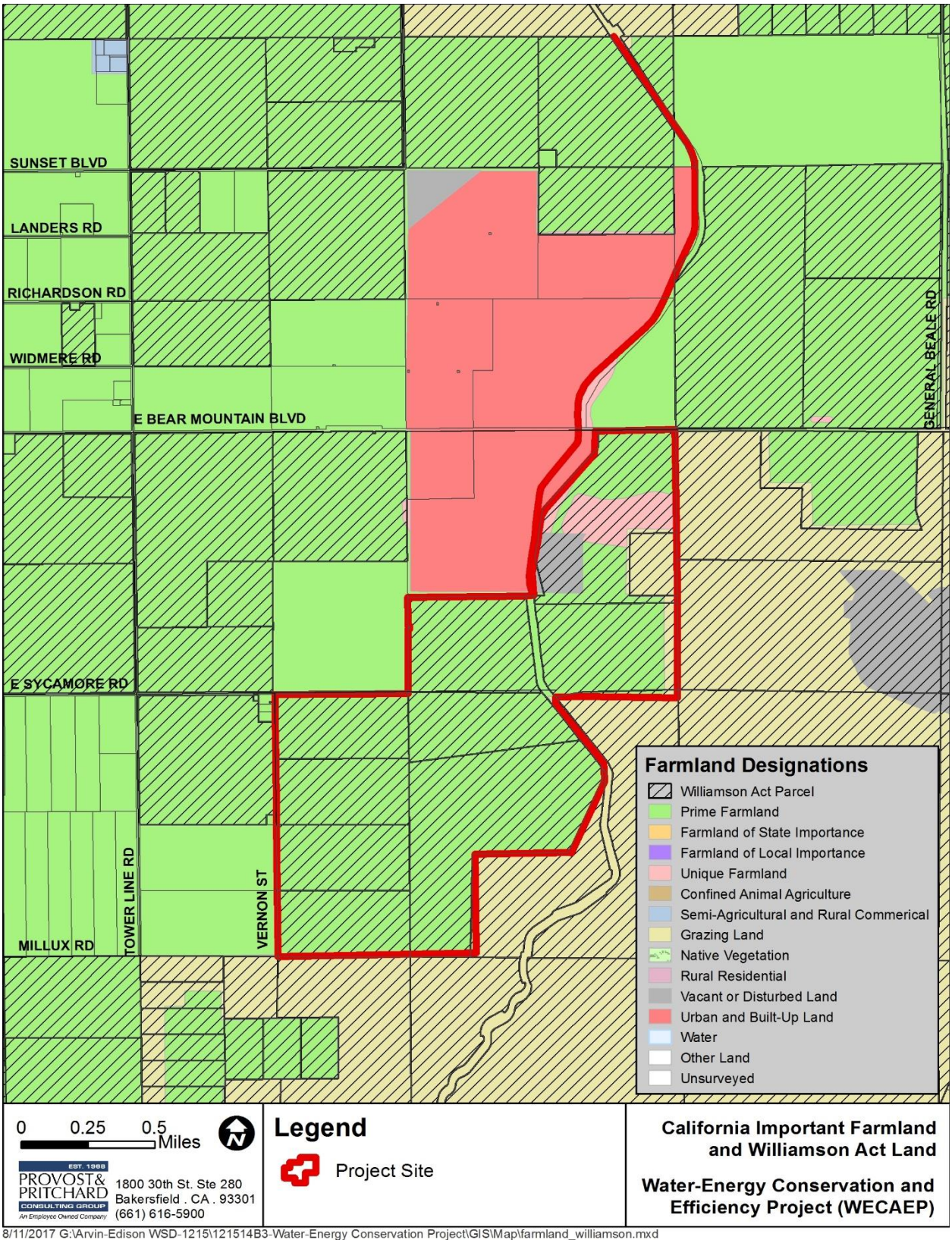

Figure 5 California Important Farmland and Williams Act Land Map

Section 2 Alternatives and Proposed Action

This EA considers two possible actions: the No Action Alternative and the Proposed Action. The No Action Alternative reflects future conditions without the Proposed Action and serves as a basis of comparison for determining potential effects to the human environment against the Proposed Action. For purposes of analysis, the No Action Alternative represents a projection of current conditions and reasonably foreseeable actions to the most reasonable future responses or conditions that could occur during the life of the project without any action alternatives being implemented.

2.1 No Action Alternative

Under the No Action Alternative, Reclamation would not provide the grant funds and the District would not construct the Proposed Action with federal funds. The Need for Proposed Action, as described in Section 1.2 may not be realized and therefore surface water may not be conserved and stored(i.e. it would be lost) and therefore not available during dry periods, drought response may not expand, groundwater pumping and over-draft conditions may continue; over-draft would continue to deplete groundwater sources and EQIP and associated environmental protections would not be promoted, resulting in increased energy use and costs.

2.2 Proposed Action

The Ground Water Service Area (GWSA) within the District is that area consisting of landowners that currently rely primarily on groundwater sources to meet their crop irrigation needs (approximately 50,000 acres).

Under the Proposed Action, Reclamation would provide Agricultural Water Conservation and Efficiency Grant funding to the District to assist with funding the Pilot In-Lieu Project, the Sycamore Check Structure Improvement Project, and the NRCS EQIP Promotion Project. The remaining funding would be provided by the District and/or by other grant opportunities (e.g. State of California).The District would implement the Proposed Action to conserve water (that would otherwise be lost) for beneficial use and maximize the regulation and use of available surface water. Water would be used for irrigating existing agriculturally cultivated lands in the In-Lieu area (in-lieu of groundwater pumping) thereby recharging and banking water in the groundwater basin, with recovery later in dry periods and/or use in other water management programs. The Proposed Action would have an estimated combined annual total water conservation of 22,231 AF. Construction would begin in January 2018 and be completed by June 2018.

This EA was prepared to analyze the potential impacts of the construction and operation of the Proposed Action which includes three independent sub-projects as described above in Section 1.1. An Environmental Checklist has been included in Section 3 for purposes of discussing potential adverse, beneficial and neutral effects on the environment as a result of the Proposed Action**.** The scope of the Proposed Action would include:

- Replace a section of 18-inch pipe in Turnout SCA-1 with 24-inch pipe to increase delivery capacity to farmlands as part of Pilot In-lieu Project. (Maximum depth of construction excavation through an earth embankment is estimated to be approximately 14 feet, approximately 6 feet wide at the bottom and sloped 1.5-feet:1-foot on the sides.)

- Construct a pipeline network from seven (7) landowner wells to the District's Canal (for increased pumping flexibility and drought protection). (The typical maximum depth of construction for the largest diameter (24 inches) pipeline trenches is estimated to be 6 feet, except for short distances where the trench would need to cross under existing pipelines and levees, in which cases the depth could increase to a maximum of approximately 15 feet.

- Integrate the landowner's seven (7) existing groundwater wells and power systems into the District's water operations and PWRPA power service if and when studies indicate that is feasible.

- Reconstructing the Sycamore Check Structure with more efficient automated tilting-weir style gates and restore capacity of the District's canal system to 500 cfs by extending the existing concrete canal liner to the top of the canal banks in areas shown in Figure 2.

- Increase promotion of the United States Department of Agriculture, Natural Resource Conservation Service's Environmental Quality Incentives Program (EQIP) which provides financial and technical assistance to implement agricultural resource conservation planning efforts.

The three Proposed Action components are generally described as follows:

2.2.1 ***Proposed Action Component No. 1 – Pilot In-Lieu Project***

During wet periods, surface water would be provided to approximately 1,060 acres of vineyards currently irrigated by groundwater, thereby resulting in a reduction of groundwater pumping, as shown on Figure 3 above Upon delivery of surface water, the landowner groundwater extractions would be suspended. By using wet period surface water in-lieu of the groundwater, recharge would increase and water would be "banked" underground for future recovery during dry periods. The delivery of surface water would decrease energy use and decrease greenhouse gas emissions through reduced pump/motor operation.

The Pilot In-lieu Project component would also involve integrating the landowner's seven existing wells and associated facilities into the District's water distribution system and, when and if determined feasible, landowners' power source would be converted from PG&E to the District's Power and Water Resources Pooling Authority (PWRPA). The District's existing facilities currently utilize this PWRPA power.

The Pilot In-lieu Project component would also include constructing well discharges and pipelines to return groundwater to the District's South Canal. All pipeline-related construction would occur within unpaved, oiled, private vineyard roads across and in the shoulder of the

continuation of Sycamore Road (itself an oiled private road maintained by the landowner). The Pilot In-Lieu Project is expected to conserve an average annual water supply of 371 acre-feet (AF) while providing multiple local and statewide benefits and being a valuable part of the District's water supply portfolio. The Pilot Project would give the District the flexibility to optimally manage its water supplies and facilities. In "dry periods" (or periods of insufficient water supplies for existing District surface water service area customers) when the vineyards are not using the wells, the previously banked groundwater could be recovered to the District's canal system via new pipelines shown in Figure 3.

The District's canal, which flows from north to south, has a canal-side turnout (SCA-1) for the Pilot In-lieu Project property that has limited capacity to provide supplemental water supply when the District has water available in excess of its permanent water supply contracts demands. Turnout SCA-1, which currently has a 24-inch control valve and an 18-inch diameter pipe, is proposed to be reconstructed after the valve with a 24-inch diameter pipe to improve surface water delivery into the landowner's existing reservoir system (including proposed filtration and booster pumps) to meet irrigation needs for the entire 1,060-acre property. Proposed Action features would include additional pipelines and canal discharges to allow well water from all seven (7) existing wells to be conveyed into the District's Canal during dry periods.

During Proposed Action construction, one or more staging areas would be established at the Sycamore Spreading Works and/or District Headquarters. The potential staging area at Sycamore Spreading Works would be located near Pond R6P1, and would cover an area of approximately two (2) acres. The potential staging area at the District Headquarters would be located in a gravel lot already used for equipment storage, and would be approximately one (1) acre in size. Following Proposed Action construction, the staging area(s) would be restored.

This project component would improve the District's ability to respond to droughts in the future.

2.2.2 ***Proposed Action Component No. 2 – Sycamore Check Structure Improvements Project***

The Sycamore Check Structure Project would replace, modernize and restore the Sycamore Check Structure original design capacity to 500 cfs with better water measurement, control, and regulation. In addition, an approximately 2.25-mile length of the North Canal concrete liner up stream of the Sycamore Check Structure and an approximately 0.2-mile length of the South Canal concrete liner downstream of the Sycamore Check Structure would be extended up the earthen banks to increase storage and delivery flexibility.

Reconstruction of the District's Sycamore Check Structure (a key component of the District's irrigation distribution system) would restore capacity and improve water regulation of the entire District. The Sycamore Check Structure Improvements would include construction of a modern automated gate structure with overflow-type weir gates (superior in performance to the existing radial gate and structure, which have reached the end of their design life) and a supervisory control and data acquisition (SCADA) system. The Proposed Action would conserve an

additional average annual amount of 20,410 AF, and improve District water regulation and management.

Affected segments of the North and South Canals would be temporarily dewatered in the vicinity of the Sycamore Check Structure using one of the following techniques depending upon projected hydrology and related canal water levels level at the time of construction:

1. At minimal flow, a temporary dam would be installed upstream of the construction site;

2. At medium flow, a pump and pipe bypass network would be installed to divert water around the construction site; or

3. At heavy flow, a temporary bypass would be constructed through Pond R6P1 of the District's Sycamore Spreading Works.

Currently, the existing concrete liner does not reach to the top of the existing canal banks. This sub-project component of the overall Proposed Action would extend the concrete canal liner several feet up to the top of the existing banks of the canal. Some scarifying and re-compaction of the existing bank material could be required to accept the extended concrete liner. Approximately 2.25 miles of the North Canal concrete liner upstream of the Sycamore Check Structure and 0.2 mile of the South Canal concrete liner downstream of the Sycamore Check Structure would be extended. No improvements are proposed for the canal bank roads or the exterior of the canal banks.

2.2.3 ***Proposed Action Component No. 3 – NRCS EQIP Promotion Project***

At past District meetings, the District has provided information to its customers about the U.S. Department of Agriculture's NRCS Environmental Quality Incentives Program (EQIP), which provides financial and technical assistance to implement conservation planning efforts. New promotion efforts would increase the dissemination of information about EQIP to water users, related to groundwater metering, conversions to micro-irrigation (surface and/or sprinkler), improved irrigation management and/or soil-moisture monitoring practices, tail-water return systems, or reservoirs. Implementation of the program is estimated to result in conservation of an additional 1,450 AF annually.

2.2.4 ***Construction Details***

Improvements on private landowner property:

1. Pipeline extensions/construction, duration 30 to 45 days
2. Pipeline discharges to canal, duration 15 to 30 days
3. Turnout improvements, duration 5 to 10 days

Equipment for above-listed improvements:

- 2 excavators (CAT 320; 40,000 lb, 140 HP) for trench excavation and compaction

- 1 backhoe (CAT 426; 85 HP) for general site work
- 1 water truck (4,000 GAL, 350 HP)
- 1 skip loader for general site work
- 2 crew trucks (Ford 550, 400 HP)
- 1 grader (CAT 140G, 40,000 lb, 240 HP)
- Crew size: 1 foreman, 3 operators, 4 laborers
- Pipe and other material deliveries by tractor trailer
- 4 transit mix loads (10 cubic yards each) for miscellaneous concrete

Improvements on District property:

1. Reconstruct Sycamore Check Structure, duration 60 to 90 days

   Equipment for above-listed improvements:

   - 2 excavators (CAT 320; 40,000lb, 140HP) for excavation and compaction
   - 1 Vibratory compactor (CAT 563, 25,000 lb, 150HP)
   - 1 water truck (4,000 GAL, 350 HP)
   - 2 crew trucks (Ford 550, 400 HP)
   - 1 grader (CAT 140G, 40,000 lb, 240 HP)
   - 1 hydraulic rough terrain crane (40 ton, 150 HP)
   - Crew size: 1 foreman, 2 operators, 6 carpenters, 4 laborers
   - Formwork and other material deliveries by tractor trailer
   - 20 transit mix loads of concrete (10 cubic yards each)

2. Raise Canal Liner - Earthwork, Duration 30 days

   Equipment for above-listed improvements:

   - 1 excavator (CAT 320; 40,000lb) for embankment scarifying and compaction
   - 1 water truck (4,000 GAL, 350 HP)
   - 1 grader (CAT 140G, 40,000 lb, 240 HP)
   - 1 owner operator dump trucks (400 HP) for material transport
   - Crew size: 1 foreman, 2 operators

3. Raise Canal Liner - Concrete work (subcontractor), duration 45 days

   Equipment for above-listed improvements:

   - 2 crew trucks
   - Crew size: 1 foreman, 2 carpenters, 4 laborers
   - 27 transit mix loads of concrete (10 cubic yards each)

Assumptions:

1. Work would be performed over a total of three (3) to four (4) months (90 to 120 calendar days)
2. Work would proceed more or less simultaneously, depending on crew size
3. Equipment would be shared between crews and tasks as much as possible
4. All improvements would be done by the same crew.
5. Liner extension concrete work may be sub-contracted. A maximum of approximately three (3) miles of canal would need liner raised (on both sides)
6. Pipeline extension alignments would be selected to minimize any roadway resurfacing

Improvements Partially on Private Landowner Property and Partially on District Property:

1. Well Discharge Improvements, duration 30 to 45 days

Equipment for above-listed improvements:

- 1 excavator (CAT 320; 40,000 lb, 140 HP) for trench excavation and compaction
- 1 backhoe (CAT 426; 85 HP) for general site work
- 1 water truck (4,000 GAL, 350 HP)
- 2 crew trucks (Ford 550, 400 HP)
- Crew size, 1 foreman, 2 operators, 4 laborers
- Pipe and other material deliveries by tractor trailer
- 4 transit mix loads (10 cubic yards each) for miscellaneous concrete

2.2.5 *Proposed Action Environmental Protection Features*

Table 1 below displays the environmental protection features of the Proposed Action to reduce environmental consequences for biological and cultural resources associated with the Proposed Action. Environmental consequences for biological and cultural resource areas assume the features specified would be fully implemented.

Table 1 – Proposed Action Environmental Protection Features

Environmental Issue	Proposed Action Environmental Protection Feature
Biological Resources (American badgers)	**BIO - 1**. The following measures would be implemented to avoid and minimize the potential for project-related mortality of American badgers. A. (Preconstruction Surveys.) A preconstruction survey for American badgers would be conducted by a qualified biologist within 30 days of the onset of construction. Preconstruction surveys would be conducted in all suitable denning habitat of the project site. *(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 would be established around the den and maintained until a qualified biologist has determined that the cubs have dispersed or the den has been abandoned.
Biological Resources (Burrowing Owl)	**BIO - 2.** Prior to the start of construction, the following measures would be implemented, adapted from the *Staff Report on Burrowing Owl Mitigation* (CDFG 1995 and 2012). *A. (Take Avoidance Survey).* A take avoidance survey for burrowing owls would be conducted by a qualified biologist within 30 days of the start of construction. This take avoidance survey would be conducted according to methods described in the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). The survey area would include all suitable habitat within and up to 500 feet outside of project impact areas, where accessible. *B. (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 would be established around active owl nests, or alternate avoidance measures implemented in consultation with CDFW. The buffer areas would be enclosed with temporary fencing to prevent construction equipment and workers from entering the setback area. Buffers would 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.

Environmental Issue	Proposed Action Environmental Protection Feature
	C. (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.
Biological Resources (Kit Fox)	**BIO - 3**. Prior to construction, the following measures adapted from the U.S. Fish and Wildlife Service 2011 *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* would be implemented. *A.* <u>*Pre-construction Surveys*</u>. Pre-construction surveys shall be conducted no less than 14 days and no more than 30 days prior to the start of construction. These surveys would be conducted in accordance with the USFWS Standard Recommendations. The primary objective is to identify kit fox habitat features (e.g. potential dens and refugia) on the project site and evaluate their use by kit foxes through use of remote monitoring techniques such as motion-triggered cameras and tracking medium. If an active kit fox den is detected within or immediately adjacent to the area of work, the USFWS and CDFW shall be contacted immediately. In the event that kit fox or active dens are found on site the following measures would also be incorporated: *B. (Avoidance).* Should an active kit fox den be detected within or immediately adjacent to the area of work, a minimum 50-foot disturbance-free buffer would be established around the den in consultation with the USFWS and CDFW, to be maintained until a qualified biologist has determined that the den is no longer occupied. Known kit fox dens may not be destroyed until they have been vacant for a period of at least three days, as demonstrated by use of motion-triggered cameras or tracking medium, and then only after obtaining take authorization from the USFWS. *C. (Minimization)*. Construction activities shall be carried out in a

Environmental Issue	Proposed Action Environmental Protection Feature
	manner that minimizes disturbance to kit foxes. Minimization measures include, but are not limited to: restriction of project-related vehicle traffic to established roads, construction areas, and other designated areas; inspection and covering of structures (e.g., pipes), as well as installation of escape structures, to prevent the inadvertent entrapment of kit foxes; restriction of rodenticide and herbicide use; and proper disposal of food items and trash. *D.* *(Employee Education Program)*. Prior to the start of construction, the applicant would retain a qualified biologist to conduct one tailgate meeting to train construction staff that would be involved with the project on the San Joaquin kit fox. This training would 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 would include a hand out with all the training information included in it. The project manager would 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. *E.* *(Mortality Reporting)*. The Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW would be notified in writing within three working days in case of the accidental death or injury of a San Joaquin kit fox during project-related activities. Notification must include the date, time, location of the incident or of the finding of a dead or injured animal, and any other pertinent information.
Biological Resources (Migratory Birds)	**BIO - 4**. In order to minimize construction disturbance to migratory bird nests, the applicant would implement one or more of the following measure(s) as necessary, prior to project construction: *A.* *(Avoidance).* If feasible, all construction activities would occur outside of the typical avian nesting season, or between September 1 and January 31, in order to avoid impacts to nesting migratory birds. *B.* (*Pre-construction Surveys*). If construction must occur between February 1 and August 31, a qualified biologist would conduct pre-construction surveys for active migratory bird nests within 30 days of the onset of these activities. The survey would include the proposed work area(s) and surrounding lands within 500 feet, where accessible.

Environmental Issue	Proposed Action Environmental Protection Feature
	C. (*Establish Buffers*). Should any active nests be discovered in or near proposed construction zones, the biologist would identify a suitable construction-free buffer around the nest. This buffer would be identified on the ground with flagging or fencing, and would be maintained until the biologist has determined that the young have fledged.
Cultural	**CUL 1.** (*Late Discovery*) If previously undetected cultural materials are discovered during construction, work in the immediate vicinity should *immediately* cease and be redirected to another area until a qualified archaeologist inspects and evaluates the find. Such finds include, but are not limited to, prehistoric grinding implements, stone tools, soapstone bowls, and ornaments (e.g., beads, pendants) as well as intact building foundations and high concentrations of historical artifacts. Any post-review discoveries would be addressed per 36 CFR part 800.13. If human remains are uncovered, or in any other case where human remains are discovered, the Kern County Coroner is to be notified to arrange their proper treatment and disposition. If the remains are identified—on the basis of archaeological context, age, cultural associations, or biological traits—as those of a Native American, California Health and Safety Code 7050.5 and Public Resource Code 5097.98 require that the coroner notify the NAHC within 24 hours of discovery. The NAHC would then identify the Most Likely Descendant who would be given the opportunity to offer recommendations for the disposition of the remains.

Section 3 Affected Environment and Environmental Consequences

This section provides an overview of the physical environment and existing conditions that could be affected by the Proposed Action consistent with NEPA guidelines. Each resource discussion in this section evaluates the impacts of the Proposed Action Alternative and the No Action Alternative. For purposes of analysis, the No Action Alternative epresents a projection of current conditions and reasonably foreseeable actions to the most reasonable future responses or conditions that could occur during the life of the project without any action alternatives being implemented.

3.1 Water Resources

The District was formed in 1942 to provide a reliable water supply for its landowners for agricultural purposes among other objectives. In order to regulate a highly variable water supply, the District has developed and continues to develop water management programs based on the concept of delivering imported water in years of above average water supplies to 1) spreading ponds for groundwater recharge and/or 2) execute transfers/exchanges with other agencies and entities that can in turn return water at times later in the same year (or in subsequent years) and typically during drought or low allocation years or periods. During below average or dry years or periods, the District extracts (via wells) previously stored groundwater and/or accepts return of water from other agencies to meet its agricultural demands when surface supplies are deficient.

The District's current facilities were primarily constructed in the 1960s and are based on the conjunctive use of surface water imported from the CVP, SWP, Kern River, including other supplies (i.e. flood flows) and groundwater resources that underlie the District. The District owns and operates spreading/percolation/recharge basins and groundwater extraction wells, which are used to supply previously banked groundwater to its landowners within its service area when surface water supplies are deficient. The District facilities (recharge and extraction) are also made available to other water agencies for their utilization through water management programs/agreements on a second priority basis.

The District's sole water supply contract is with Reclamation for 40,000 AF of Class 1 and 311,675 AF of Class 2 from Friant Division CVP supplies. The Class 2 supply comprises the vast majority of its total contract allocation; however, this supply is highly variable depending on availability and hydrology. The District manages this supply by using an underlying groundwater reservoir to regulate water availability and to stabilize water reliability by percolating water through spreading basins in addition to water management programs (i.e. transfers/exchanges) with other water agencies outside its service area. The District takes Friant CVP water from its Intake Canal located at the terminus of the Friant-Kern Canal (FKC) and serves landowners within its district through 45 miles of lined canals and 170 miles of pipeline.

The District has historically made available a portion of its Friant Division CVP water supply to other CVP contractors located on the eastside of the San Joaquin Valley in exchange for alternate CVP supplies originating from the Sacramento-San Joaquin River Delta, diverted and wheeled through the Aqueduct for ultimate delivery to the District. Due to a decrease in supply reliability, cost increases, and water quality concerns, several of these exchanges are no longer feasible to the extent they once were. As a result, it has been necessary for the District to identify and implement additional programs to manage its highly variable CVP water supplies.

The District could also have recirculation water made available to it for delivery from SLR as a result of releases made into the San Joaquin River from Millerton Lake, captured at Mendota Pool or other locations, and subsequently stored through exchange/transfer agreements that were analyzed under a separate EA for recirculation of recaptured interim flows. In addition, the District assists in recirculation of other District's SJRRP allocations so that recirculated interim flows can be greatly increased.

3.1.1 *Affected Environment*

The Proposed Action is located in a land use transition area of Kern County. Lands to the west of the North / South Canal consist of traditional agricultural land uses including crop production and associated uses (i.e. barns, equipment storage, wells, etc.), rural residences, rural roadways and canals and ditches of varied sizes which are used to convey water for irrigation. Lands to the east of the North / South Canal consist of agricultural croplands adjacent to foothill seasonal grasslands.

The Area of Potential Effect is located in the Tulare Lake Hydrologic Region which includes roughly the southern two-thirds of the Central Valley. The Project Site/ Area of Potential Effect (APE) is located in the Kern County Sub-basin which is bounded on the north by the Kern County line and the Tule Groundwater sub-basin, on the east and southeast by granitic bedrock of the Sierra Nevada foothills and Tehachapi mountains, and on the southwest and west by the marine sediments of the San Emigdio Mountains and Coast Ranges. Principal rivers and streams include Kern River and Poso Creek. Active faults include the Edison, Pond-Poso, and White Wolf faults. Average precipitation values range from five (5) inches at the sub-basin interior to 9 to 13 inches at the sub-basin margins to the east, south, and west[1].

3.1.2 *Environmental Consequences*

No Action Alternative

Under the No Action Alternative, Reclamation would not provide the grant funds and the District would not construct the Proposed Action with federal funds.

[1] http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/5-22.14.pdf

If No Action is taken, groundwater levels in the area could continue to decline contributing to potential water quality and subsidence issues in the region. District and landowner costs could increase thereby hurting agricultural users (who are the main employers in the area) and creating inferior conditions for disadvantaged communities. A declining water table could result in more acres being fallow, causing associated economic impacts to the agricultural enterprises and either a reduction of the quantity of product to going to market, an increase in product prices, or both. More fallowed land could result in increased wind and water erosion and further degradation of air and water quality.

Proposed Action

The Proposed Action would increase groundwater recharge by efficiently utilizing surface water when available. Therefore, the Proposed Action would not result in a net deficit in aquifer volume or lowering of the groundwater table, but rather would raise water volumes in the aquifer and raise the groundwater table. The Proposed Action would not require extensive grading. All pipeline related project elements would be constructed and operated underground within disturbed rights-of-way and agricultural access roads. All pipeline related trenches would be backfilled and compacted with the excavated dirt resulting in no excess loose soil. The Proposed Action elements associated with the North / South Canal would be constructed within the existing disturbed canal operations area. Two project-related pipelines would cross under an earthen channel in order to connect to the North / South Canal. However, construction and operation would not alter the course of any flows within the channel in a manner which would result in substantial erosion or siltation on- or off-site.

3.2 Biological Resources

3.2.1 ***Affected Environment***

The *California Natural Diversity Data Base* (CDFW 2014a) 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*). USFWS's *Endangered Species List Generator* (USFWS 2014) was queried for federally-listed species with the potential to be affected by projects in the same nine quadrangles. These species, and their potential to occur on the Project site, are listed in Table 2, Federal and State Special Status Species That Could Potentially Occur Within Affected Area, 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 2014b), *Special Vascular Plants, Bryophytes, and Lichens* (CDFW 2014c), and *The California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2014).

Table 2 - Federal and State Special Status Species That Could Potentially Occur Within Affected Area

Species	Status[2]	Potential to Occur in Study Area[3]
Plants		
Bakersfield Smallscale *(Atriplex tularensis)*	CECNPS 1A	**Absent.** Past and ongoing disturbance of the site has created conditions unsuitable for this plant species.
California Jewel-Flower *(Caulanthus californicus)*	FE, CE, CNPS 1B	**Absent.** Past and ongoing disturbance of the site has created conditions unsuitable for this plant species.
Kern Mallow *(Eremalche kernensis)*	FE, CNPS 1B	**Absent.** Past and ongoing disturbance of the site has created conditions unsuitable for this plant species.
Striped Adobe Lily *(Fritillaria striata)*	CT CNPS 1B	**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	**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	**Absent.** Past and ongoing disturbance of the site has created conditions unsuitable for this plant species.
Horn's Milk Vetch *(Astagalus hornii var. hornii)*	CNPS 1B	**Absent.** Past and ongoing disturbance of the site has created conditions unsuitable for this plant species.
Lemmon's Jewelflower *(Caulanthus lemmonii)*	CNPS 1B	**Absent.** Past and ongoing disturbance of the site has created conditions unsuitable for this plant species.
Hispid Salty Bird's Beak *(Chloropyron molle ssp. hispidum)*	CNPS 1B	**Absent.** Past and ongoing disturbance of the site has created conditions unsuitable for this plant species, and suitable soils are absent.
Vasek's Clarkia *(Clarkia tembloriensis ssp. calientensis)*	CNPS 1B	**Absent.** The site is situated outside of this species' elevational range, and is otherwise unsuitable for this species due to intensive human uses.

Species	Status[2]	Potential to Occur in Study Area[3]
Tejon Poppy *(Eschscholzia lemmonii ssp. kernensis)*	CNPS 1B.1	**Absent.** Past and ongoing disturbance of the site has created conditions unsuitable for this plant species.
Pale-yellow Layia *(Layia heterotricha)*	CNPS 1B	**Absent.** Suitable soils and habitats for this species are absent from the Project site, and the site is situated outside of the species' elevation range.
Comanche Point Layia *(Layia leucopappa)*	CNPS 1B	**Absent.** Past and ongoing disturbance of the site has created conditions unsuitable for this plant species.
Munz's Tidy-tips *(Layia munzii)*	CNPS 1B.2	**Absent.** Sloping topography required by this species is absent from the Project site, and the site is otherwise unsuitable due to intensive human uses.
Madera Leptosiphon *(Leptosiphon serrulatus)*	CNPS 1B.2	**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)*		**Absent.** Suitable soils and habitat for this species are absent from the Project site.
Piute Mountains Navarretia *(Navarretia setiloba)*	CNPS 1B	**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.
ANIMALS		
Vernal Pool Fairy Shrimp *(Branchinecta lynchi)*	FT	**Absent.** Vernal pools are absent from the Project site and immediately adjacent lands.
Valley Elderberry Longhorn Beetle *(Desmocerus californicus dimorphus)*	FT	**Absent.** The newly revised range of this species by the USFWS does not include Kern County.
Delta Smelt *(Hypomesus transpacificus)*	FT	**Absent.** The Project site is situated well outside of the known distribution of this species.

Species	Status[2]	Potential to Occur in Study Area[3]
Blunt-Nosed Leopard Lizard *(BNLL)* *(Gambelia sila)*	FE, CE, CFP	**Unlikely.** All habitats of the Project site are intensively maintained and unsuitable for the BNLL. Surrounding lands consist of orchards, vineyards, agricultural fields, and the District 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	**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	**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	**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 on the Tejon Ranch approximately 17 miles southeast of the site; the report was made in 1976.
Southwestern Willow Flycatcher *(Empidonax traillii extimus)*	FE	**Absent.** Riparian habitat is absent from the Project site and surrounding lands.
Least Bell's Vireo *(Vireo bellii ssp. pusillus)*	FE, CE	**Absent.** Riparian habitat is absent from the Project site and surrounding lands.

Species	Status[2]	Potential to Occur in Study Area[3]
Tipton Kangaroo Rat *(Dipodomys nitratoides nitratoides)*	FE	**Absent.** The Project site offers unsuitable habitat for this species due to intensive human uses of the site. Agricultural lands surrounding much of the Project site are also unsuitable for this species. The closest occurrences of Tipton kangaroo rat are approximately 7.5 miles west of the site, recorded in the 1980s and 1990s. A full protocol San Joaquin kangaroo rat trapping survey was performed at the Project site on May 11-16, 2016 at the request of USFWS by a qualified biologist. No Tipton kangaroo rats, a sub-species of the San Joaquin kangaroo rats, were captured. See Appendix A.
San Joaquin Kit Fox *(Vulpes macrotis mutica)*	FE	**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 annual grassland habitat approximately ½ mile southeast of Well No. 3.
Western Spadefoot *(Spea hammondii)*	CSC	**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.

Species	Status[2]	Potential to Occur in Study Area[3]
Yellow-blotched Salamander *(Ensatina eschscholtzii croceator)*	CSC	**Absent.** Habitat required by this species is absent from the Project site.
San Joaquin Coachwhip *(Coluber flagellum ruddocki)*	CSC	**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	**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.
Burrowing Owl *(Athene cunicularia)*	CSC	**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	**Absent.** Breeding and foraging habitat are absent from the Project site.

Species	Status[2]	Potential to Occur in Study Area[3]
Purple Martin *(Progne subis)*	CSC	**Absent.** Habitats suitable for this species are absent from the Project site.
Tricolored Blackbird *(Agelaius tricolor)*	CSC	**Absent.** Breeding and foraging habitat are absent from the Project site.
Tulare Grasshopper Mouse *(Onychomys torridus)*	CSC	**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 represent current populations of this species.
Western Mastiff Bat *(Eumops perotis ssp. californicus)*	CSC	**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	**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.
American Badger *(Taxidea taxus)*	CSC	**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.

[2] Status Codes

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
FPE	Federally Endangered (Proposed)	CR	California Rare
FC	Federal Candidate	CFP	California Protected
		CSC	California Species of Special Concern

CNPS California Native Plant Society Listings:
- 1A Plants Presumed Extinct in California
- 1B Plants Rare, Threatened, or Endangered in California and elsewhere
- 2 Plants Rare, Threatened, or Endangered in California, but more common elsewhere
- 3 Plants about which we need more information – a review list
- 4 Plants of limited distribution – a watch list

[3] Occurrence Designation Explanations

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.

The Proposed Action site contains agricultural land, the District North and South Canals and associated infrastructure, an earthen channel, a portion of the Sycamore Spreading Works, a portion of the District Headquarters property, and paved and unpaved access roads. Five habitat/land use types were observed on the Project site and nearby areas during the November 2014 biological field survey.

3.2.2 ***Endangered, Threatened, or Special Status Plant and Animal Species Meriting Further Discussion***

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

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 over-story 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.

The Proposed Action site contains 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 Proposed Action 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 Proposed Action site. Based on the documented presence of badgers in the APE vicinity, it is likely that badgers pass through the site from time to time. Badgers may also dig sleeping dens in the 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.

Although habitats of the Proposed Action site are marginal to unsuitable for the American badger, badgers may occasionally pass through the site, and possibly den along the 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 adverse environmental impact of the Action.

Based on the recommendation of Appendix A – Biological Evaluation / Biological Assessment, the District would incorporate the environmental protection measures for American Badgers as part of the Proposed Action Environmental Protection Features. These Proposed Action Features are listed below:

Table 3 - Proposed Action American Badger Protection Features

Environmental Issue	Proposed Action American Badger Protection Features
Protection of American Badgers	**BIO - 1.** The following measures would be implemented to avoid and minimize the potential for Project-related mortality of American badgers. *Preconstruction Surveys.* A preconstruction survey for American badgers would be conducted by a qualified biologist within 30 days of the onset of construction. Preconstruction surveys would be conducted in all suitable denning habitat of the Project site. If an active sleeping den be identified during the preconstruction surveys the following measures would also be incorporated: *(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 would be established around the den and maintained until a qualified biologist has determined that the cubs have dispersed or the den has been abandoned.

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

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. 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. 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.

The Proposed Action site contains, 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.

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

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.

The Proposed Action 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 roads and earthen upper banks of the North and South Canals and the flood channel. If burrowing owls were to occupy burrows of the Proposed Action 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 adverse environmental impact of the Project as defined by NEPA and CEQA.

Burrowing owls could theoretically roost or nest in those portions of the Proposed Action 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 their roads. The Proposed Action site does not offer suitable foraging habitat for burrowing owl, and the intensively-managed agricultural and industrial lands bordering the Proposed Action 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.

Based on the recommendation of Appendix A – Biological Evaluation / Biological Assessment, the District would incorporate the environmental protection measures for burrowing owl as part of the Proposed Action Environmental Protection Features. These Proposed Action Features are listed below:

Table 4 - Proposed Action Burrowing Owl Protection Features

Environmental Issue	Proposed Action Burrowing Owl Protection Features
Protection of Burrowing Owl	**BIO – 2.** Prior to the start of construction, the following measures would be implemented, adapted from the Staff Report on Burrowing Owl Mitigation (CDFG 1995 and 2012). *(Take Avoidance Survey).* A take avoidance survey for burrowing owls would be conducted by a qualified biologist within 30 days of the start of construction. This take avoidance survey would be conducted according to methods described in the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). The survey area would include all suitable habitat within and up to 500 feet outside of Project impact areas, where accessible. *(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 would be established around active owl nests, or alternate avoidance measures implemented in consultation with CDFW. The buffer areas would be enclosed with temporary fencing to prevent construction equipment and workers from entering the setback area. Buffers would 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. *(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.

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

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 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.

The Proposed Action site contains 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 Proposed Action site, and is 350 feet outside of Proposed Action 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 Proposed Action vicinity. In addition to the 2012 detection, there are eleven other CNDDB occurrences of kit fox within a ten-mile radius of the Proposed Action site. Based on the documented presence of kit fox in the Proposed Action 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 Proposed Action site at the time of the field survey.

As discussed, the Proposed Action 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 Proposed Action site from time to time.

Although no burrows of suitable dimensions for the San Joaquin kit fox were observed on the Proposed Action 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 District canals and the flood channel. However, the highly maintained areas of the Proposed Action site are unlikely to be used for natal denning by this species.

If one or more kit foxes were present on the Proposed Action site at the time of construction, then they would be at risk of construction-related mortality.

Based on the recommendation of Appendix A – Biological Evaluation / Biological Assessment, the District would incorporate the environmental protection measures for San Joaquin kit fox as part of the Proposed Action Environmental Protection Features. These Proposed Action Features are listed below:

Table 5 - Proposed Action San Joaquin Kit Fox Protection Features

Environmental Issue	Proposed Action San Joaquin Kit Fox Protection Features
Protection of San Joaquin Kit Fox	**BIO -3.** Prior to construction, the following measures adapted from the U.S. Fish and Wildlife Service 2011 *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* (Appendix A – Biological Evaluation / Biological Assessment) would be implemented. *Pre-construction Surveys*. Pre-construction surveys shall be conducted no less than 14 days and no more than 30 days prior to the start of construction. These surveys would be conducted in accordance with the USFWS Standard Recommendations. The primary objective is to identify kit fox habitat features (e.g. potential dens and refugia) on the Project site and evaluate their use by kit foxes through use of remote monitoring techniques such as motion-triggered cameras and tracking medium. If an active kit fox den is detected within or immediately adjacent to the area of work, the USFWS and CDFW shall be contacted immediately. *Avoidance.* Should an active kit fox den be detected within or immediately adjacent to the area of work, a minimum 50-foot disturbance-free buffer would be established around the den in consultation with the USFWS and CDFW, to be maintained until a qualified biologist has determined that the den is no longer occupied. Known kit fox dens may not be destroyed until they have been vacant for a period of at least three days, as demonstrated by use of motion-triggered cameras or tracking medium, and then only after obtaining take authorization from the USFWS. *(Minimization).* Construction activities shall be carried out in a manner that minimizes disturbance to kit foxes. Minimization measures include, but are not limited to: restriction of Project-related vehicle traffic to established roads, construction areas, and other

Environmental Issue	Proposed Action San Joaquin Kit Fox Protection Features
	designated areas; inspection and covering of structures (e.g., pipes), as well as installation of escape structures, to prevent the inadvertent entrapment of kit foxes; restriction of rodenticide and herbicide use; and proper disposal of food items and trash. *(Employee Education Program).* Prior to the start of construction, the applicant would retain a qualified biologist to conduct one tailgate meeting to train construction staff that would be involved with the Project on the San Joaquin kit fox. This training would 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 would include a hand out with all of the training information included in it. The Project manager would use this handout to train any additional construction staffs that were not in attendance at the first meeting, prior to starting work on the Project. *(Mortality Reporting).* The Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW would be notified in writing within three working days in case of the accidental death or injury of a San Joaquin kit fox during Project-related activities. Notification must include the date, time, location of the incident or of the finding of a dead or injured animal, and any other pertinent information.

Migratory Birds:

Habitats of the Proposed Action site are generally not suitable for avian nesting, owing to regular maintenance associated with vineyard operation and the District 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 Proposed Action 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 District 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 Proposed Action site at the time of construction, they would have the potential to be injured or killed by Proposed Action activities. In addition to direct "take" of nesting birds, Proposed Action activities could disturb birds nesting within or adjacent to work areas such that they would abandon their nests. Proposed Action activities that adversely affect the nesting success of raptors and migratory birds or result in the mortality of individual birds constitute a violation of state and federal laws and represent a potentially significant adverse environmental impact of the Action as defined by NEPA.

Based on the recommendation of Appendix A – Biological Evaluation / Biological Assessment, the District would incorporate the environmental protection measures related to migratory birds as part of the Proposed Action Environmental Protection Features. These Proposed Action Features are listed below:

Table 6 - Proposed Action Migratory Birds Protection Features

Environmental Issue	Proposed Action Migratory Bird Protection Features
Protection of Migratory Birds	**BIO - 4.** In order to minimize construction disturbance to migratory bird nests, the applicant would implement one or more of the following measure(s) as necessary, prior to Project construction: *Avoidance.* If feasible, all construction activities would occur outside of the typical avian nesting season, or between September 1 and January 31, in order to avoid impacts to nesting migratory birds. (*Pre-construction Surveys*). If construction must occur between February 1 and August 31, a qualified biologist would conduct pre-construction surveys for active migratory bird nests within 30 days of the onset of these activities. The survey would include the proposed work area(s) and surrounding lands within 500 feet, where accessible. (*Establish Buffers*). Should any active nests be discovered in or near proposed construction zones, the biologist would identify a suitable construction-free buffer around the nest. This buffer would be identified on the ground with flagging or fencing, and would be maintained until the biologist has determined that the young have fledged.

3.2.3 *Environmental Consequences*

No Action Alternative

No Impact. Under the No Action alternative, there would be no impacts on biological resources because the proposed action would not be implemented with federal funds. Conditions related to biological resources would remain the same as existing conditions.

Proposed Action

The Proposed Area of Potential Effect contains agricultural land, the District North and South Canals and associated infrastructure, the earthen channel, a portion of the Sycamore Spreading Works, a portion of the District Headquarters property, and paved and unpaved access roads. Any native habitats once present on the Area of Potential Effect have been heavily altered by human enterprise such that the site no longer provides suitable habitat for any locally occurring special status plant species; hence, the Proposed Action would not impact special status plants.

However, construction during the nesting season has a small potential to result in disturbance to nesting Swainson's hawks such that nest failure may result. Mitigation measures to reduce or eliminate direct and indirect impacts to nesting Swainson's hawks include avoidance of project

construction during the nesting season, and preconstruction surveys and buffers around active nests if construction activity is to occur within the nesting season (see Attachment B).
The Proposed Action may also result in impacts to nesting birds protected under the federal Migratory Bird Treaty Act. Birds nesting on or adjacent to the project site have the potential to be killed or disturbed by construction activities. Preconstruction surveys and avoidance, should active nests be found, would avoid and reduce impacts to nesting birds.

Preconstruction surveys and avoidance and minimization measures consistent with the USFWS *Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* would reduce and avoid the potential for impacts to San Joaquin Kit Fox (see Attachment B).

The Proposed Action would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species with implementation of the Proposed Action Environmental Protection Features, described above and in Section 2.2.1.

3.3 Land Use

3.3.1 ***Affected Environment***

The Proposed Action would be located approximately two miles east of the City of Arvin, within the District. The District is located in Central Kern County, California. The immediate area surrounding the Area of Potential Effect consists primarily of agriculturally productive lands, associated agricultural-support facilities, and scattered rural residences. A variety of water conveyance facilities exist within the Proposed Action area including canals, channels, reservoirs, wells, pump stations, pipelines, and associated appurtenances. Properties within the immediate vicinity are designated as Agriculture in the Kern County General Plan and zoned A-1 by the Kern County Zoning Code.

3.3.2 ***Environmental Consequences***

No Action Alternative
Under the No Action Alternative, there would be no impacts to land use and planning. Conditions related to land use and planning would remain the same whether or not the Proposed Action is taken.

Proposed Action
All pipeline-related Action elements would be constructed and operated underground within disturbed rights-of-way and agricultural access roads. The Proposed Action elements associated with the North / South Canal would be constructed within the existing disturbed canal operations area. Additionally, the Proposed Action would support surrounding agricultural uses by ensuring the efficient delivery and use of irrigation water. Therefore, lands designated in the Department of Conservation's Farmland Mapping and Monitoring Project would not be adversely impacted.

Finally, no lands within the Area of Potential Effect are subject to a Williamson Act contract or designated as forest or timberland. Therefore, no adverse impacts would occur.

3.4 Cultural Resources

A cultural resource is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation that outlines the Federal Government's responsibility to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (NRHP). Those resources that are on or eligible for inclusion in the NRHP are referred to as historic properties. For Federal projects, cultural resource significance can be evaluated in terms of eligibility for listing in the NRHP.

The Section 106 process is outlined in the Federal regulations at 36 Code of Federal Regulations (CFR) Part 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking would have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action to affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that APE, determine the effect that the undertaking would have on historic properties, and consult with the State Historic Preservation Officer (SHPO), to seek concurrence on Reclamation's findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties.

3.4.1 ***Affected Environment***

The study area, or APE, includes the proposed water pipelines, the Sycamore Check Structure, and an approximately 2.3-mile segment of the Arvin-Edison North Canal. Project design changes following the completion of the pedestrian survey excluded the South Canal from the APE; however, for this report the survey coverage and findings for the South Canal are included in the discussion.

Following the inventory, identified cultural resources were evaluated for significance. To be eligible for federal and state registers, a resource must possess both significance and integrity, which refers to a resource's capacity to convey its significance. Although the NRHP and CRHR significance criteria are quite similar, the former is typically afforded precedence, mainly because cultural resources eligible for the NRHP are also eligible for inclusion in the CRHR, but not necessarily vice-versa (California Public Resources Code [PRC] 5024.1[c]). If eligible cultural resources (i.e., historic properties or historical resources) exist within the APE, they are subsequently evaluated for project effects/impacts. Eligibility and proximity to the project do not, by themselves, constitute an adverse effect/significant impact to an important cultural

resource but must be demonstrated. In functional terms, a project affects/impacts a historic property/historical resource if it compromises the property's integrity or somehow depreciates its significant qualities.

The final step in the Section 106 and CEQA processes is the treatment/mitigation of adverse effects/significant impacts on historic properties/historical resources. This may be accomplished by modifying the project design to avoid adverse effects/significant impacts or, alternatively, by implementing measures that compensate for these effects/impacts.

Æ Senior Archaeologist Jay Lloyd (M.A.), a Registered Professional Archaeologist (RPA), served as project manager, providing technical and administrative oversight for all aspects of the project. Æ Architectural Historian/Historical Archaeologist Josh Smallwood (M.A., RPA) conducted the pedestrian survey and archival and background research, and prepared the NRHP/CRHR evaluation for the built-environment resource within the APE. The historical overview and resource evaluation was reviewed by Victoria Smith (M.A.), Æ Senior Architectural Historian and Historic Preservation Program Manager. Æ Associate Archaeologist Katie Asselin (M.A.) assisted with the preparation of the technical report. Résumés for key personnel are provided in Appendix C.

The archaeological work documented in this report was carried out to satisfy the requirements of both CEQA and Section 106 of the NHPA, and the results are presented in accordance with *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format* (Office of Historic Preservation 1990). A copy of this report and the associated cultural resource records would be transmitted to the Southern San Joaquin Valley Information Center at California State University, Bakersfield for inclusion in the California Historical Resources Information System. Field notes and photographs are on file at Æ's Fresno and Hemet offices. (Appendix C).

3.4.2 ***Environmental Consequences***

No Action Alternative

Under the No Action alternative, there would be no impacts on cultural resources because the Proposed Action would not be implemented with federal funds. In addition, the no action alternative would result in Reclamation not implementing the federal action. As a result, Reclamation would not have a Federal action and would not have an undertaking requiring compliance with NHPA and Section 106. Conditions would remain the same and there would be no impacts from this Proposed Action.

Proposed Action

The District proposes to make a number of improvements as part of this Proposed Action. Specifically, the District would complete two subcomponents of the Action, the Pilot In-lieu and Sycamore Check Improvement projects, which include construction of a pipeline network to and from the Arvin-Edison North Canal, improvements to the Sycamore Check Structure, a temporary bypass to divert water around the check structure during construction, and integration of a private landowner's existing irrigation facilities and extraction wells into the District irrigation distribution system. To meet CEQA and Section 106 requirements, Applied

Earthworks, Inc. conducted a background review, Native American outreach, and field survey to identify cultural resources within a predefined study area that more or less corresponds to the project area. The study area—called the Area of Potential Effects (APE) in federal contexts (36 CFR 800.16[d])—would be large enough to account for direct and indirect effects to potentially significant historic properties, however none were found to be present. Project components include new pipelines that would intersect the existing irrigation system as well as a segment of the North Canal and the Sycamore Check Structure. The APE for the Project at the time of this study measured 60 feet wide and was intended to encompass a larger area than required by the Project to accommodate minor spatial adjustments[4]. The APE includes the proposed water pipelines, the Sycamore Check Structure, and an approximately 2.3-mile segment of the Arvin-Edison North Canal. Project design changes following the completion of the pedestrian survey excluded the South Canal from the APE; however, for this report the survey coverage and findings for the South Canal are included in the discussion[5].

Following the inventory, identified cultural resources were evaluated for significance. In order to be eligible for federal and state registers, a resource must possess both significance and integrity, which refers to a resource's capacity to convey its significance. Although the NRHP and CRHR significance criteria are quite similar, the former is typically afforded precedence, mainly because cultural resources eligible for the NRHP are also eligible for inclusion in the CRHR, but not necessarily vice-versa (California Public Resources Code [PRC] 5024.1[c]). If eligible cultural resources (i.e., historic properties or historical resources) exist within the APE, they are subsequently evaluated for project effects/impacts. Eligibility and proximity to the project do not, by themselves, constitute an adverse effect/significant impact to an important cultural resource but must be demonstrated. In functional terms, a project affects/impacts a historic property/historical resource if it compromises the property's integrity or somehow depreciates its significant qualities[6].

On behalf of the District, Provost and Pritchard Consulting Group retained Æ to assist in the identification of historic properties for this undertaking. Identification included a comprehensive records search completed at the California Historical Resources Information System through the Southern San Joaquin Valley Information Center. 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. For evaluative purposes, the entire District 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 recommended 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

[4] Appendix D, Cultural Resources Survey and Evaluation for the AEWSD Water Conservation and Efficiency Project, Page 1.
[5] Ibid. Page 5.
[6] Ibid.

individual resource or as a contributor to the larger District water delivery, recharge, and storage system.

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 would work to resolve them and notify your office as appropriate.

Based on the information provided above, Reclamation determined that the Arvin-Edison Canal System (North and South Canals and Sycamore Check Structure) is not eligible for the National Register under any criteria. In addition, Reclamation reached a finding of no historic properties affected for the proposed undertaking. Reclamation consulted with the California SHPO s on the above findings and received concurrence on December 4, 2015.

Although no other known cultural resources were identified in the survey, there would be a potentially significant impact if historical resources were uncovered during Project construction. Based on the recommendation of Appendix C, the District would incorporate the environmental protection measures related to inadvertent discovery during construction of cultural resources as part of the Proposed Action Environmental Protection Features. These Proposed Action Features are listed in Table 7 below:

Table 7 - Proposed Action Inadvertent Resource or Human Remains Discovery Protection Features

Environmental Issue	Proposed Action Cultural Resource Protection Features
Cultural	**CUL – 1.** Should previously undetected cultural materials be inadvertently discovered during construction, work in the immediate vicinity should immediately cease and be redirected to another area until a qualified archaeologist inspects and evaluates the find. Such finds include, but are not limited to, prehistoric grinding implements, stone tools, soapstone bowls, and ornaments (e.g., beads, pendants) as well as intact building foundations and high concentrations of historical artifacts. Any post review discoveries would be addressed per 36 CFR part 800.13. If human remains are uncovered, or in any other case where human remains are discovered, the Kern County Coroner is to be notified to arrange their proper treatment and disposition. If the remains are identified—on the basis of archaeological context, age, cultural associations, or biological traits—as those of a Native American, California Health and Safety Code 7050.5 and Public Resource Code 5097.98 require that the coroner notify the NAHC within 24 hours of discovery. The NAHC would then identify the Most Likely Descendant who would be given the opportunity to offer recommendations for the disposition of the remains.

3.5 Indian Trust Assets

Indian Trust Assets (ITA) are legal interests in assets that are held in trust by the United States (U.S.) for federally recognized Indian tribes or individuals. The trust relationship usually stems from a treaty, executive order, or act of Congress. The Secretary of the Interior is the trustee for the U.S. on behalf of federally recognized Indian tribes. "Assets" are anything owned that holds monetary value. "Legal interests" means there is a property interest for which there is a legal remedy, such as compensation or injunction, if there is improper interference. ITAs cannot be sold, leased or otherwise alienated without the U.S. approval. "Assets" can be real property, physical assets, or intangible property rights, such as a lease, or right to use something; which may include lands, minerals and natural resources in addition to hunting, fishing, and water rights. Indian reservations, rancherias, and public domain allotments are examples of lands that are often considered trust assets. In some cases, ITAs may be located off trust land. Reclamation shares the Indian Trust responsibility with all other agencies of the Executive Branch to protect and maintain ITAs reserved by or granted to Indian tribes, or Indian individuals by treaty, statute, or Executive Order.

3.5.1 *Affected Environment*

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

3.5.2 *Environmental Consequences*

No Action Alternative

Under the No Action Alternative, there would be no impacts to ITAs as there would be no ground-disturbing activities and conditions would remain the same as existing conditions.

Proposed Action

The Proposed Action would not affect any ITAs as there are no Indian reservations, rancherias, or allotments in the project area.

3.6 Indian Sacred Sites

Executive Order 13007 provides that in managing Federal lands, each Federal agency with statutory or administrative responsibility for management of Federal lands would, to the extent practicable and as permitted by law, accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and avoid adversely affecting the physical integrity of such sacred sites.

3.6.1 *Affected Environment*

The Proposed Action is not on Federal land.

3.6.2 *Environmental Consequences*

No Action Alternative

Under the No Action Alternative, there would be no impacts to Indian sacred sites since conditions would remain the same as existing conditions.

Proposed Action

The Proposed Action is not on federal land and therefore would not prohibit access to and ceremonial use of Indian sacred sites on federal land.

3.7 Air Quality

3.7.1 ***Affected Environment***

The Proposed Action lies within the San Joaquin Valley Air Basin (SJVAB), the second largest air basin in the State. Air basins share a common "air shed", the boundaries of which are defined by surrounding topography. Although mixing between adjacent air basins inevitably occurs, air quality conditions are relatively uniform within a given air basin. The San Joaquin Valley experiences episodes of poor atmospheric mixing caused by inversion layers formed when temperature increases with elevation above ground, or when a mass of warm, dry air settles over a mass of cooler air near the ground.

Despite years of improvements, the SJVAB does not meet some State and Federal health-based air quality standards. To protect health, the San Joaquin Valley Air Pollution Control District (SJVAPCD) is required by Federal law to adopt stringent control measures to reduce emissions. On November 30, 1993, the Environmental Protection Agency (EPA) promulgated final general conformity regulations at 40 CFR 93 Subpart B for all federal activities except those covered under transportation conformity. The general conformity regulations apply to a proposed Federal action in a non-attainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutant caused by a proposed action equal or exceed certain emissions thresholds, thus requiring the Federal agency to make a conformity determination. Table 8 below presents the emissions thresholds and attainment status covering the project location's overlying air basin.

Table 8 - Air Basin Attainment Status and Emissions Thresholds for Federal Conformity Determinations

Pollutant	Federal Attainment Status[a]	(tons/year)[b]
Volatile organic compounds (VOC) (as an ozone precursor)	Nonattainment/Serious (8-hour ozone)	50
Nitrogen oxides (NO_x) (as an ozone precursor)	Attainment Maintenance/ Unclassified	100
Inhalable particulate matter (PM_{10})	Attainment	100
Carbon monoxide (CO)	Attainment Maintenance/ Unclassified	100

a San Joaquin Valley Air Resources Control Board.

b Federal level conformity determination thresholds pursuant to 40 CFR 93.153

Proposed Action operations would not contribute to criteria pollutant emissions; however, emissions would be associated with construction. Construction of the Proposed Action would be accomplished with scrapers, long-boom excavators, graders, loaders, dump trucks, hauling trucks and water trucks. Construction of the Proposed Action would occur over a 4-month period.

3.7.2 ***Environmental Consequences***

No Action Alternative

Under the No Action Alternative, there would be no impacts to air quality since no construction would take place with federal funds.

Proposed Action

Short-term air quality impacts would be associated with construction, and would generally arise from dust generation (fugitive dust) and operation of construction equipment. Fugitive dust results from land clearing, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. Fugitive dust is a source of airborne particulates, including PM_{10} and $PM_{2.5}$. Large earth-moving equipment, trucks, and other mobile sources powered by diesel or gasoline are also sources of combustion emissions, including nitrogen dioxide (NO_2), CO, VOC, sulfur dioxide, and small amounts of air toxics. Table 9 below provides a summary of the estimated unmitigated emissions during construction.

Table 9 - Estimated Unmitigated Project Emissions during Construction

Pollutant	Estimated Project Emissions[a] (tons)
VOC	0.8
NO_x	6.2
PM_{10}	1.0
CO	3.7

a "SacMetro" Road Construction Emissions Model, Version 7.1.5.1, 2015. See Appendix A.

Comparison of the estimated Proposed Action emissions in Table 10, with the thresholds for Federal conformity determinations in Table 9 indicates that Project emissions are estimated to be substantially below these thresholds. Therefore, a conformity determination is not required.

The Proposed Action operational phase also involves the use of electrically-driven pumps and motors, but reduces overall electrical energy use due to increased use of available surface water and corresponding decreased groundwater pumping ; accordingly, there would not be any direct emissions from the operation of Project facilities/equipment. Accordingly, the Proposed Action would only result in deminims direct emissions during construction and no direct emissions during operations and would therefore not result in adverse impacts to air quality beyond Federal thresholds.

Construction

Construction of a project generates emissions of various air pollutants, including criteria pollutants such as carbon monoxide (CO), ozone precursors such as nitrous oxides (NO_x), and reactive organic gases (ROG) or Volatile Organic Compounds (VOC), particulate matter less than 10 microns in diameter (PM_{10}), and $PM_{2.5}$, as well as sulfur oxides (SO_x). For example, typical emission sources during construction include equipment exhaust and dust from wind erosion, earthmoving activities, and vehicle movements.

To assist in evaluating impacts of project-specific air quality emissions, the SJVAPCD has adopted thresholds of significance for criteria pollutant emissions, expressed in units of tons per year (tons/yr), as presented in below.

Table 10 - SJVAPCD Thresholds of Significance

Pollutant	Construction Emissions (tons/yr)	Operation Emissions (tons/yr)
ROG	10	10
NO_x	10	10
CO	100	100
SO_x	27	27
PM_{10}	15	15
$PM_{2.5}$	15	15

Source: SJVAPCD, May 2012.

As shown in Table 11**,** the Proposed Action has been estimated to emit less than the *de minimus* thresholds for NO_x, ROG/VOC as O_3 precursors, $PM_{2.5}$, and PM_{10}; therefore, a Federal general conformity analysis report is not required.

Linear construction project emissions relating to the proposed pipelines and canal liner raising were estimated the Sac Metro Road Construction Emissions Model Version 7.1.1.5. Emissions relating to the Sycamore Check Structure improvements were estimated using CalEEMOD.

Table 11 - Maximum Unmitigated Pipeline Construction-Related Emissions

Pollutant	Project Construction Emissions (tons/yr)	SJVAPCD Thresholds of Significance (tons/yr)
ROG (VOC)	0.2	10
NO_x	2.0	10
CO	1.0	100
SO_x	Less than 0.001	27
PM_{10}	0.1	15
$PM_{2.5}$	0.1	15

Source: SacMetro Road Construction Emissions Model Version 7.1.1.5

Table 12 - Maximum Unmitigated Canal-liner Construction-Related Emissions

Pollutant	Project Construction Emissions (tons/yr)	SJVAPCD Thresholds of Significance (tons/yr)
ROG (VOC)	0.3	10
NO_x	2.2	10
CO	1.3	100
SO_x	Less than 0.001	27
PM_{10}	0.7	15
$PM_{2.5}$	0.2	15

Source: SacMetro Road Construction Emissions Model Version 7.1.1.5

Table 13 - Maximum Unmitigated Check Structure and Well Discharge Construction-Related Emissions

Pollutant	Project Construction Emissions (tons/yr)	SJVAPCD Thresholds of Significance (tons/yr)
ROG (VOC)	0.3	10
NO_x	2.0	10
CO	1.4	100
SO_x	Less than 0.001	27
PM_{10}	0.2	15
$PM_{2.5}$	0.14	15

Source: CalEEMod, March 2015 (see Appendix A- Air Quality / Greenhouse Gases).

Table 14 - Total Maximum Unmitigated Project Construction-Related Emissions

Pollutant	Project Construction Emissions (tons/yr)	SJVAPCD Thresholds of Significance (tons/yr)
ROG (VOC)	0.8	10
NO_x	6.2	10
CO	3.7	100
SO_x	Less than 0.001	27
PM_{10}	1.0	15
$PM_{2.5}$	0.44	15

Source: CalEEMod, March 2015 (see Appendix B of EA Appendix A- Air Quality / Greenhouse Gases).

Table 15 - Total Maximum Unmitigated Project Operations-Related Emissions

Pollutant	Project Operational Emissions (tons/yr)	SJVAPCD Thresholds of Significance (tons/yr)[1]
ROG (VOC)	0.4	10
NO_x	0.0	10
CO	0.0002	100
SO_x	0.0	27
PM_{10}	0.0	15
$PM_{2.5}$	0.0	15

San Joaquin Valley Air Pollution Control District, Guide for Assessing and Monitoring Air Quality Impacts, Table 2: Air Quality Thresholds of Significance - Criteria Pollutants, page 80.

According to the tables above, construction- and operations-related emissions would not exceed SJVAPCD or Federal thresholds. Additionally, a Fugitive Dust Control Plan is required to be submitted to the Air District to comply with Regulation VIII prior to the initiation of construction.

3.8 Environmental Justice

Environmental justice refers to the fair treatment of peoples of all races, income levels, and cultures with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment implies that no person or group of people should shoulder a disproportionate share of negative impacts resulting from the execution of Federal programs. Executive Order 12898, dated February 11, 1994, establishes the achievement of environmental justice as a Federal agency priority. The memorandum accompanying the order directs heads of departments and agencies to analyze the environmental effects of federal actions, including human health, economic, and social effects when required by NEPA, and to address significant and adverse effects on minority and low-income communities.

3.8.1 ***Affected Environment***

Executive Order 12898 requires each Federal agency to identify and address disproportionately high and adverse human health or environmental effects, including social and economic effects of its program, policies, and activities on minority populations and low-income populations. There are no disadvantaged or minority populations identified within census tracts located in the project area that could be adversely affected by the project. Therefore, the Proposed Action would not have disproportionately negative impacts on low-income or minority individuals or populations within the Project area.

3.8.2 ***Environmental Consequences***

No Action Alternative

Under the No Action Alternative, Reclamation would not help fund construction of the Proposed Action. There are no disadvantaged or minority populations identified within census tracts located in the project area that could be adversely affected if the project is not carried out.

Proposed Action

There are no disadvantaged or minority populations identified within census tracts located in the project area that could be adversely affected by the project. Therefore, the Proposed Action would not have disproportionately negative impacts on low-income or minority individuals or populations within the Project area.

3.9 Cumulative Impacts

According to the Council on Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act, a cumulative impact is defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period (40 CFR 1508.7).

The Proposed Action would involve short-term impacts consisting of emissions during construction and long-term impacts which are attributable to project operations, involving employee trips to the Project site (approximately 30 per year). These emissions would vary annually. The estimated unmitigated overall GHG emission due to temporary Project construction activities is roughly 176 metric tons of carbon dioxide equivalents. The estimated unmitigated overall GHG emissions due to on-going operational activities are roughly 4 metric tons of carbon dioxide equivalents.

In considering when to disclose projected quantitative GHG emissions, CEQ has provided a reference point of 25,000 metric tons of carbon dioxide equivalent emissions on an annual basis below which a GHG emissions quantitative analysis is not warranted unless quantification below that reference point is easily accomplished (Council on Environmental Quality 2014). In California, the California Air Resources Board established a mandatory reporting rule for major sources of GHG (Title 17, California Code of Regulations, Subchapter 10, Article 2, Section 95101(a)(1)(A)(3)) as required by Assembly Bill 32, which established 25,000 metric tons/year as the threshold for mandatory emissions reporting for stationary sources. This California Code of Regulations incorporated by reference certain requirements promulgated by the EPA in its Final Rule on Mandatory Reporting of Greenhouse Gases (Title 40, Code of Federal Regulations, Part 98). However, California did not establish a threshold for cumulative emissions from temporary mobile sources such as construction equipment, which would be lower than permanent stationary sources. The 176 metric tons of carbon dioxide equivalent per year during

construction together, and the 4 metric tons of carbon dioxide equivalent per year during on-going operations anticipated to be emitted from the Proposed Project are both well below 25,000 metric tons/year.

Air quality emissions described in Section 3.7 were compared with two other water conservation projects which would be implemented at about the same time as the Proposed Action, and within the same SJVAB: the North Kern Water Storage District Calloway Canal Lining and Water Delivery Improvements Project; and the Semitropic Water District Groundwater Well Operational Data Acquisition, Solar Power and Lateral Canal Lining Project. There would not be cumulatively significant impacts considering that the estimated 48 trips/day for North Kern and 28 trips/day for Semitropic combined are still far below the threshold of significance (1,673 trips/day) developed by the SJVAPCD's Small Project Analysis Level for assessing air quality impacts (SJVAPC, 2017), and the Proposed Action's construction emissions are also far below the SJVAPCD thresholds. Cumulatively, it is unlikely they would exceed the local thresholds with the possible exception of NOx, considering the Project is estimated to emit 6.2 tons/year of NOx and the threshold is 10 tons/year. However, the project schedules only partially overlap and therefore the potential cumulative increase in NOx would be less. In addition, since the federal *de minimus* thresholds are higher than the SJVAPCD thresholds, there would not be a cumulatively significant impact on air quality and meeting the NAAQS.

Section 4 Consultation and Coordination

4.1 Agencies and Groups Consulted

Arvin-Edison Water Storage District, the U.S. Fish and Wildlife Service, and the California State Historic Preservation Office were consulted in the preparation of this EA.

4.2 Endangered Species Act (16 USC § 1531 et seq.)

Section 7 of the ESA requires Federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species. Reclamation sent a memorandum to the Service on September 14, 2015 requesting concurrence that the Proposed Action is not likely to adversely affect the San Joaquin kit fox. The Service requested additional information on October 7, 2015. Additional information was provided to the Service on May 26, 2016 and July 22, 2016. The Service concurred with Reclamation's request on October 30, 2016. (See Appendix D).

4.3 National Historic Preservation Act (16 USC § 470 et seq.)

The NHPA of 1966, as amended (16 U.S.C. 470 et seq.), requires that federal agencies give the Advisory Council on Historic Preservation an opportunity to comment on the effects of an undertaking on historic properties, properties that are eligible for inclusion in the National Register. The 36 CFR Part 800 regulations implement Section 106 of the NHPA.

Section 106 of the NHPA requires federal agencies to consider the effects of federal undertakings on historic properties, properties determined eligible for inclusion in the National Register. Compliance with NHPA Section 106 follows a series of steps that are designed to identify interested parties, determine the APE, conduct cultural resource inventories, determine if historic properties are present within the APE, and assess effects on any identified historic properties.

Pursuant to NHPA Section 106 Reclamation initiated consultation with the State Historic Preservation Office (SHPO) on December 3, 2015 requesting concurrence with Reclamations' finding of "no adverse effect to historic properties pursuant to 36 CFR § 800.5(b)." SHPO concurred with Reclamations' findings and determination by letter dated March 29, 2016 and indicated the NHPA Section 106 process for this undertaking was thereby completed. (See Appendix C).

4.4 Public Review Period

The EA is being released for a 14-day public review period.

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Section 5 References

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