

Final Environmental Assessment

Shafter-Wasco Irrigation District Kimberlina Groundwater Recharge Basin and Banking Project



September 2016

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to 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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Abbreviations and Acronyms

Act	San Joaquin River Settlement Act
AF	Acre-Feet
AF/yr	Acre-Feet per year
AIE	Archaeological Information Center
BSA	Biological Study Area
CDFW	California Department Fish and Wildlife
CH ₄	Nitrous Oxide
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CFR	Code of Federal Regulations
CRHP	California Register of Historical Places
CVP	Central Valley Project
District	Shafter-Wasco Irrigation District
DWR	Department of Water Resources
EPA	Environmental Protection Agency
F	Fahrenheit
FKC	Friant Kern Canal
FWCA	Fish and Wildlife Coordination Act
GHG	Greenhouse Gases
GSAs	Groundwater Sustainability Agencies
GSPs	Groundwater Sustainability Plans
ITA	Indian Trust Assets
MBTA	Migratory Bird Treaty Act
NAHC	Native American Heritage Commission
NEPA	National Environmental Protection Act
NES	Natural Environmental Study
NHPA	National Historic Preservation Act
NO ²	Nitrogen Dioxide
NO _x	Oxides of Nitrogen
NRDC	Natural Resources Defense Council
PEIS/R	Program Impact Statement/Impact Report
PM	Particulate Matter
PM ₁₀	Particulate Matter Less Than 10 Microns in Diameter
PM _{2.5}	Particulate Matter Less Than 2.5 Microns in Diameter
Reclamation	United States Bureau of Reclamation
ROD	Record of Decision
SGMA	Sustainable Groundwater Management Act
SHPO	State Historic Preservation Office
SJKF	San Joaquin kit fox
SJRRP	San Joaquin River Settlement Program
SJVAB	San Joaquin Valley Air Board
SJVAPCD	San Joaquin Valley Air Pollution Control District
SWID	Shafter-Wasco Irrigation District

SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
US	United States
USFWS	United States Fish and Wildlife Services

Section 1 Introduction

1.1 Background

The Shafter-Wasco Irrigation District

The Shafter-Wasco Irrigation District (District), as shown on Figure 1, is located in the southern area of the San Joaquin Valley generally in the northwest quadrant of Kern County. The District includes approximately 38,766 acres and is situated between the Semitropic and North Kern Water Storage Districts. The District contains and benefits both the incorporated Cities of Wasco and Shafter.

The District was formed in 1937 for the purpose of finding ways to replenish dwindling groundwater supplies within the District's boundaries. From the period of 1921 to 1949 the groundwater table progressively lowered 2.3 feet per year.

With the start of construction of Friant Dam on November 4, 1939 a future source of water for the District became a definite possibility. The District formally applied to the United States Bureau of Reclamation (Reclamation) for Central Valley Project (CVP) water for the 37,528 acres within the District boundaries on February 5, 1946. The District later entered into a water supply contract in 1955 with Reclamation to supply water for the District from the Friant Unit of the Federal Central Valley Project (CVP) by way of the Friant Kern Canal. On February 11, 1955 the Board of Directors of the Shafter-Wasco Irrigation District executed a contract with the United States providing for a water service contract and for construction by Reclamation of an \$8,366,979 distribution system for 50,000 acre-feet of Class I water and 39,600 acre-feet of Class II water.

The groundwater table decline increased to about six feet per year until the mid-1970's, when the CVP and the State Water Project (SWP) were fully operational, and District operations stabilized the decline. The District then entered into several interim surface water renewal contracts under the Central Valley Project Improvement Act of 1992 and other provisions of laws and contracts. In 2001, a long-term 25 year contract was obtained with Reclamation.

From 2012 to 2015, the worst drought on record has hit California and the San Joaquin River watershed. And, compounding drought related issues, regulatory restrictions on Delta exports out of the Sacramento-San Joaquin River Delta to Reclamation CVP and Exchange Contractors, and administration of exchange contracts that underpin CVP Friant contracts resulted in two years (2014 and 2015) of zero water allocations for all Friant contractors. Thus energy consumption has increased and groundwater levels in the District have significantly declined, as landowners in the district and surrounding areas have relied on more and deeper groundwater pumping to make up for surface water allocation deficits.

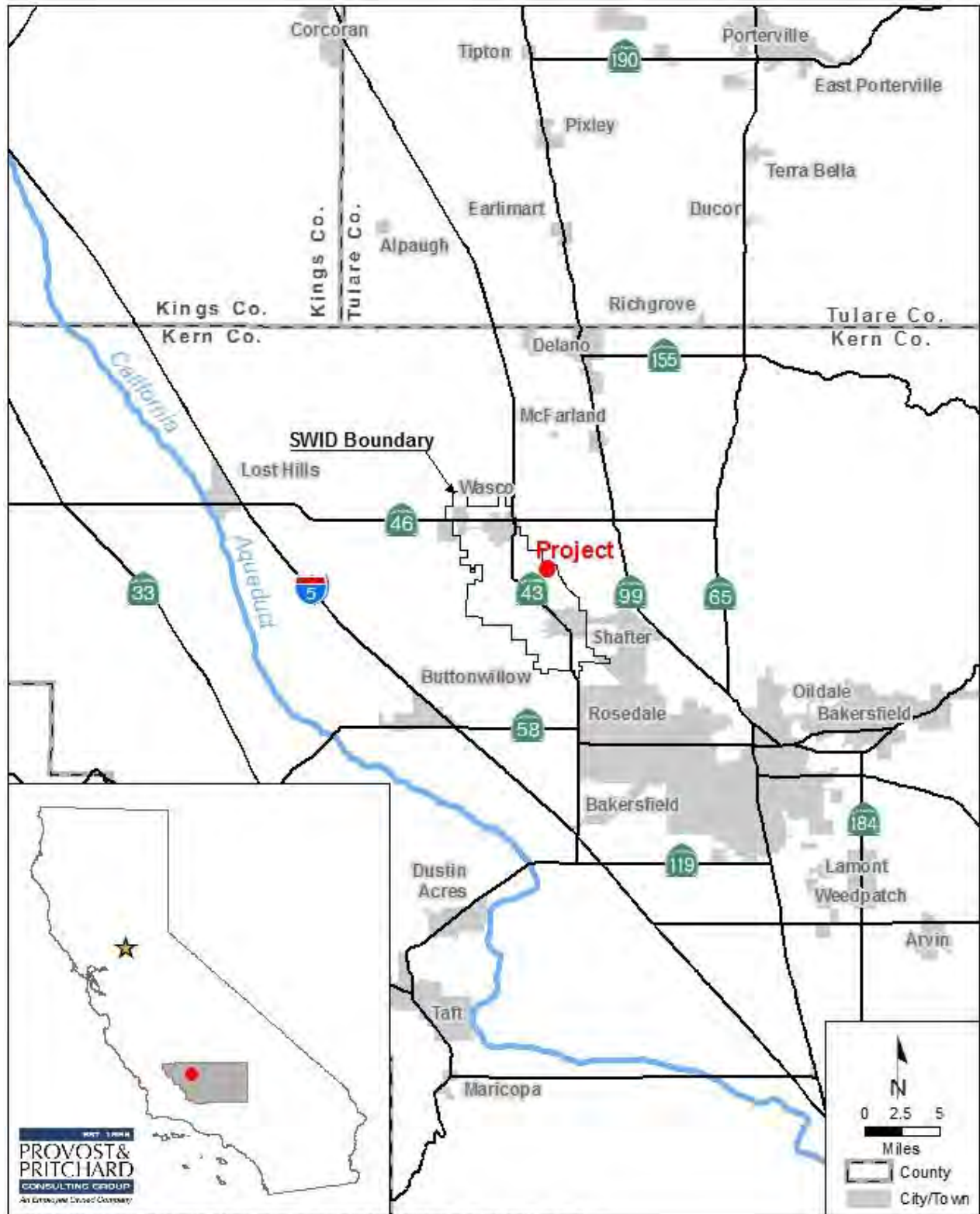


Figure 1 - Regional Location Map

Meanwhile, the State of California enacted fundamental groundwater regulations (Sustainable Groundwater Management Act, or SGMA) in 2014. SGMA is intended to establish “sustainable groundwater management” through the creation of Groundwater Sustainability Agencies (GSAs) and the agencies’ mandate to adopt and begin to implement Groundwater Sustainability Plans (GSPs), for some basins, by as early as 2020.

SGMA’s goal is to reach a sustainable level of groundwater storage within 20 years of adoption of the GSPs. The legislation identifies six undesirable conditions/results that must be managed:

- 1) Chronic lowering of groundwater levels,
- 2) Significant and unreasonable reduction in groundwater storage,
- 3) Significant and unreasonable seawater intrusion,
- 4) Significant and unreasonable degraded water quality,
- 5) Significant and unreasonable land subsidence, and
- 6) Depletions of interconnected surface water that has significant and unreasonable adverse effects on beneficial uses of the surface water.

Kern Groundwater Authority, of which the District is a member, is planning both GSA and GSP compliance for most of the valley floor of Kern County. State agencies (Department of Water Resources and Water Resources Control Board) were given authority to intervene if GSAs do not meet their GSP goals.

The District is therefore proposing to construct the Kimberlina Groundwater Recharge Basin and Banking Project (Project) as a means to capture excess surface water in wet periods as recharge for storage as groundwater, and thereby have greater supplies of groundwater available during dry periods for irrigation. Figure 2 shows the proposed action location within the Poso Creek Integrated Regional Water Management Plan (IRWMP) Region, and in relation to the Sacramento River-San Joaquin River Delta, the Friant-Kern Canal, and the California Aqueduct.

The San Joaquin River Restoration Program

In 1988, a coalition of environmental groups, led by the Natural Resources Defense Council (NRDC), filed a lawsuit challenging renewal of long-term water service contracts between the United States and Central Valley Project (CVP) Friant Division (Friant Division). After more than 18 years of litigation, *NRDC, et al., v. Kirk Rodgers, et al.*, a settlement was reached (Settlement). On September 31, 2006, the Settling Parties, including NRDC, Friant Water Users, Authority (now represented by Friant Water Authority), and the U.S. Departments of the Interior and Commerce, agreed on the terms and conditions of the Settlement, which was subsequently approved by the U.S. Eastern District Court of California on October 23, 2006. The Settlement establishes two primary goals:

- Restoration Goal – To restore and maintain fish populations in “good condition” in the main stem of the San Joaquin River below Friant Dam to the confluence of the Merced River, including naturally reproducing and self-sustaining populations of salmon and other fish.
- Water Management Goal – To reduce or avoid adverse water supply impacts on all of the Friant Contractors that may result from the Interim Flows and Restoration Flows provided for in the Settlement.

The Secretary of the Interior is authorized and directed to implement the terms and conditions of the Settlement in the San Joaquin River Settlement Act (Act), included in Public Law 111-11. The San Joaquin River Restoration Program (SJRRP) is implementing the Settlement. The San Joaquin River Restoration Program Implementing Agencies are: Reclamation, U.S. Fish and Wildlife Service, National Marine Fisheries Service, State of California Department of Water Resources, and State of California Department of Fish and Wildlife.

The SJRRP Program Environmental Impact Statement/Impact Report (PEIS/R) was finalized in July 2012 and the corresponding Record of Decision (ROD) was issued on September 28, 2012 (Reclamation 2012a and 2012b). The PEIS/R and ROD analyzed at a project-level the reoperation of Friant Dam to release Interim and Restoration Flows to the San Joaquin River, making water supplies available to Friant Division long-term contractors at a pre-established rate, and the recapture of Interim and Restoration Flows at existing facilities within the Restoration Area and the Delta.

Part III of Title X, Subtitle A of Public Law 111-11 (Part III) authorizes the U.S. Department of the Interior, Reclamation, to provide financial assistance to local agencies within the CVP of California for the planning, design, environmental compliance, and construction of local facilities to bank water underground, or to recharge groundwater to reduce, avoid, or offset the quantity of expected water supply impacts to Friant Division long-term contractors caused by Restoration flows authorized by Public Law 111-11. Because the Part III Guidelines were in development at the time of preparation of the SJRRP PEIS/R, potential actions in accordance with Part III were not included as an element of any of the alternatives analyzed in the PEIS/R. Therefore, Reclamation has prepared this Environmental Assessment to analyze and disclose the potential impacts of the proposed action.

Under the proposed action, Reclamation would fund roughly 40% of the Project pursuant to Part III. The remainder of construction funding would come from District Sponsors and from a private source, Homer, LLC. This private source funding and the Homer LLC grant of easement for the basin use would be offered in exchange for an agreement wherein the District would make available to Homer, LLC, a portion of the surface water received by the District. The remaining water would be left behind to replenish the aquifer for the benefit of District landowners. In addition, the District would have access to facility capacity at times when it is not needed to meet Homer LLC obligations.

Pursuant to its responsibilities under CEQA, the District prepared and adopted an Initial Study/Mitigated Negative Declaration and Addendum¹ for the *Shafter-Wasco Irrigation District Recharge Project*, which evaluated the impacts of a program of 60 twenty-acre recharge basins (and related facilities and appurtenances) throughout the District, including the Kimberlina Basin Recharge Project.

1.2 Need for the Proposal

The release of Restoration Flows will reduce heretofore annual surface water deliveries to Friant Division CVP water contractors, potentially placing greater stress on the region's already overdrawn groundwater basins followed by worsening effects to the region's agricultural

¹ Shafter-Wasco Irrigation District, *Final Initial Study/Mitigated Negative Declaration*, February 2015, and *Addendum to Final Initial Study/Mitigated Negative Declaration*, June, 2015.

economy. The purpose of the Proposed Action is to contribute to achieving the Settlement Water Management Goal by reducing, avoiding, or offsetting the quantity of expected water supply impacts to Friant Division long-term contractors caused by the release of Restoration Flows by facilitating groundwater banking and recharge activities by local districts in accordance with Part III.

The purpose of the Proposed Action is to increase the District's ability to capture, recharge, and store (bank) available wet-period surface water supplies in the groundwater aquifer, including the District's existing Friant Division contract supplies (which include Recovered Water Account water and re-circulated Restoration Flows, Unreleased Restoration Flows, Reclamation Section 215 water supplies, Kern River flood flows and other available flood flows in the Friant-Kern Canal) and other water supplies that may become available to the District from the Calloway Canal (operated by North Kern Water Storage District) or other conveyance facility or means. Reclamation is proposing to contribute funding to the District's efforts to increase their ability to recharge, store and manage groundwater as part of their efforts under the SJRRP water management goal to offset Friant Contractor water supply impacts of releasing Restoration Flows.

The objective of the Proposed Action is to capture/recharge and store as groundwater excess surface supplies during wet periods, and better balance the use of surface water and groundwater to achieve a sustainable supply for the District and its landowners, and help avoid the adverse economic and environmental burdens associated with continuing groundwater level declines. In support of regional water management, the Poso Creek Regional Water Management Group (RWMG) completed an Integrated Regional Water Management Plan (IRWMP). Pursuant to that IRWMP, Reclamation prepared an EA and Finding of No Significant Impact for the "25-Year Groundwater Banking, Transfer, and Exchange Program"². This plan allows the Poso Creek RWMG to take advantage of CVP water management opportunities during wet periods and the availability of surplus (at the time) surface water supplies. All CVP water that is banked, exchanged, or transferred would be kept within the Region and within the CVP authorized place-of-use. Reclamation's analysis being programmatic in nature anticipated projects such as this Kimberlina Basin Recharge Project to be consistent with the scope of that EA, allowing member districts to bank, transfer, and exchange water supplies over the next 25 years and, upon their completion, to utilize facilities. The purpose of this current EA is to assess the specific effects of the construction and operation of the now-proposed Kimberlina Recharge Basin and Banking Project.

Reclamation's programmatic EA listed the following water management actions as part of the then Proposed Action:

- Groundwater banking, transfers, and exchanges among RWMG districts who receive or purchase CVP water delivered from the FKC (DEID, Shafter-Wasco, and KTWD) and with RWMG districts that have non-CVP water (Semitropic, North Kern, and Cawelo), and CVP Delta water (KTWD);
- Groundwater banking, transfers, and exchanges among RWMG districts who receive re-captured water that is made available in San Luis Reservoir or the Delta for the Friant Division contractors (i.e. DEID, Shafter-Wasco, and KTWD) with RWMG districts that

have non-CVP water (Semitropic, North Kern, and Cawelo), and CVP water from the Delta (KTWD);

- Groundwater banking, transfers, and exchanges between KTWD, who receives CVP Delta water, and RWMG districts that have regulated state, local, or CVP water supplies; and
- Groundwater banking, transfers, and exchanges among RWMG districts that have wet year supplies (e.g. uncontrolled season Class 2 water, RWA water, Section 215 water, and wet year non-CVP supplies) and limited available absorptive capacity, with RWMG districts that have direct recharge and/or in-lieu recharge facilities with the capacity to absorb the wet year supply at the time the water is available.

Section 2 Alternatives

This EA considers two possible actions: the No Action Alternative and the Proposed Action. The No Action Alternative reflects foreseeable future conditions without the Proposed Action and serves as a basis of comparison for determining potential effects to the human environment.

2.1 No Action Alternative

Under the No Action Alternative, Reclamation would not provide Part III Grant funding to the District for construction of the Kimberlina Recharge Basin and Banking Project and Shafter-Wasco ID would not have the ability to discharge groundwater (return previously banked water) into the FKC. Without the assistance of federal funding resources, the District may elect to find alternative funding sources for the project or seek to implement other actions, or construct nothing. In the event that no action is implemented, the District would remain unable to utilize all of its CVP Friant Division surface water supplies. Without any increased capacity for recharge, the District would be limited to only its current facilities, and continued reliance on groundwater to meet irrigation needs would force landowners to continue to increase groundwater pumping and groundwater levels within the District would continue to decline. The groundwater utilization over a 30-year period without the Project is estimated to be 241,000 AF more than with the Project.³

As described in the PEIS/R, release of “Restoration Flows” under the SJRRP, will reduce surface water available for irrigation in all years that Restoration Flows are allocated. Under the no action alternative, this reduction will decrease the availability of wet year recharge water and dry year irrigation supplies. This increased pressure on an already limited supply could force market prices for water up and create a substantial impact to conjunctive use operations within the Shafter-Wasco Irrigation District, which depend on a wet-year pricing structure to acquire large quantities of surface water for groundwater recharge.

The No Action alternative would also result in increased energy demands for additional groundwater pumping (pumping from greater depths and for longer durations). Increased and

³ Shafter-Wasco Irrigation District, San Joaquin River Restoration Program: Part III of Title X, Subtitle A of Public Law 111-11, FY 2013 Funding Opportunity Announcement No. R13AF20008, *Modified Madera Avenue Intertie Project*, Project Location – San Joaquin Valley, Kern County, California, January 22, 2016.

on-going pumping of the No Action alternative would also eventually lead to additional subsidence, an impact that is potentially irreversible.

2.2 Proposed Action

Under the Proposed Action, Reclamation would provide Part III funding to the District for a portion of the proposed Project as shown on Figure 3 and Figure 4. The remainder of the construction would be paid for by the District, a District Sponsor, and a private entity, Homer LLC under an agreement with the District, who would grant an easement to the District for the recharge basin site.



Figure 2 – Project Location in Relation to California State Water System

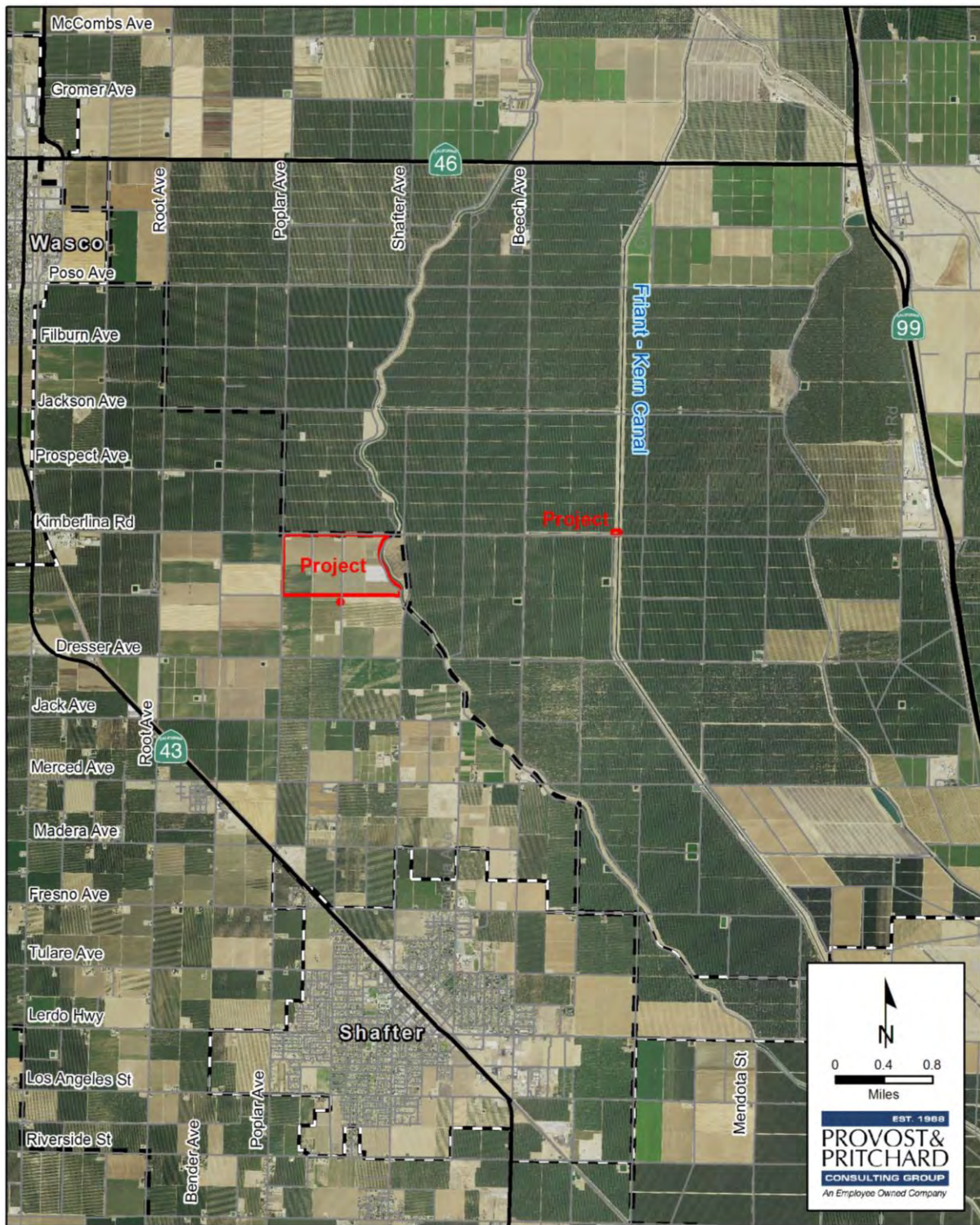


Figure 3 - Project Location and Vicinity Map

The Project Sponsors are Federal contractors who would provide non-federal funding and an institutional framework for the Project. Shafter-Wasco ID is a CVP contractor and is the Applicant. The second Project Sponsor is Kern-Tulare WD, also a CVP contractor. The Project would have access to facilities shared with two State Water Project Contractors--- Cawelo WD and Semitropic WSD. The Project Applicant has secured a private funding partner, Homer, LLC, to assist with the acquisition of an easement over the land that would allow for construction of the Kimberlina spreading grounds (also “recharge basin”).

In November, 2015, an agreement was signed between Homer, LLC and Shafter-Wasco ID for the Kimberlina Recharge Area Water Management Project that provides an exclusive, permanent easement to Shafter-Wasco ID for 35 year use of the land property as spreading grounds. Within the Agreement, it states that at the expiration of the initial 35-year term of this Agreement, Homer shall provide a grant deed to Shafter-Wasco ID for the lands used as the Kimberlina spreading grounds. In exchange for the grant of easement for recharge purposes (and associated loss to Homer, LLC of functional crop-land), for the first 10,600 AF/yr, Shafter-Wasco ID would make available to Homer, LLC up to 1 AF of water for every 2 AF of Homer surface water received; the other 1AF, or 50%, is required to be left behind to replenish the aquifer. After the first 10,600 AF/yr the leave behind drops to 33%, and the remaining 66.66% shall be recoverable by Homer, LLC. Homer, LLC. and Shafter-Wasco ID would acquire water from all available sources including SJRRP Unreleased Restoration Flow water supplies, wet-year water, and other contract supplies for use within the Kimberlina spreading ground consistent with existing or new contracts, agreements, and commitments.

The Agreement between Homer and Shafter-Wasco ID defines the shared use of the Kimberlina spreading grounds. Since Homer has existing irrigated land including within other Friant CVP contractor districts, water delivered by Homer would utilize existing, allowable water banking and transfer mechanisms to deliver their water to the Kimberlina spreading grounds or to Shafter-Wasco ID growers for storage and later return stored water to Homer. In addition, the proposed action would have direct pump-back capability to the Friant-Kern Canal that can be utilized for return of Homer’s stored water when there is insufficient Friant entitlement for the exchange return mechanism described above.

The Project Sponsors are members of the Poso Creek Regional Water Management Group (RWMG) which formulated and adopted the Poso Creek Integrated Regional Water Management Plan (IRWMP) in 2007. Since that time, districts within the Poso Creek RWMG have completed projects of regional significance that would be utilized for conveyance of water to the Kimberlina Spreading Grounds via the Calloway Canal.

The proposed facilities would be located within the service area of Shafter-Wasco ID. The Project includes construction of a spreading grounds facility with three wells for added recovery capacity; to connect sources of supply with groundwater storage capacity.⁴

⁴ Ibid, pg. 7.

The location of the Proposed Action takes advantage of the site's close proximity to the District's existing 78-inch main pipeline (mainline) that lies along the south side of Kimberlina Road. The Proposed Action includes the construction and operation of an approximately 270-acre groundwater recharge basin to be constructed south of Kimberlina Road and west of and immediately adjacent to the Calloway Canal. The Proposed Action also includes a groundwater recovery component that would facilitate the return of water to the FKC. This can be accomplished using the mainline's existing connection to the FKC. This 78-in mainline fronting the proposed basin extends east where it crosses to the north side of Kimberlina Road just west of Calloway Canal, then turns east and crosses under the Calloway Canal to Shafter Road. At Shafter Road, the pipeline increases to 90 inches and continues east along the north side of Kimberlina Road where it eventually connects with the FKC. Roughly 3,700 ft. west of the FKC the District mainline daylights to an open concrete canal that feeds directly from the FKC.

The recharge function of the Proposed Action would involve the installation of a new head gate feature on the west bank of the North Kern Water Storage District's Calloway Canal enabling water from the Canal to flow into a new canal that would be constructed longitudinally east to west along the center of the proposed recharge basin site. This new central canal would measure a maximum of 6 feet deep with an approximate width of 24 feet at the bottom and 48 feet at top, with interior 2:1 side-slopes. The new canal within the overall basin site would be flanked north and south by a series of approximately 22 individual "recharge cells" ranging in size from about 6 acres to about 26 acres, each separated by small levees constructed at roughly one-foot declining contours, stepping down from east to west. Each cell would have the capacity to hold water throughout a depth of at least 12 inches. Levees between cells would be at most 2.5 feet high from the basin bottom and have a top bank width of at least 16 feet. The exterior basin levees would be 3.0 feet high from basin bottom and roughly 1-1/2 to 2 feet above surrounding grade. This perimeter levee would have a top-of-bank width of 24 to 30 feet. The most westerly cell, the largest cell at about 26 acres, would be sized to retain all water capacity of the up-gradient cells in the event of catastrophic levee failures. The bottom of this cell would be excavated to approximately 6 ft below grade and would allow for 1.5 feet of freeboard.

There would also be a banked water payback component of the project allowing groundwater to be exchanged or directly returned to the Friant Kern Canal (FKC). This would be accomplished by constructing two (2) new deep wells and utilizing one (1) existing well within the recharge basin. The one existing grower well that will be acquired by the District to be utilized for the groundwater recovery component of the Proposed Action, would be replaced for the grower to a suitable location on other lands he farms south of the basins as shown on Figure 4. This replacement well as shown on Figures 4 and 5 is included in this Proposed Action, and would involve Part III funding. These three wells would convey pumped groundwater into a new system of 15 inch and 21 inch pipelines that would inter-tie to the District's existing 78-in main pipeline that runs along basin frontage adjacent to the south edge of the Kimberlina Road right-of-way. The new recovery deep wells would be drilled to a depth of approximately 1,000 feet by truck-mounted equipment using an approximately 18-inch-diameter casing. The well head would be surrounded by an approximately 8 foot square concrete pad, on which the pump and motor would be set and enclosed with a security fence and would include an above-ground segment of pipe with a locking cap surrounded by a concrete foundation. The new pipelines connecting the deep wells to the existing pipeline would be installed in trenches measuring approximately 2.5 feet wide and 5.5 feet deep. The top of the existing 78" pipeline would be cored out and a 24"

connection would be installed to convey the recovered well water into the mainline for conveyance to District growers and/or the Friant Kern Canal. The pump-back capacity would match the capacity of the three project wells. Deepwell production would vary with groundwater depth. After a year of recharge, all three wells together may produce 20 CFS.

Two existing older wells on the site would be converted to monitoring wells. The intent of the monitoring wells is for purposes of future SGMA implementation and compliance and can be used to monitor effects on the groundwater aquifer levels. Up to four bollards would be installed around each monitoring well for protection. Meters proposed for the Project will serve to monitor/document the amount of surface water taken from and returned to the FKC.

In most years, Friant Division surface water supplies accessible to the District would be used to provide the banked water payback portion by allowing the recovered groundwater to be conveyed into the District main line and distributed to District growers; this mechanism of payback is referred to as an exchange.

During the infrequent times that Friant Division surface supplies are not available for exchange between recovered groundwater and district surface water supplies, the water flow would be reversed in the existing main line allowing recovered groundwater to be conveyed through the mainline east to the open canal portion of the District mainline and from there via a pump and new pipeline, back into the FKC. A new 50 HP electric motor pump would be installed along the north bank of the District's open canal near the FKC that would draw water into a new 21 inch pipeline that would convey the water back into the FKC. The pump and motor would be enclosed with a security fence. Two metering devices, approximately 8 feet long, would be installed in a 2.5 feet wide by 8 feet deep trench through the FKC embankment to measure flow of water being returned to the FKC. The exposed portion of pipe over the FKC would rest on a concrete saddle measuring approximately 12 inches wide, 12 inches long, and 18 inches high (12 inches of which would be buried). The concrete saddle would be located approximately 24 inches away from the edge of the canal liner and the pipe would extend approximately 5 feet over the FKC.

The banked portion of the water recharged into the groundwater basin would be stored until needed by Homer LLC, it would deliver the pumped deepwell water to its landowners and the Friant contract supply would be delivered by this exchange to Homer. If there is not enough District contract supply to facilitate the exchange, the deepwell water would be delivered directly back to the FKC in the facilities described above.

Operation and Maintenance:

Given that groundwater recharge is a passive process, operation and maintenance activities would be minimal. Occasional service employees may be on-site for scheduled, preventive maintenance as well as unscheduled service. Site maintenance would include annual sloping of levees and canal side-slopes with motor grader, mowing of pond bottoms with tractors, setting diversion boards, and basic maintenance. In addition, canal and levee banks would be sprayed with herbicides as necessary.

Construction:

Prior to construction, the District would prepare a Stormwater Pollution Prevention Plan (SWPPP) as part of its compliance with the State of California regulations governing stormwater related issues. Construction mobilization and site preparation for the Proposed Action is expected to commence in 2017. Construction of the Proposed Action is estimated to require 10 workers on site with heavy equipment for earthwork, mid to light construction equipment on structures and fencing, and a drill rig crew of three to four workers for well construction.

Installation of the three new deep wells is anticipated to be completed in late 2016. Two of the three new wells would be installed within the basin; the third well would be installed south of the basin to replace the one existing well already within the basin area that the landowner will allow the District to use. On average, well drillers are typically able to complete a 300-ft deep well in about 3 days, which means the proposed installation of three 1,000 ft deep wells would be anticipated to take about 3 weeks to complete. Therefore it is estimated that overall construction of the wells and the basins would take place over a period of approximately three (3) to four (4) months.

Construction of the Proposed Action would require the use of scrapers, graders, compacters, trenchers, backhoes, forklifts, front end loaders, water trucks, and material and equipment hauling trucks. The aforementioned vehicles are diesel and gasoline-powered equipment.

The areas subject to construction and operation ground disturbances resulting from the Proposed Action are shown on Figure 5.

2.2.1 Environmental Commitments

The following environmental commitments will be incorporated into the proposed action:

2.2.1.1 Biological Resources Commitments

The following conservation measures, which are consistent with the SJRRP Conservation Strategy and *U.S. Fish And Wildlife Service Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (Service 2011), will be implemented to avoid and minimize potential impacts associated with the implementation of the proposed action:

1. A Service-approved biologist will conduct pre-construction surveys for San Joaquin kit fox no fewer than 14 days and no more than 30 days prior to the onset of any ground disturbing activity. If San Joaquin kit fox are detected at any time, all activities associated with the project will be halted immediately. The project will be placed on hold until consultation with the Service is completed.
2. An employee education program will be conducted. The program will consist of a brief presentation by a Service-approved biologist. The program will include the following: a description of the San Joaquin kit fox and its habitat needs; a report of San Joaquin kit fox occurrence in the project area; an explanation of the status of the species and its protection under the Act; and a list

of measures being taken to reduce impacts to the species during project construction. A fact sheet conveying this information will be prepared for distribution to construction personnel.

3. Project-related vehicles will observe a daytime speed limit of 15-mph throughout the site in all project areas, except on state and federal highways; after dark, the speed limit will be reduced to 10-mph. Off-road traffic outside of designated Project Areas will be prohibited.
4. Construction work at night (half hour after sunset to half-hour before sunrise) will not be allowed.
5. To prevent inadvertent entrapment of San Joaquin kit fox or other animals during construction, all excavated, steep-walled holes or trenches more than 2 feet deep will be covered with plywood or similar materials at the end of each work day. If the trenches cannot be closed, one or more escape ramps constructed of earthen fill or wooden planks will be installed. Before such holes or trenches are filled, they will be inspected for trapped animals.
6. All construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored at a construction site for one or more overnight periods will be thoroughly inspected for San Joaquin kit fox before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a San Joaquin kit fox is discovered inside a pipe, that section of pipe will not be moved until the Service has been consulted and CDFW contacted. If necessary, and under the direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped.
7. All food-related trash items such as wrappers, cans, bottles, and food scraps will be disposed of in securely closed containers and removed daily from the project site.
8. No firearms will be allowed on the project site.
9. No pets will be permitted on the project site.
10. Use of rodenticides in the project area will not be allowed.
11. Upon completion of the project, all areas subject to temporary ground disturbances, including staging areas, temporary roads, and borrow sites will be re-contoured if necessary, and revegetated with native seed to promote restoration of the area to pre-project conditions.
12. Sightings of San Joaquin kit fox will be reported to the California Natural Diversity Database.
13. San Joaquin kit fox surveys of the recharge basins will be conducted in coordination with

the Service and CDFW prior to the inundation of the recharge basins. The purpose of these surveys is to ensure that any new vegetation growth has not increased prey base and attracted San Joaquin kit fox to the area. Surveys will only occur in years when flooding of the recharge basins will occur. The need for these surveys will be reassessed in consultation with the Service and coordination with CDFW after seven years of surveys have been completed.

- 14.& ASan Joaquin kit fox survey report will be submitted to CDFW and the Service by December 31 of each year in which surveys are conducted.

2.2.1.2 Migratory & Nesting Bird Commitments

a)&The following avoidance and minimization measures will ensure compliance with the Migratory Bird Treaty Act and the "Staff Report on Burrowing Owl Mitigation" (CDFG 2012).

1. Pre-construction surveys of any suitable habitat in the project area will be implemented by a qualified biologist for migratory and nesting birds within 14 days of construction start for work occurring during the nesting season (February 1- September 1) to identify active nests in the project area.
2. In the event that nesting birds or active nests are observed in the project area, a protective no-disturbance buffer will be installed under supervision of a qualified biologist in coordination with CDFW and the Service.
3. The qualified biologist will determine the size of the buffer in coordination with CDFW and the Service and will determine when nesting has been completed and the buffer may be removed. If the proposed buffer differs from CDFW's recommended buffer, the District will prepare and implement a plan for monitoring occupied nests and make adjustments to project activity as needed to ensure that nest abandonment does not result from project activity.
4. No activity will occur within the buffer area, and worker awareness training and daily biological monitoring will be conducted to ensure that avoidance measures are being implemented and nesting is not disrupted.
5. Pre-construction surveys for burrowing owls will be conducted within the project area no more than 30 days prior to the start of construction to determine any presence or sign of burrowing owl occupancy.
6. If burrowing owls are discovered during pre-construction surveys, CDFW will be contacted to approve the following avoidance, minimization and possible mitigation measures:
7. Active burrowing owl burrows within the project limits will be protected by a 250 foot-radius protection buffer outside of the nesting season (September 1 to January 31).
8. Active burrowing owl burrows within the project limits would be protected by a 650 foot-radius protection buffer during the nesting season (February 1 to August 31).

-
- 9.& If active burrows are located within a construction area, the CDFW will be contacted and a 'Burrowing Owl Relocation Plan' provided to the CDFW.
- 10.& The Burrowing Owl Relocation Plan' will specify a protection buffer, passive relocation efforts (i.e. installing one-way exclusion doors on burrow entrances, and providing artificial burrows constructed nearby, within 150-300 feet if possible). A minimum of 6.5 acres of contiguous foraging habitat would be available within a 300-foot radius around the new burrow site per owl pair or resident single bird. All passive relocation work will be performed by CDFW-approved, qualified biologists.
- 11.& If burrowing owls are observed during pre-construction surveys, a CDFW-approved biological monitor will be present during all ground disturbance and will perform daytime monitoring of active burrows within the project limits if construction activities must occur within the protective buffer zone.

2.2.1.3 Air Quality Commitments

- a) The following measures will be implemented to reduce mobile-source emissions' associated with the use of off-road construction equipment:'
- i. When not in use, construction equipment will be turned off and will not be allowed to idle.
 - ii. All construction equipment will be maintained in proper working condition according to manufacturer's specifications. The equipment will be checked by a certified mechanic and determined to be running in proper condition before it is operated.
 - iii. Low-emission off-road construction equipment will be used. At a minimum, construction equipment 50 horsepower (hp) and greater, will meet U.S. EPA Tier II emission standards.
 - iv. The District will comply with all applicable requirements of and obtain all applicable permits from, the San Joaquin Valley Air Pollution Control District.

2.2.1.4 Water Resources Commitments

- a) Prior to introduction of groundwater into the FKC, water from all wells will be tested. If testing of the project wells indicates that the blended volume of water from the wells does not meet then-current Reclamation standards, it would not be introduced into the FKC until water quality concerns are addressed as approved by Reclamation.

In order for groundwater to be introduced into the FKC, the concentration of nitrates (as NO₃) and salinity (measured as Electrical Conductivity) must not exceed the following thresholds:

- Nitrate-nitrogen not to exceed 20 mg/L in the FKC
- Salinity not to exceed 900 µS/cm in the FKC

All delivery schedules for introducing water into the FKC under the proposed action will be approved by Reclamation prior to introduction into the FKC. The quantity of groundwater pumped into the FKC will be measured by flow-meters read and calibrated by Friant Water Authority field staff. Copies of all reports and monitoring data collected for the Proposed Action will be submitted to Reclamation.

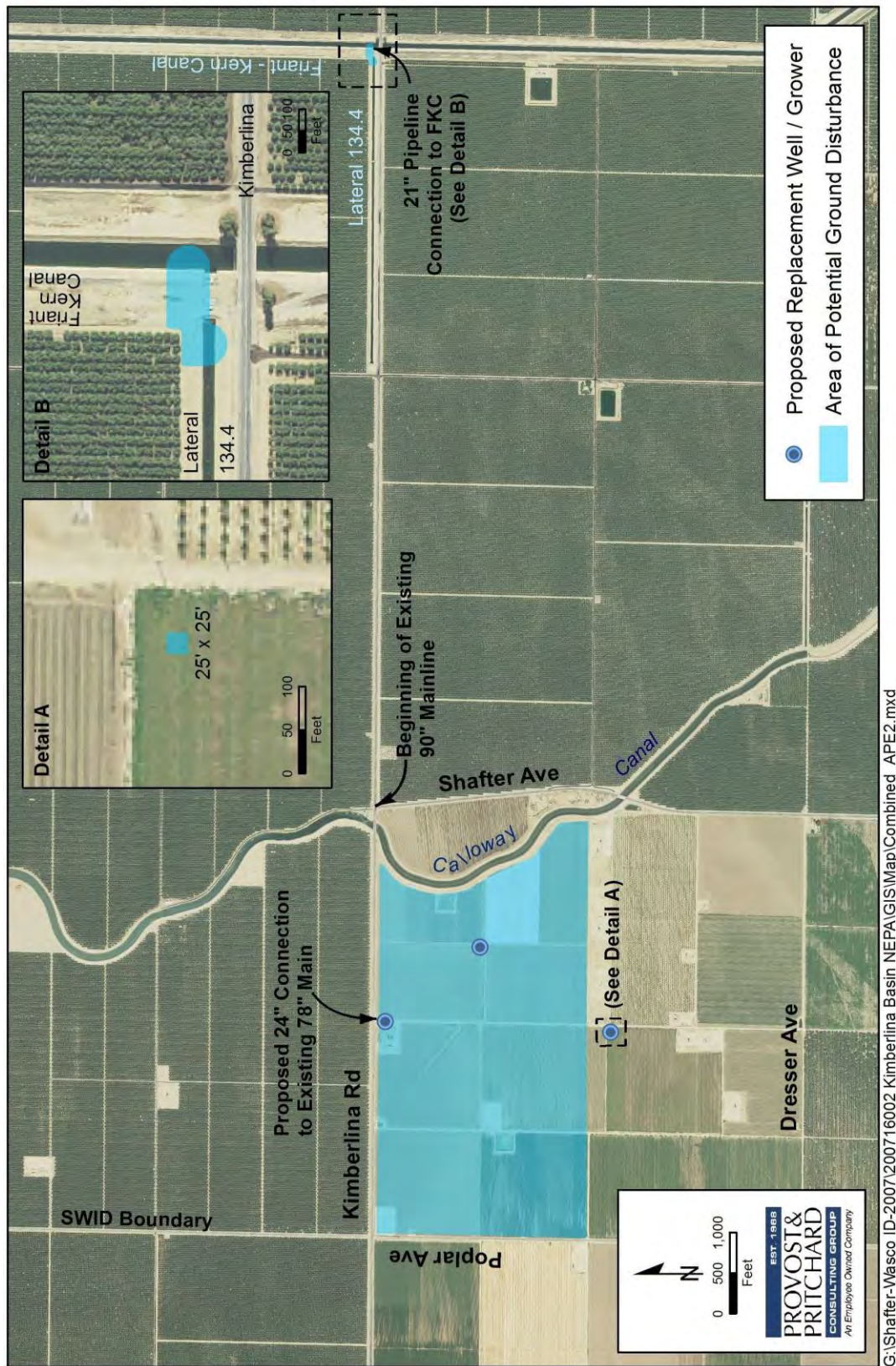


Figure 5 - Project's Potential Ground Disturbance Areas

Section 3 Affected Environment and Environmental Consequences

The Proposed Action would have no impacts to aesthetics, mineral resources, population and housing, public services, traffic, noise, or recreation. Therefore, these resources are not further discussed.

3.1 Water Resources

3.1.1 Affected Environment

Shafter-Wasco Irrigation District

The Shafter-Wasco Irrigation District has held a contract for Friant Division CVP surface water supplies since 1955. The District has a contract for 50,000 acre-feet (AF) of Class 1 water and 39,600 AF of Class 2 water from the CVP Friant Unit. The District also may obtain supplemental supplies from other entities, including purchasing Section 215 water (surplus CVP water). The District covers 38,766 acres, of which approximately 30,300 acres are farmed. The District delivers water directly to 27,100 acres within the total farmed acreage. Imported water varies from 0.5 AF per acre to 4.0 AF per acre, depending on the water year. Surface water supplies are supplemented by groundwater, obtained from privately owned wells on an individual basis.

Over the last several decades the District has observed a decline in groundwater elevations, due to the heavy reliance that farmers have had to put on groundwater to meet crop consumption needs. The trend in groundwater levels has been both up and down largely as a function of wet and dry cycles; however, the long-term average trend has been downwards.

The District provides only agricultural water supplies to farms within its service area and does not serve municipal and industrial water. The District does not own or operate any groundwater extraction facilities for obtaining groundwater supplies; therefore, each individual landowner within the District must use private groundwater wells to sustain irrigation during periods when the District is not diverting surface water into its system.

Although the District receives water from the Friant-Kern Canal, the canal does not run through the District's boundaries. It lies roughly one mile to the east at the closest point, and is connected to the District by various conveyance facilities, including the Kimberlina Road Turnout pipeline which would be used in the Proposed Action.

Groundwater Resources

The Proposed Action area overlies the Kern Groundwater Sub-basin of the San Joaquin Valley Basin, and is confined within the Tulare Lake Hydrologic Region. Major rivers and streams in the sub-basin include the Kern River, Poso Creek, Caliente Creek and several small streams along the south and west sides of the Southern San Joaquin Valley which essentially drain from the Sierra Nevada.

The District was formed in 1937 in response to groundwater level decline of 2.3 feet per year from 1931 to 1949. Surface water has played a major role in District water supplies in the years

since. The Kern sub-basin has been identified by DWR as a sub-basin subject to critical conditions of overdraft. Critical conditions of overdraft are defined as a groundwater basin in which continuation of present practices would probably result in adverse overdraft-related environmental, social or economic impacts.

The District monitors groundwater levels, which generally move downward and then westerly, by measuring approximately 64 groundwater wells in January and September of each year. This information is used to monitor the amount of groundwater used by the water users in the District. Based on historical water level readings by these and other entities, there is an overall trend of declining groundwater levels within the sub-basin. It is important to note that the sub-basin does have the ability to respond to positive conditions. This is demonstrated during years of above-average precipitation when the decline has been periodically interrupted by short-term groundwater recovery, as a result of reduced groundwater pumping and increased surface water imports.

Reclamation has previously approved programs for several Friant Division contractors to pump groundwater into the FKC. These programs, as most recently described and analyzed in the 2016 5-Year Friant-Kern Canal Groundwater Pump-In Program Finding of No Significant Impact and Environmental Assessment (EA), require that groundwater being introduced to the FKC be subject to water quality monitoring and meet Reclamation's current standards in order to be approved for conveyance in the FKC. Reclamation and the Friant Water Authority continuously monitored for EC and nitrates during the 2014 pump-in program. North-Kern Water Storage District (which is adjacent to Shafter Wasco Irrigation District) wells met all of Reclamation's water quality criteria during that time. A summary of water quality test results for EC and nitrates for the 2014 FKC Groundwater Pump-in Program is included in Figures 6 and 7, respectively. The only exceedence of Reclamation's water quality criteria occurred for nitrates as NO₃ in November of 2014 at milepost 89.35, which is approximately 40 miles north of the project area.

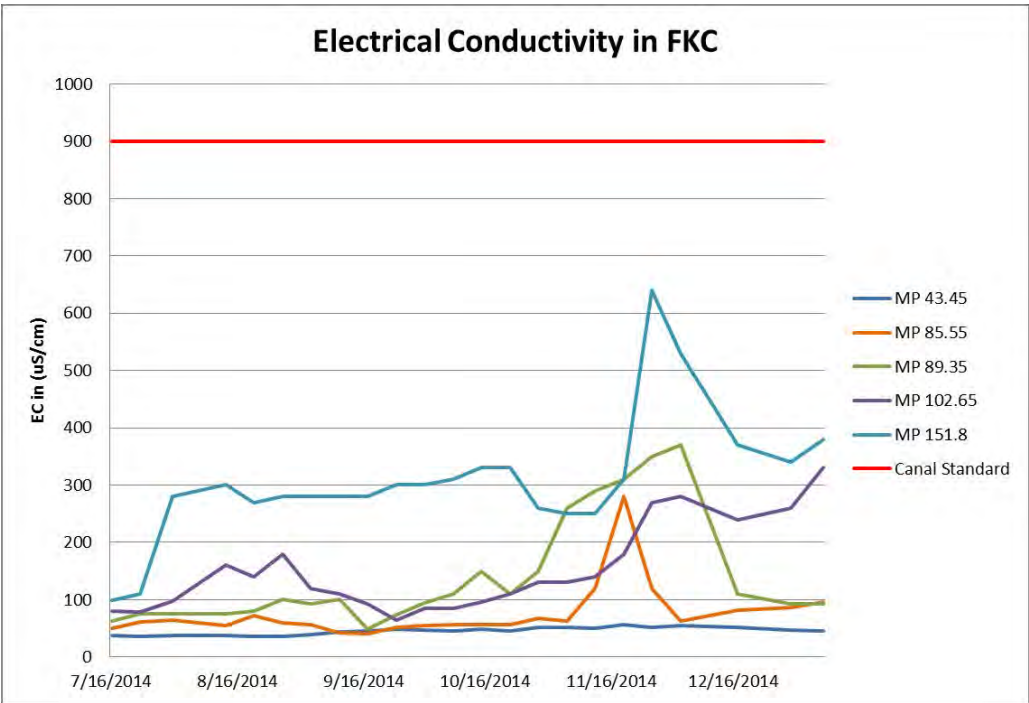


Figure 6 - Electrical Conductivity in FKC in 2014 Pump-in Events

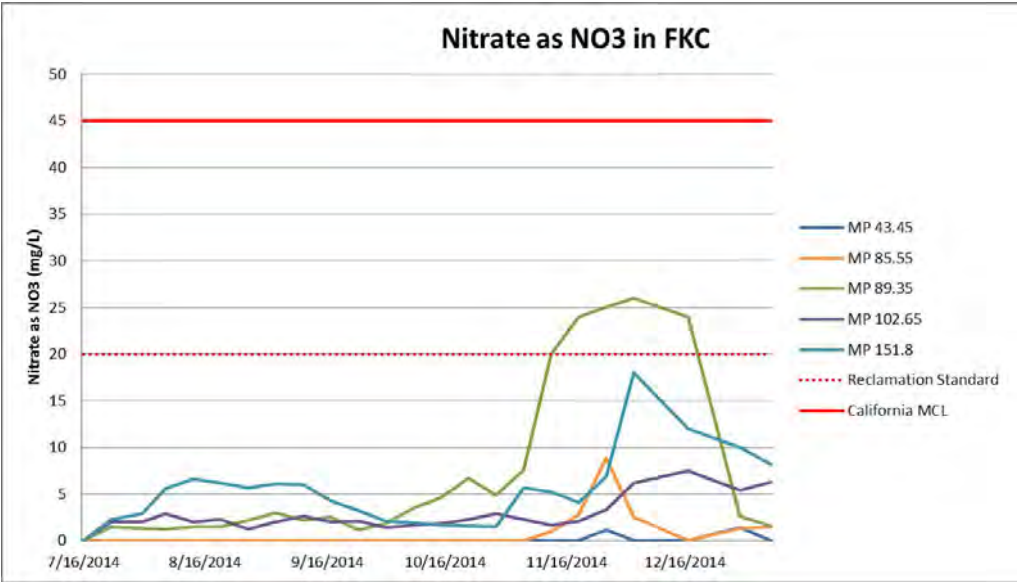


Figure 7 - Nitrate as NO₃ in FKC During 2014 Pump-in Events

3.1.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not provide funding for the construction of the proposed groundwater recharge basins and related facilities and appurtenances, including water control structures, pipelines, and conveyance channels, and the District would not have the ability to discharge groundwater (return previously banked water) into the FKC . However, other districts in the vicinity would convey groundwater in the FKC, as mentioned in the previous section and further described in the 5-Year Friant-Kern Canal Groundwater Pump-In Program Finding of No Significant Impact and EA. Without the assistance of federal funding resources, the District may elect to find alternative funding sources for the project or seek to implement other actions, or construct nothing. In the event that no action is implemented, the District would remain unable to utilize all of its CVP Friant Division surface water supplies. Groundwater levels underlying the District may not be able to benefit from the additional recharge and continued pumping with associated declining groundwater levels would continue. The District estimates that its 30-year total use of Friant Division supplies would be 1,565,000 AF without the Proposed Action.

Proposed Action

The purpose of the Proposed Action is to take further advantage of wet-year conditions by diverting excess water from the FKC in wet years to the recharge basin. Coupled with the proposed leave-behind component with Banking Participants, the Proposed Action is anticipated to have beneficial effects by facilitating replenishment of the groundwater aquifer.

Although the Proposed Action does include installation of wells capable of recovering a portion of the recharged groundwater, they would not be operated to remove more water than has been recharged. Under the Proposed Action, meters will monitor the amount of water taken from/returned to the FKC and delivered to the recharge basin and recovered from the wells and returned to the District system. Groundwater returned to the FKC by way of the existing mainline will be monitored, consistent with other anticipated FKC pump-in actions, and those that would occur under the No Action Alternative. As discussed previously in Section 2, groundwater conveyed in the FKC under the Proposed Action will be required to meet quality standards consistent with the requirements for groundwater pump-in actions proposed in the March 2016 5-Year Friant-Kern Canal Groundwater Pump-In Program, which would occur under the No Action Alternative . If treatment is needed, treatment facilities would be installed within the footprint of this Proposed Action by the District and/or the banking partners. Supplemental environmental analysis would be completed for installation of treatment facilities as necessary.

While the proposed water quality thresholds are higher than the background concentrations in the CVP water diverted from the San Joaquin River, the salinity threshold is within the 700-3,000 $\mu\text{S}/\text{cm}$ range recommended for irrigation with slight to moderate restrictions and the nitrate-nitrogen threshold is within the recommended range of 5 – 30 mg/L. Neither of these thresholds exceed the current California Drinking Water Standards (2,200 $\mu\text{S}/\text{cm}$ and 45 mg/L respectively). Also, as stated in Section 2, In most years, Friant Division surface water supplies accessible to the District would be used to provide the banked water payback portion by allowing the recovered groundwater to be conveyed into the District main line and distributed to District growers, and groundwater would not need to be conveyed in the FKC, minimizing the potential effects of the proposed action on water quality in the FKC.

The increased ability to recharge water from surface supplies would help offset the projected long-term decline in groundwater levels from groundwater pumping. Since less groundwater would be recovered than recharged with the project, impacts for the project would be positive for the groundwater basin in the vicinity of the District. During periods when banking partners are paid back, the wells used as part of the project would be operated, however the quantity recovered would be less than what would have been recovered without the project. The Project site is internal to District boundaries, and based on aquifer characteristics, the physical drawdown impacts of the three wells would be limited to the vicinity of the Project site, keeping in mind that the groundwater levels would be higher than without the project due to less overall pumping by the growers in the District. If drawdown impacts were noticed in the Project monitoring wells, operations will be adjusted accordingly. The District, being a public agency, has monthly Board Meetings where the public and landowners have the opportunity to address the Board and raise concerns if the project operators are not responding to their concerns. Therefore, a separate monitoring committee is not proposed.

The Funding Opportunity Announcement No. R13AF20008 specifies the use of a 30-year Project life cycle. The necessary hydrology was available for the 83-year period extending from 1922 through 2004. The last 30 years of this period, 1975 through 2004, were used for the purpose of determining the Project yield. In particular, the total use of available water supplies under the no action alternative was compared to the proposed action condition. The use of available water supplies was determined with a spreadsheet operations model which was developed for this purpose. The model was driven by the water supplies projected to be available from the Friant Division of the CVP to Shafter-Wasco ID, and Kern-Tulare WD. The resulting 30-year total use of Friant Division supplies is summarized below for the *Modified Madera Avenue Intertie* (rounded to the nearest 1,000 AF):

(+) Project Condition	1,806,000 AF
(-) No-Project Condition	<u>1,565,000 AF</u>
(=) Project Yield (Total)	241,000 AF
(-) Project Yield (non-RWA)	<u>88,000 AF</u>
(=) Project Yield (RWA)	153,000 AF

As shown above, the total yield of the Project over 30 years is estimated at about 241,000 acre-feet; however, a portion of this yield is attributable to improved utilization of available Class 2 supplies through banking. Accordingly, the remaining amount is the Project yield which would serve to reduce the RWA, and which is estimated at about 153,000 acre-feet. Therefore, the Proposed Action would have beneficial effects to the District's water resources.

3.2 Biological Resources

3.2.1 Affected Environment

A Natural Environmental Study (NES) was conducted by Bighorn Consulting, Inc. According to that Study (see Attachment 1) the project is located in an area of intense and longstanding agricultural practices, including stone fruit orchards and croplands. Orchards are located just to the north of the project, north of Kimberlina Road, and east of the project, east of Calloway Canal and Shafter Avenue. Orchards are also located further to the south-east of the project. The local climate is classified as a Mediterranean climate, signified by hot dry summers and mild wet winters. The mean annual temperature is 65°Fahrenheit (F), but summer temperatures reach 100°F and frequently higher. The average annual precipitation occurring within the project area is approximately 5.48 inches, which occurs mostly in the form of winter and spring rains (WRCC 2015).

The Project site is that area in which all related construction and operational activities would occur, such as grading, excavating, trenching, filling, pipe laying, concrete pouring, vehicle and material staging and construction and maintenance vehicle access and turn around areas. The Biological Study Area (BSA), (also known as the action area is the area that was studied by Bighorn Consulting biologists to determine direct, as well as indirect effects of the proposed action on the biological environment and biological resources. The BSA was determined by adding a buffer area extending 150 feet outward from the project area. The BSA encompasses approximately 440 acres, which includes the 270-acre basin site, and adjacent areas along both sides of Shafter Avenue, Kimberlina Road and Poplar Avenue.

The BSA contains compacted, bare ground in the form of dirt farming roads and the Calloway Canal service road, paved roads and associated road shoulders (Kimberlina Road, Shafter Avenue and Poplar Avenue), fallow fields, adjacent orchards, Calloway Canal, three wells and two small sumps.

Due to longstanding agricultural use and regular herbicide application there is very little vegetated ground within the BSA. No trees are located within the BSA and only orchard trees are located adjacent to the BSA. Waterways within or adjacent to the BSA include the Calloway Canal that enters the BSA from the north-east and exits the BSA to the south-east. Commercial and residential properties are located adjacent to the BSA. Appendix B of Attachment 1 shows an aerial map of the BSA, while site photographs can be found in Appendix G of Attachment 1.

Ruderal

In the BSA, ruderal vegetation is found associated with the edges of paved roadways, edges of dirt roads, canal banks and around ponding basin areas, as well as pump areas. Ruderal plant

⁶ Shafter-Wasco Irrigation District, San Joaquin River Restoration Program: Part III of Title X, Subtitle A of Public Law 111-11, FY 2013 Funding Opportunity Announcement No. R13AF20008, *Modified Madera Avenue Intertie Project*, Project Location – San Joaquin Valley, Kern County, California, January 22, 2016.

species identifiable in the BSA in December and January include bermuda grass (*Cynodon dactylon*), saltgrass (*Distichlis spicata*), tumble weed (*Salsola tragus*), pineapple weed (*Matricaria discoidea*), various bromes (*Bromus* sp.) and prickly paddy melon (*Cucumis myriocarpus*).

Wild grape (*Vitis vinifera*) and beavertail cactus (*Opuntia basilaris*) are found adjacent to two existing sump areas.

The following table lists the special-status species and/or habitats that may potentially occur within the BSA and was compiled using the USFWS, CNDDDB and CNPS special-status species lists obtained for the 9-Quad Search on June 21 and 22, 2016.

Table 1 – Special-Status Species Lists

Scientific Name	Common Name	Status	General Habitat Description	Habitat P/A*	Rationale
<i>Plants</i>					
<i>Atriplex cordulata</i> var. <i>cordulata</i>	heartscale	--1--fl B.2	Chenopod scrub, meadows and seeps, valley and foothill grassland and saline or alkaline areas. Elevation range is 0- 560 meters.	A	Suitable habitat is not present within the BSA.
<i>Atriplex cordulata</i> var. <i>erecticaulis</i>	Earlimart orache	--/--/IB 2	Valley and foothill grassland. Elevation range is 40-100 meters.	A	Suitable habitat is not present within the BSA.
<i>Atriplex coronata</i> var. <i>vallicola</i>	Lost Hills crownscale		Chenopod scrub, valley and foothill grassland and vernal pools. Elevation range is 50-635 meters.	A	Suitable habitat is not present within the BSA.
<i>Atriplex minuscula</i>	Lesser saltscale	--/--/IB.1	Chenopod scrub, playas, valley and foothill grassland and alkaline, sandy areas. Elevation range is 15- 200 meters.	A	Suitable habitat is not present within the BSA.
<i>Atriplex subtellis</i>	Subtle orache	--/--/IB.2	Valley and foothill grassland. Elevation range is 40-100 meters.	A	Suitable habitat is not present within the BSA.
<i>Caulanthus californicus</i>	California jewelflower	FE/SE/IB.2	Chenopod scrub, pinyon and juniper woodland, valley and foothill grassland and sandy areas. Elevation range is 61- 1000 meters.	A	Suitable habitat is not present within the BSA.
<i>Cirsium crassicaule</i>	Slough thistle	--/--/IB.1	Chenopod scrub, marshes and swamps, sloughs, riparian scrub. Elevation range is 3-100 meters.	A	Suitable habitat is not present within the BSA.
<i>Delphinium recurvatum</i>	Recurved larkspurt	--I-1IB 2	Chenopod scrub, Valley and foothill grassland, cismontane woodland. On alkaline soils; often in Valley saltbush or Valley chenopod scrub. Bloom period is March to June. Elevation range is 3-790 meters.	A	Suitable habitat is not present within the BSA.

Scientific Name	Common Name	Status	General Habitat Description	Habitat P/A*	Rationale
<i>Eremakhe kernensis</i>	Kern mallow	FE/--/1 B.1	Chenopod scrub, valley and foothill grassland, prefers dry, open, sandy to clay soils; often at edge of balds. Elevation range is 70-1290 meters.	A	Suitable habitat is not present within the BSA.
<i>Eriastrum hooveri</i>	Hoover s eriastrum	FD/--/4.2	Shadscale scrub and Valley grassland. Bloom period is March to July. Elevation range is 45-944 meter.	A	Suitable habitat is not present within the BSA.
<i>Eryngium spinosepalum</i>	Spiny-sepaled button-celery	--1-11B 2	Valley and foothill grassland, vernal pools. Elevation range is from 80-975 meters.	A	Suitable habitat is not present within the BSA.
<i>Layia munzii</i>	Munz's tidy-tips	--1-11B 2	Chenopod scrub, valley and foothill grassland; prefers alkaline clay. Elevation range 150-700 meters.	A	Suitable habitat is not present within the BSA.
<i>Monolopia congdonii</i>	San Joaquin woolly-threads	FE/--/1B.2	Occurs in chenopod scrub and Valley foothill grassland. Alkaline or loamy plains and sandy soils, often with grasses. Bloom period is February to May. Elevation range is 60-800 meters.	A	Suitable habitat is not present within the BSA.
<i>Stylocline masonii</i>	Mason s neststraw	--/--/1B.1	Chenopod scrub, pinyon and juniper woodland; prefers sandy soil. Elevation range is 100-1200 meters.	A	Suitable habitat is not present within the BSA.
Fish					
<i>Hypomesus transpacificus</i>	Delta smelt	FT/SE	This euryhaline species inhabits open waters of bays, tidal rivers, channels, and sloughs of the Bay Delta region.	A	Suitable habitat is not present within the BSA.
Amphibians					
<i>Rana draytonii</i>	California red-legged frog	FT	Aquatic habitats including pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds, and lagoons.	A	Suitable habitat is not present within the BSA.
<i>Spea hammondi</i>	Western spadefoot	SSC	Lowland habitat such as washes, floodplains and rivers, alluvial fans, playas and alkali flats. They also occur in the foothills and mountains. They prefer areas of open vegetation and short grasses where the soil is sandy or gravelly. They are found in the valley and foothill grasslands, open chaparral and pine-oak woodlands.	A	Suitable habitat is not present within the BSA.
Reptiles					

Scientific Name	Common Name	Status	General Habitat Description	Habitat P/A*	Rationale
<i>Gambelia silus</i>	Blunt-nosed leopard lizard	FE/SE/FP	Inhabits semiarid grasslands, alkali flats, low foothills, canyon floors, large washes, and arroyos, usually on sandy, gravelly, or loamy substrate, sometimes on hardpan. It is common where there are abundant rodent burrows and rare or absent in dense vegetation or tall grass.	A	Suitable habitat is not present within the BSA.
<i>Phrynosoma blainvillii</i>	Coast horned lizard	SSC	Coast horned lizards occur in scrub habitat, coniferous forests and deciduous forests.	A	Suitable habitat is not present within the BSA.
<i>Thamnophis gigas</i>	Giant garter snake	FT/ST	Freshwater marsh and low gradient streams.	A	Suitable habitat is not present within the BSA.
Birds					
<i>Agelaius tricolor</i>	Tricolored blackbird	SSC	Wintering tricolored blackbirds are associated with open rangeland including dairies; in the spring large flocks are associated with ripening grain fields and migration follows the flooding of rice fields; nesting occurs in cattail marshes, bulrushes, Himalaya berry and agricultural silage.		Suitable habitat is not present within the BSA.
<i>Athene cunicularia</i>	Burrowing owl	SSC	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	A	Very few California ground squirrel burrows present due to agricultural management practices; no suitable foraging and denning habitat adjacent to BSA.
<i>Buteo swainsoni</i>	Swainson's hawk	ST	Grasslands with scattered trees, juniper sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Suitable nesting sites are usually within or adjacent to riparian areas; adjacent foraging habitat includes grasslands, alfalfa, or grain fields supporting rodent populations.	A	Suitable habitat is not present within the BSA. No alfalfa fields were observed in or adjacent to the BSA during surveys.
<i>Toxostoma lecontei</i>	Le Conte's thrasher	SSC	Le Conte's thrasher inhabit desert scrub, mesquite, tall riparian brush and chaparral.	A	Suitable habitat is not present within the BSA.
Mammals					

Scientific Name	Common Name	Status	General Habitat Description	Habitat P/A*	Rationale
<i>Ammospermophilus nelson</i>	Nelson's antelope squirrel	ST	The Nelson's antelope squirrel is primarily in marginal habitat of low foothills and mountains on the western edge of the San Joaquin Valley; near Elks Hills and on portions of the Carrizo and Elkhorn plains; dry, sparsely vegetated loam soils;	A	Suitable habitat is not present within the BSA.
<i>Dipodomys ingens</i>	Giant kangaroo rat	FE/SE	Habitat includes friable, sandy or silty soils in areas with no to moderate shrub cover and scattered herbaceous plants; sparsely vegetated alkali sink communities where soils are generally sandy or silty; Valley grassland, saltbush and sink scrub.	A	Suitable habitat is not present within the BSA.
<i>Dipodomys nitratooides nitratooides</i>	Tipton kangaroo rat	FE/SE	Habitat includes friable, sandy or silty soils in areas with no to moderate shrub cover and scattered herbaceous plants; sparsely vegetated alkali sink communities where soils are generally sandy or silty; Valley grassland, saltbush and sink scrub.	A	Suitable habitat is not present within the BSA.
<i>Eumops perotis californicus</i>	Western mastiff bat	SSC	Open, semi-arid to arid habitats including conifer and deciduous woodlands, coastal scrub, grasslands, and chaparral. Roosts in crevices in cliff faces, high buildings, trees, and tunnels.	A	Suitable habitat is not present within the BSA.
<i>Onychomys torridus tularensis</i>	Tulare grasshopper mouse	SSC	Arid shrubland communities in hot, arid grassland, blue oak woodland, upper Sonoran subshrub scrub, alkali sink and grassland associations on the sloping margins of the San Joaquin Valley and the Carrizo Plain region.	A	Suitable habitat is not present within the BSA.
<i>Sorex ornatus relictus</i>	Buena Vista Lake ornate shrew	FE	Occupied marshes on the margins of the historic Buena Vista Lake. May occur in dense vegetation along streams and sloughs and along edges of Tule marshes in the Tulare Basin.	A	Suitable habitat is not present within the BSA.
<i>Taxidea taxus</i>	American badger	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient prey base, friable soils, and open, uncultivated ground. Preys on burrowing rodents. Readily digs its own burrows.	A	Suitable habitat is not present within the BSA.

Scientific Name	Common Name	Status	General Habitat Description	Habitat P/A*	Rationale
<i>Vulpes macrurus mutica</i>	San Joaquin kit fox	FT/ST	Habitat includes alkali sink, Valley grassland, and open woodlands, in valleys and adjacent gentle foothills with suitable prey base (primarily rodents). Urban population present in Bakersfield.	U	SJKF or sign of SJKF were not observed within and adjacent to the BSA. The BSA does not provide foraging or denning habitat and it does not provide any shelter. While unlikely, it is possible that Calloway canal or adjacent orchards could be used as a potential movement corridor in search of food, shelter of mates. The closest CNDDDB occurrence is 6 miles from the BSA.
Natural Community					
<i>Valley Saltbrush Scrub</i>	Valley Saltbrush Scrub	--/--/--	Upland soils of old beach or lake deposits; alluvial fans and rolling hills from 75-1500 meter; wetland habitat intermittently flooded and saturated.	A	Valley saltbrush scrub habitat is not present within the BSA.

<p>Status</p> <p>California Native Plant Society, Inventory of Rare and Endangered Plants (June, 2016): (1A) Presumed extinct in California (1 B) Rare, threatened, or endangered in California and elsewhere (2) Rare, threatened, or endangered in California but common elsewhere (3) More information is needed .1 - Seriously endangered in California .2 - Fairly endangered in California .3 - Not very endangered in California</p> <p>United States Fish and Wildlife Service (June, 2016): (FE) Federal Endangered (FT) Federal Threatened (FD) Federal Delisted</p>	<p>California Department of Fish and Wildlife CNDDDB (June, 2016): (SE) State Endangered (ST) State Threatened (FP) State Fully Protected (SSC) Species of Special Concern in California</p> <p>*Habitat P/A Present [P] - habitat is present. Absent [A] - no habitat present and not further work is needed. Unlikely[U] – species and/or habitat present in vicinity, but not detected in action area</p>
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3.2.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not provide funding for the construction of the proposed groundwater recharge basins and related facilities and appurtenances, including water control structures, pipelines, and conveyance channels. Without the assistance of federal funding resources, the District may elect to find alternative funding sources for the project or seek to implement other actions, or construct nothing. In the event that no action is implemented, the District would remain unable to utilize all of its CVP Friant Division surface water supplies. Changes in conditions or habitats would not occur under the No Action Alternative. Operations and water management practices would not change. Therefore, the No Action Alternative would not result in changes to biological resources or habitats.

Proposed Action

Any native habitats once present on the project site 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. Calloway Canal may serve as a dispersal and/or migration corridor for wildlife and may provide low-quality foraging habitat and temporary refuge for some species.

There is minimal potential for effects to the San Joaquin kit fox (SJKF). The ruderal and agricultural nature of the BSA has very low habitat value for either foraging or denning SJKF. SJKF could traverse the project area in search of mates, food or shelter, but this also is unlikely due to the absence of cover in the BSA and its disturbance by humans and dogs. SJKF could use Calloway Canal for movement, but Calloway Canal does not provide any type of cover due to complete lack of vegetation and the banks of Calloway Canal are heavily frequented by agricultural traffic. SJKF could use the adjacent orchards as a movement corridor. The orchards are located outside of the project area and would not be impacted. The movement through the orchards would not be restricted by project activities.

Areas located farther from the BSA, such as the adjacent orchards, offer limited foraging habitat. The proposed project would permanently disturb up to 270 acres of ruderal and agricultural lands. Creation of ponding basins may create potential habitat for SJKF in the future. Maintenance of the ponding basin would occur on an annual basis, and ponding typically occurs during winter and early spring. However, continued herbicide and ground management practices would likely preclude viable SJKF prey base from establishing in the project area.

Implementation of preconstruction surveys and other avoidance and minimization measures, as described in Section 2, 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 adverse effects to San Joaquin kit fox (see Appendix A of Attachment 1).

The biological survey identified a slight risk for adverse effects to migratory birds, which are protected by the Migratory Bird Treaty Act. The proposed project would not remove any trees,

but construction activities may disturb migratory birds or nesting birds using adjacent orchards due to dust, vibration, noise, vehicle operation, and foot traffic. Project activities will include implementation of the measures listed in Section 2.

The Proposed Action would not have an adverse effect, either directly or through habitat modifications, on any special-status species with implementation of the proposed mitigation measures.

3.3 Land Use

3.3.1 Affected Environment

The Shafter-Wasco Irrigation District is comprised of 38,766 acres of which 30,300 acres are dedicated to agricultural crops, primarily almonds, alfalfa, cotton, and wheat. The Proposed Action area contains disturbed lands consisting of agricultural fields, the Calloway Canal, and ruderal land. The project site is situated within a region dominated by agricultural land uses. Additionally, there are several rural residences located in the vicinity of the Proposed Action site. The closest residence to the Proposed Action area lies approximately 200 feet away.

As shown on Figure 8 the Kern County designates the Proposed Action area for Intensive Agriculture uses (Minimum 20 acres) and the Zoning for the site is A – Exclusive Agriculture. Recharge ponds are consistent with land uses allowed in Zone A.

3.3.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not provide funding for the construction of the proposed groundwater recharge basins and related facilities and appurtenances, including water control structures, pipelines, and conveyance channels. Without the assistance of federal funding resources, the District may elect to find alternative funding sources for the project or seek to implement other actions, or construct nothing. In the event that no action is implemented, the District would remain unable to utilize all of its CVP Friant Division surface water supplies. Conditions related to the current use and operation of lands and existing groundwater recharge may remain the same, and may not impact land use.

Proposed Action

The Proposed Action would not result in adverse effects to lands designated as prime agricultural land since the construction of water facilities have been determined to be compatible uses within all relevant designations. All water recovered from the Proposed Action will be used for the irrigation of existing farmland, rather than encouraging the development of new land. No land conversions will result. Therefore, no adverse effects to land use would occur.

3.4 Cultural Resources

“Cultural resources” is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. Title 54 U.S.C. 300101 *et seq.*, formerly and commonly known as the National Historic Preservation Act (NHPA) is the primary legislation for Federal historic preservation. Section 106 of the NHPA (54 U.S.C. 306108) requires Federal agencies to take



Figure 8 - Kern County Zoning

into consideration the effects of their undertakings on historic properties and to afford the Advisory Council on Historic Preservation an opportunity to comment. Historic properties are those cultural resources that are listed on or eligible for inclusion in the National Register of Historic Places (National Register). The Section 106 implementing regulations at 36 CFR Part 800 outline the process the Federal agency takes to identify historic properties within the area of potential effects (APE) and to assess the effects the proposed undertaking will have on those historic properties. The Section 106 process consultations involve the State Historic Preservation Officer, Indian tribes, and other identified consulting and interested parties.

The Section 106 process, as outlined in the Federal regulations at 36 CFR § 800, describes the steps 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 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.

Reclamation proposes to award grant funds to the District for this project from the San Joaquin River Restoration Program (Title X, Part III, sec. 10202). The granting of Federal funds is an undertaking as defined in 36 CFR § 800.16(y) and is a type of activity that has the potential to cause effects on historic properties under 36 CFR § 800.3(a).

3.4.1 Affected Environment

The Central Valley of California is abundant with cultural resources ranging from small archaeological sites to pre-historic villages, and historic era resources ranging from bridges and buildings to canals and roads. Native Americans broadly used the landscapes south of the San Joaquin River and cultural resources related to that use have been identified and recorded within the region. Historic use is also quite prevalent and broadly distributed over the landscape. The contemporary landscape is a heavily altered landscape consisting of agricultural fields of permanent and rotational crops, supporting infrastructure such as water conveyance systems, roads, farm outbuildings, residences, and other components of the built environment. While the potential for archaeological resources exists, it is anticipated, due to the large scale landscape modification, that much of their context is heavily disturbed.

In an effort to identify cultural resources, the District contracted ASM Affiliates to conduct the investigation to identify resources that are eligible for inclusion or listing on the NRHP. These efforts are documented in a *Class III Cultural Resources Inventory/Phase I Survey Report* by Carey et al. (2016). ASM Affiliates conducted background research which included a records search of site files and maps at the Southern San Joaquin Valley Archaeological Information Center (AIE), California State University, Bakersfield; a search of the Native American Heritage Commission (NAHC) *Sacred Lands File*, and a field survey of the Proposed Action area. These combined efforts resulted in the identification of three cultural resources, the Calloway Canal, the K-RA-1 farming reservoir, and the Friant-Kern Canal. Additionally, Reclamation identified a segment of District's Lateral 134.4 within the APE. The Calloway Canal and K-RA-1 have been determined to be ineligible for listing in the NRHP under any criteria. The Friant-Kern Canal, however, has been determined to be eligible for the NRHP under Criterion A/1 for the historic theme of Development, Construction and Operation of the Central Valley Project with a period of significance from 1945 to 1951, as one of the West's longest canals that facilitated the expansion of irrigated lands on the east side of the central-southern reaches of the Central Valley which, in turn, expanded California's agricultural economy to unprecedented levels. The Friant-Kern Canal retains integrity of location, setting, association, feeling, materials, design and craftsmanship.

The segment of District Lateral 134.4 within the APE is a 78-inch diameter concrete pipeline with a 3,700-foot long open concrete lined canal portion west of the FKC turnout from which it receives water. The lateral totals approximately 10.9 miles long and was installed in the late 1950s by Reclamation for the District as part of the District distribution system. Recording the entirety of the District system was outside the scope of this project. Therefore, for the purposes of this undertaking only, Reclamation will treat the District water conveyance system as a district, eligible for inclusion in the National Register under Criterion A for the theme of development of irrigated agriculture in the Kern River valley, and Lateral 134.4 as a contributing element to that district.

3.4.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not help fund construction of the recharge facilities and related appurtenances. Under the No Action Alternative, there would be no adverse effects to cultural resources since there would be no change in operations and no ground disturbance. Without the assistance of federal funding resources, the District may elect to find alternative funding sources for the project or seek to implement other actions, or construct nothing. In the event that no action is implemented, the District would remain unable to utilize all of its CVP Friant Division surface water supplies. Conditions related to cultural resources would remain the same as existing conditions.

Proposed Action

Under the Proposed Action, Reclamation would fund the construction of the Project and associated appurtenances, including one off-site replacement well. The action involves significant ground disturbance and alteration of the landscape. As a result, the proposed action was determined to be the type of activity that had the potential to cause effects to historic properties pursuant to 26 CFR § 800.3(a)(1). As noted in the affected environment for this section, efforts to identify historic properties were conducted resulting in the identification of one previously recorded historic property, the FKC. Applying the criteria of adverse effect at 36 CFR § 800.5(a), it was determined that the proposed action would not adversely affect the FKC and Reclamation found that the overall project would result in a finding of “no adverse effect to historic properties” pursuant to 36 CFR § 800.5(b). Reclamation entered into consultation with the SHPO seeking their concurrence on Reclamation’s findings on May 13, 2016. The SHPO concurred with Reclamations findings on June 17, 2016. As a result of the identification and consultation efforts with the SHPO, Reclamation finds that the proposed action would have no adverse impact on historic properties or cultural resources of any significance (Attachment 2)

3.5 Indian Trust Assets

3.5.1 Affected Environment

Indian Trust Assets (ITAs) 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.’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.

3.5.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not provide funding for the construction of the proposed groundwater recharge basins and related facilities and appurtenances, including water control structures, pipelines, and conveyance channels. Without the assistance of federal funding resources, the District may elect to find alternative funding sources for the project or seek to implement other actions, or construct nothing. In the event that no action is implemented, the District would remain unable to utilize all of its CVP Friant Division surface water supplies. If no project is constructed there would be no adverse effects to ITAs as there would be no impact to fiduciary responsibilities and conditions would remain the same as existing conditions.

Proposed Action

The closest Indian Trust lands are located on the Tule River Tribal Indian lands 41 miles to the northeast. The Tule River Tribe does not maintain trust assets in the project area. As a result, the proposed action would not have ITA impacts.

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 involves construction of a groundwater recharge facility on land that is not owned by a federal agency and therefore is not subject to Executive Order 130007.

3.6.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not provide funding for the construction of the proposed groundwater recharge basins and related facilities and appurtenances, including water control structures, pipelines, and conveyance channels. If no project were constructed, there may be no adverse effects to Indian sacred sites since conditions would remain the same as existing conditions. Without the assistance of federal funding resources, the District may elect to find alternative funding sources for the project or seek to implement other actions, or construct nothing. In the event that no action is implemented, the District would remain unable to utilize all of its CVP Friant Division surface water supplies.

Proposed Action

Native American consultation activities consisted of a Sacred Land File Search performed by the Native American Heritage Commission (NAHC) and no resources were identified. Notification letters and requests for consultation were sent to designated Native American contacts as identified by the NAHC, and no responses were received regarding the Proposed Action. In

addition, Reclamation sent letters to both the Santa Rosa Rancheria, Tejon Indian Tribe, and the Tule River Tribe requesting their assistance in identifying sites of religious and cultural significance which received no reply. The Proposed Action is not located on Federal lands and would not limit access to any known resources on Federal lands. As a result there would be no impact to Indian Sacred Sites as defined by Executive Order 13007.

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 2 below presents the emissions thresholds and attainment status covering the project location’s overlying air basin.

Table 2 - San Joaquin Valley General Conformity “de minimis” Thresholds

Pollutant	Averaging Time	National Standards*	
		Primary	Attainment Status
Ozone (O3)	1-hour	-	Non-Attainment (Extreme)**
	8-hour	0.075 ppm	
Particulate Matter (PM10)	AAM	-	Attainment
	24-hour	150 µg/m3	
Fine Particulate Matter (PM2.5)	AAM	15 µg/m3	Non-Attainment
	24-hour	35 µg/m3	
Carbon Monoxide (CO)	1-hour	35 ppm	Attainment/ Maintenance
	8-hour	9 ppm	
	8-hour (Lake Tahoe)	-	
Nitrogen Dioxide (NO2)	AAM	0.053 ppm	Attainment/ Unclassified
	1-hour	0.100 ppb	
Sulfur Dioxide (SO2)	AAM	0.03 ppm	Attainment/ Unclassified
	24-hour	0.14 ppm	
	3-hour	-	
	1-hour	75 ppb	
Lead	30-day average	-	No Designation/ Classification
	Calendar Quarter	1.5 µg/m3	
	Rolling 3-Month Average	0.15 µg/m3	
Sulfates	24-hour	No Federal Standards	
Hydrogen Sulfide	1-hour		
Vinyl Chloride	24-hour		
Visibility-Reducing Particulate Matter	8-hour		

**For more information on standards visit: <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>*

***No Federal 1-hour standard. Reclassified extreme nonattainment for the Federal 8-hour standard May 5, 2010.*

****Secondary Standard*

Source: ARB 2013; SJVAPCD 2013

Proposed Action operations would only result in emissions generated by routine maintenance activities; however, construction of the Proposed Action would result in the temporary generation of emissions associated with site grading and excavation, motor vehicle exhaust associated with construction equipment and worker trips, as well as the movement of construction equipment on unpaved surfaces.

3.7.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not provide funding for the construction of the proposed groundwater recharge basins and related facilities and appurtenances, including water control structures, pipelines, and conveyance channels. Without the assistance of federal funding resources, the District may elect to find alternative funding sources for the project or seek to implement other actions, or construct nothing. In the event that no action is implemented, the District would remain unable to utilize all of its CVP Friant Division surface water supplies. If no project is constructed there would be no adverse effects to air quality.

Proposed Action

The closest rural residence to the affected area is 200 feet away. Short-term air quality effects 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 PM₁₀ 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 (NO₂), CO, carbon dioxide (CO₂), ROG, sulfur dioxide, and small amounts of air pollutants. Table 3 below provides a summary of the estimated emissions during construction of the Proposed Action. These numbers were obtained using the data per 20-acre recharge basin found in Ambient Air Quality Noise Consulting's Air Quality and GHG Impact Analysis, see Attachment 3.

Table 3 - Calculated Proposed Action Construction Emissions.

	Total Annual Emissions (Tons/Year) ¹				
	ROG	NO _x	CO	PM ₁₀	PM _{2.5}
	0.52	5.34	3.78	1.17	0.62
<i>SJVAPCD Significance Thresholds:</i>	<i>10</i>	<i>10</i>	<i>None</i>	<i>15</i>	<i>None</i>
<i>Exceed SJVAPCD Thresholds?</i>	<i>No</i>	<i>No</i>	<i>NA</i>	<i>No</i>	<i>NA</i>

1. Emissions were quantified using CalEEMod, version 2013.2.2.

Table 4 - Calculated Proposed Action Operational Emissions

Source	Annual Emissions (Tons/year) ¹				
Off-Road Maintenance Equipment	0.002	0.027	0.025	0.001	0.001
Maintenance Worker Vehicle Trips	0.003	0.012	0.040	0.089	0.089
<i>Total Proposed Project Emissions:</i>	<i>0.01</i>	<i>0.04</i>	<i>0.07</i>	<i>0.09</i>	<i>0.09</i>
<i>SJVAPCD Significance Thresholds:</i>	<i>10</i>	<i>10</i>	<i>None</i>	<i>15</i>	<i>None</i>
<i>Exceed SJVAPCD Thresholds?</i>	<i>No</i>	<i>NA</i>	<i>No</i>	<i>No</i>	<i>NA</i>

1. Emissions were quantified using CalEEMod, version 2013.2.2.

Comparison of the estimated Proposed Action operational emissions as seen above in Table 4, with the thresholds for Federal conformity determinations indicates that project emissions are estimated to be below these thresholds. Regardless, the commitments set forth in Section 2 will be implemented under the proposed action to further reduce potential adverse effects. Therefore, project construction and operations under the Proposed Action would not result in adverse effects to air quality beyond Federal thresholds.

3.8 Global Climate Change

Climate change refers to change in measures of climate (e.g., temperature, precipitation, or wind) lasting for decades or longer. Many environmental changes (changes in sun's intensity, changes

in ocean circulation, deforestation, urbanization, burning fossil fuels, etc.) can contribute to climate change (EPA 2009a). Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). Some GHG such as CO₂ occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHG (e.g., fluorinated gases) are created and emitted solely through human activities. The principal GHG that enter the atmosphere because of human activities are: CO₂, methane (CH₄), nitrous oxides, and fluorinated gases (EPA 2009a). During the past century, humans have substantially added to the amount of GHG in the atmosphere by burning fossil fuels such as coal, natural gas, oil, and gasoline to power our cars, factories, utilities, and appliances. The added gases, primarily CO₂ and CH₄, are enhancing the natural greenhouse effect, and likely contributing to an increase in global average temperature and related climate changes. At present, there are uncertainties associated with the science of climate change (EPA 2009). More than 20 million Californians rely on regulated delivery of water resources such as the State Water Project and the CVP, as well as established water rights from rivers. Increases in air temperature may lead to changes in precipitation patterns, runoff timing and volume, sea level rise, and changes in the amount of irrigation water needed due to modified evapotranspiration rates. These changes may lead to effects to the State's water resources and project operations. While there is general consensus in their trend, the magnitudes and onset-timing of effects are uncertain and are scenario-dependent (Anderson et al. 2008).

3.8.1 Affected Environment

In 2002, with the passage of Assembly Bill 1493, the State launched an innovative and proactive approach to dealing with GHG emissions and climate change at the state level. Assembly Bill 1493 requires the California Air Resources Board to develop and implement regulations to reduce automobile and light truck GHG emissions. The State also adopted Assembly Bill 32, which identified GHG reduction goals and noted the effect of increased GHG emissions as they relate to global climate change. While the emissions of one single project would not cause global climate change, GHG emissions from multiple projects throughout the world could result in an adverse impact with respect to global climate change.

3.8.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not provide funding for the construction of the proposed groundwater recharge basins and related facilities and appurtenances, including water control structures, pipelines, and conveyance channels. Without the assistance of federal funding resources, the District may elect to find alternative funding sources for the project or seek to implement other actions, or construct nothing. In the event that no action is implemented, the District would remain unable to utilize all of its CVP Friant Division surface water supplies. If no project is constructed there would be continued farming operations and continued declines in groundwater levels causing growers in the area to increase motor horsepower, resulting in an increase in energy use to convey the same amount of water to their crops. This would potentially increase GHG emissions resulting in possible adverse effects to global climate change since no new recharge of the aquifer would take place.

Proposed Action

The Proposed Action would involve short-term emissions during construction and long-term emissions attributable to project operations and employee trips to the site. These emissions

would vary annually. While these emissions are similar to those of ongoing farming, the estimated unmitigated overall GHG emission due to temporary Project construction activities (Attachment 3) is 644.053 metric tons of carbon dioxide equivalents. The estimated unmitigated overall GHG emissions due to on-going operational activities are 0.0001 metric tons of carbon dioxide equivalents. Since the combined amount of GHGs emitted from the Proposed Action would be well below the 25,000 metric tons/year threshold, no report is required to be submitted to the U.S. EPA and California Air Resources Board (CARB). Accordingly, construction and operation under the Proposed Action would result in below *de minimis* effects to the global climate.

Generally, climate change is expected to result in less snow pack and more reservoir releases outside the growing season. This proposed action would enable capturing the releases for beneficial use.

3.9 Socioeconomic Resources

3.9.1 Affected Environment

The agricultural industry in Kern County contributes to the overall economic stability of the San Joaquin Valley. The market for seasonal workers on local farms draws thousands of migrant workers.

3.9.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not provide funding for the construction of the proposed groundwater recharge basins and related facilities and appurtenances, including water control structures, pipelines, and conveyance channels. Without the assistance of federal funding resources, the District may elect to find alternative funding sources for the project or seek to implement other actions, or construct nothing. In the event that no action is implemented, the District would remain unable to utilize all of its CVP Friant Division surface water supplies. If no project is constructed, the groundwater levels underlying the District would not be able to benefit from the additional recharge. Local farmers rely on groundwater and surface water from the District for irrigation and could be impacted during years when surface water supplies are insufficient, resulting in a reduction in irrigated agriculture and fewer jobs.

Proposed Action

The Proposed Action would increase the water reliability for the District. As a result, the viability of farming practices would also benefit from a more reliable irrigation water supply, and would help to protect agriculture related jobs within the District. There would be slight potential for a beneficial impact to socioeconomics from the increased water supply reliability facilitated by the Proposed Action.

3.10 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 adverse effects 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 adverse effects on minority and low-income communities.

3.10.1 Affected Environment

Kern County employs seasonal workers on local farms that include migrant workers, commonly of Hispanic origin. The communities in which they reside require safe and dependable sources of water.

3.10.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not provide funding for the construction of the proposed groundwater recharge basins and related facilities and appurtenances, including water control structures, pipelines, and conveyance channels. Without the assistance of federal funding resources, the District may elect to find alternative funding sources for the project or seek to implement other actions, or construct nothing. In the event that no action is implemented, the District would remain unable to utilize all of its CVP Friant Division surface water supplies. If no project is constructed groundwater levels underlying the District would not be able to benefit from the additional recharge from wet year surface water supplies. All of the surrounding rural and urban communities rely upon groundwater for municipal and industrial use and local farms depend on surface water delivered by the District for irrigation purposes; therefore, if no project is constructed adverse effects could result for minority or low-income populations in the area.

Proposed Action

To the extent that water supply reliability is improved in Kern County by the proposed action, the Project would increase the available groundwater to the surrounding District agricultural landowners, as well as to surrounding homes and urban areas and other users down gradient of the basin. There are a variety of studies and maps for the groundwater basin which contain supporting information, including the District Groundwater Management Plan⁷. In addition, Figure 9-Water Level Elevations Surrounding the Proposed Action, from the Semitropic Monitoring Committee Report, of which District is an adjoining entity member, shows the location of the basin site and three wells lying between the 50 and 60-foot water level contours (relative to mean sea level). The elevation decline of these contours within which the basin lies, represents roughly a 10-foot drop in a little over 2 miles. The District anticipates that surface water supplies will be sufficient in most years to serve the District and Homer LLC, and the recovery wells, as a back-up component, would only be utilized in extremely dry years (about once every 7 years). So during the other 6 years, groundwater elevations would rise and result in benefits accruing to the District and surrounding areas lying over the greater groundwater basin.

⁷ Shafter-Wasco Irrigation District, *Groundwater Management Plan*, July, 2007. Accessed via the web at http://www.water.ca.gov/groundwater/docs/GWMP/TL-21_Shafter-WascoID_GWMP_2008.pdf

Keeping groundwater levels higher also keeps farming a viable practice resulting in creating jobs for those in the communities within the District. As a result, there would be beneficial effects to minority and/or disadvantaged populations from implementation of the Proposed Action and it would not result in any adverse impact to minority groups. In addition, the Proposed Action would not disproportionately affect one community over another.

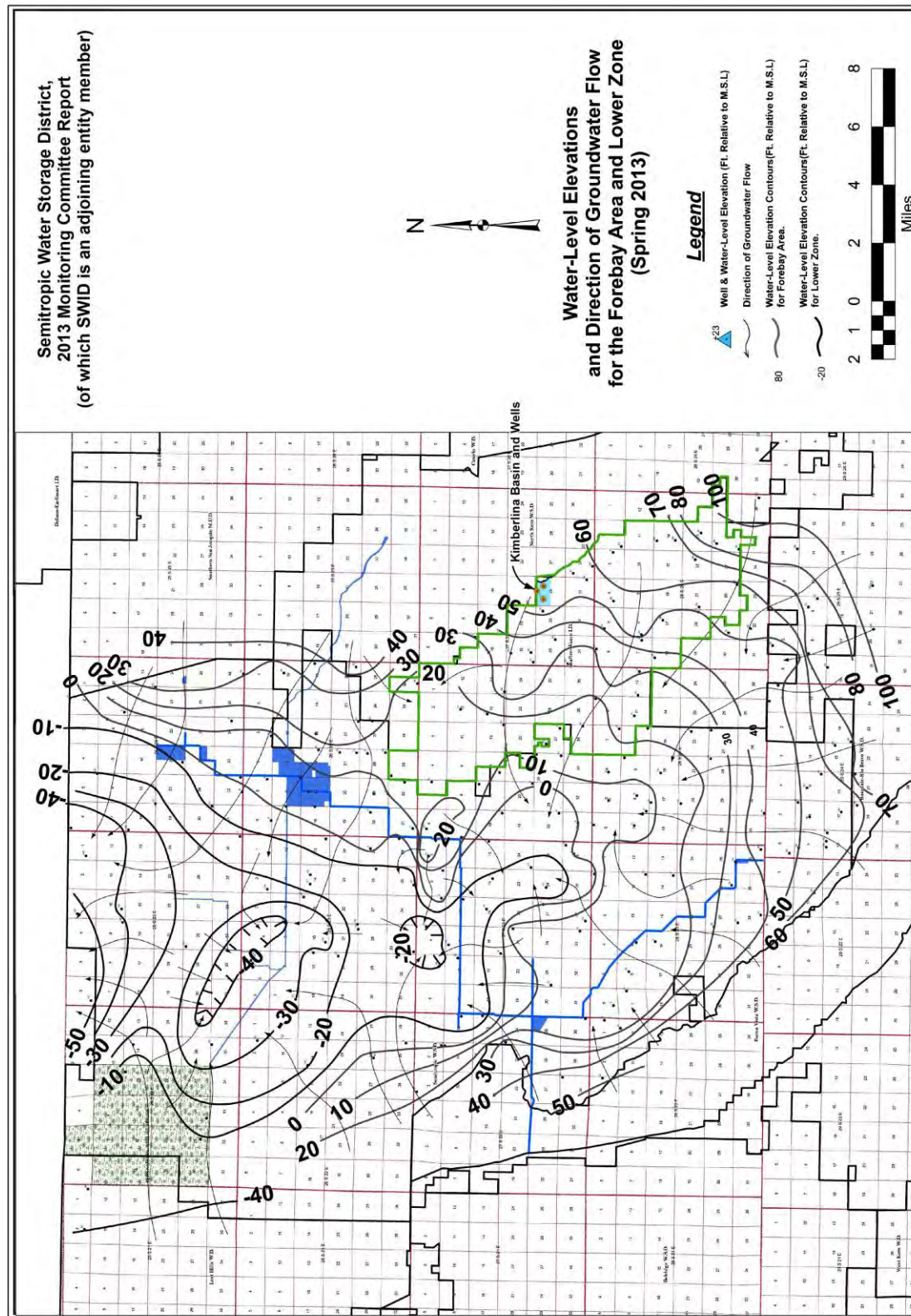


Figure 9 –Water Level Elevations Surrounding the Proposed Action

3.11 Cumulative Effects

According to the Council on Environmental Quality regulations for implementing the procedural provisions of NEPA, 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 effects can result from individually minor but collectively substantial actions taking place over a period of time.

Biological resources would continue to be affected by other types of activities that are ongoing but unrelated to the Proposed Action. Effects to biological resources from the implementation of the Proposed Action would occur only during construction activities. 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 mitigation as described in Section 3.2 and in Attachment 1. Therefore, the Proposed Action, when added to other similar past, existing, and future actions would not contribute to cumulative adverse effects to wildlife resources since construction activities would be short-term.

The Proposed Action would potentially convey groundwater in the FKC in addition to other past, present and future actions that would also introduce groundwater into the FKC, as described in Section 3.1. However, because the Proposed Action would not utilize the FKC for conveyance in all years, and implementation of the proposed monitoring as described in Section 2 would ensure that the water introduced into the FKC under the proposed action would meet the same water quality requirements as other actions to convey groundwater in the FKC, the Proposed Action would not considerably contribute to cumulative water quality effects in the region. The Proposed Action would result in an increase in the District's water supply reliability and improve groundwater conditions. As a result of improved water resource conditions, the Proposed Action would contribute to beneficial cumulative effects in regards to socioeconomic, environmental justice, air quality and groundwater resources resulting from increased local water supply reliability.

Section 4 Consultation and Coordination

Reclamation coordinated with the following entities in preparation of this EA: the Settlement parties, SJRRP Implementing Agencies, and several tribes, as described in Section 3.4. A draft of this EA was circulated for public review and comment for 20 days. One comment letter was received from Arvin-Edison Water Storage District. These comments and responses are included in Attachment 4. In response to these comments, clarifying text has been added to this EA as noted in the responses. The changes made to the EA did not introduce any significant new information or result in any changes to the impact assessment.

4.1 Endangered Species Act

Section 7 of the Endangered Species Act (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 conducted informal consultation with the USFWS on potential effect of the Proposed Action on SJKF. The Proposed Action includes implementation of avoidance and minimization measures as described in Section 2. Reclamation has determined that the Proposed Action is not likely to adversely affect SJKF, and has received concurrence from the USFWS with this determination.

4.2 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) requires that Reclamation coordinate with fish and wildlife agencies (federal and state) on all water development projects that could affect biological resources. Reclamation is coordinating with USFWS on FWCA issues for the proposed action.

4.3 National Historic Preservation Act

Pursuant to the Section 106 regulations at 36 CFR § 800, Reclamation must consult with the SHPO on certain determinations and findings if the undertaking is determined by the Agency Official to be the type of undertaking that has the potential to cause effects to historic properties assuming such properties are present (36 CFR § 800.3[a][1]). Additionally, agencies may identify Indian tribes that may attach religious and cultural significance to cultural resources that could be affected by a proposed action. Once those tribes are identified, the agency official shall invite them to assist in the identification of such properties and invite the Indian tribe to participate in the Section 106 process. Letters to the Santa Rosa Rancheria and Tule River Tribe were sent on two separate occasions, May 6 and August 5, 2015 requesting assistance in identifying sites of religious and cultural significance and inviting both tribes to participate in the Section 106 process. No responses to Reclamation's requests were received. Reclamation initiated consultation with the SHPO seeking their concurrence on a finding of no adverse effect to historic properties. The SHPO concurred with Reclamation's determination in June 2016.