RECLAMATION

Managing Water in the West

Draft Environmental Assessment

Antelope Valley Water Bank Initial Recharge and Recovery Facilities Improvement Project

EA-09-112

U.S. Department of the Interior
Bureau of Reclamation
Mid Pacific Region
South-Central California Area Office
Fresno, California

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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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List of Acronyms and Abbreviations

AB 32	Assembly Bill 32
AF	acre-feet`
APE	area of potential effects
AVEK	Antelope Valley East Kern Water Agency
AVWB	Antelope Valley Water Bank
CAA	Clean Air Act
CDFG	California Department of Fish and Game
CFR	Code of Federal regulations
Corps	U.S. Army Corps of Engineers
CNDDB	California Natural Diversity Data Base
CWA	Clean Water Act
Delta	Sacramento-San Joaquin River Delta
DWR	Department of Water Resources
EA	Environmental Assessment
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
FWCA	Fish and Wildlife Coordination Act
GHG	greenhouse gases
ITA	Indian Trust Assets
KCAPCD	Kern County Air Pollution Control District
KCPD	Kern County Planning Department
MBTA	Migratory Bird Treaty Act
MDAB	Mojave Desert Air Basin
M&I	municipal and industrial
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
PM_{10}	particulate matter less than 10 microns in diameter
Reclamation	U.S. Bureau of Reclamation
Recovery Act	American Recovery and Reinvestment Act of 2009
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SRWBA	Semitropic-Rosamond Water Bank Authority
State	State of California
SWP	State Water Project
U.S.	United States
USFWS	U.S. Fish and Wildlife Service

Section 1 Purpose and Need for Action

1.1 Background

The Kern County Planning Department (KCPD) prepared and completed an Environmental Impact Report (EIR) for the development of the Antelope Valley Water Bank (AVWB) project, which was adopted by KCPD in September 2006 and is hereby incorporated by reference (KCPD 2006). The AVWB encompasses an 18-square mile area totaling roughly 13,440 acres, of which 1,482 acres would be dedicated for spreading basins and the rest of the property would be undisturbed except for the construction of recovery wells and associated pipelines. More specifically, there would be 11 spreading basins, each approximately 160 acres in size except for one 40-acre basin, and up to 40 new recovery wells (Figure 1). At full build-out, the AVWB would be a water banking facility capable of annual recharge and recovery of up to 100,000 acre-feet (AF) and would allow up to 500,000 AF of total storage capacity within the underlying aquifer. Accordingly, the AVWB would contribute to accomplishing the goal of making more water available, through recharge and recovery, to meet existing and future water requirements in the Antelope Valley and other regions in Southern California during periods when surface water supplies are deficient.

The AVWB is located on the Kern County side of the Kern/Los Angeles County border, in a region known as Antelope Valley (Figure 2). Major communities within Antelope Valley include Boron, California City, Mojave, Rosamond, Edwards Air Force Base, Lancaster, and Palmdale. The KCPD transferred development and operation responsibilities of the AVWB to the Semitropic-Rosamond Water Bank Authority (SRWBA), which acquired all the necessary lands pertinent to the AVWB in late 2008. The SRWBA consists of Semitropic Water Storage District, Rosamond Community Services District, and Valley Mutual Water Company. As part of the AVWB project, the SRWBA completed their Initial Recharge and Recovery Facility Project, which involved the construction of one 160-acre basin capable of recharging and recovering water. In order to continue moving forward with the AVWB project, the SRWBA applied for and was selected as a potential recipient for federal funding assistance. This opportunity was the result of a Federal legislation brought about, in part, by the current state of the nation's economy.

The American Recovery and Reinvestment Act (Recovery Act) of 2009 is a bill signed into law by President Barack Obama on February 17, 2009 in an effort to jumpstart the nation's economy, create and/or save jobs, and foster unprecedented levels of accountability and transparency in government spending (Recovery 2009). The Department of the Interior has been tasked with managing $3 billion in investments as part of the Recovery Act, of which Reclamation will devote $260 million for projects in the State of California (State) to expand water supplies, repair aging water infrastructure, and mitigate the effects of a devastating drought that the State is currently experiencing (Interior 2009). Through a Challenge Grant, Reclamation provides 50/50 cost-share using Recovery Act funds for approved projects focused on water conservation, efficiency, and marketing.

1.2 Purpose and Need

The State is experiencing unprecedented water management challenges during the current and extended dry hydrology, which is now in its third consecutive year. The State Water Project (SWP) is forecasting very low storage conditions in all major reservoirs. As a result, the SWP has declared only 40 percent allocation of their Table A supplies for their contractors in 2009 and has recently forecasted a 5 percent allocation for 2010. The Antelope Valley region and much of Southern California rely mostly on SWP supplies, which originate in Northern California and are conveyed through the California Aqueduct from the Sacramento-San Joaquin River Delta (Delta). Due to pumping restrictions imposed on the SWP, the need for additional water storage south of the Delta is widely recognized by all stakeholders in the State as a tool that would help to secure long-term water supplies.

The purpose of the AVWB is to enhance water supply reliability in Antelope Valley and other regions of Southern California. Through recharge and recovery facilities, the AVWB would help meet existing and future water needs during periods when water supplies fall short. In addition, the AVWB's aims to reduce the rate of groundwater overdraft, conserve local water resources, and encourage conjunctive use.

1.3 Scope

This Environmental Assessment (EA) is being prepared to examine the impacts related to the construction and operation of recharge and recovery facilities associated with the AVWB. More specifically, the Proposed Action includes partial funding for the creation of a 160-acre basin, construction of recovery wells, and associated pipelines required for transmission and recovery of water. The Proposed Action area is located in Kern County in a region known as Antelope Valley, and encompasses the east-half of Section 30, Township 9 North, and Range 14 West, San Bernardino Base & Meridian.

1.4 Potential Issues

This EA will analyze the affected environment of the Proposed Action in order to determine the potential and cumulative impacts to the following resources:

- Water Resources
- Land Use
- Biological Resources
- Cultural Resources
- Indian Trust Assets (ITA)
- Socioeconomic Resources
- Environmental Justice
- Air Quality
- Global Climate Change

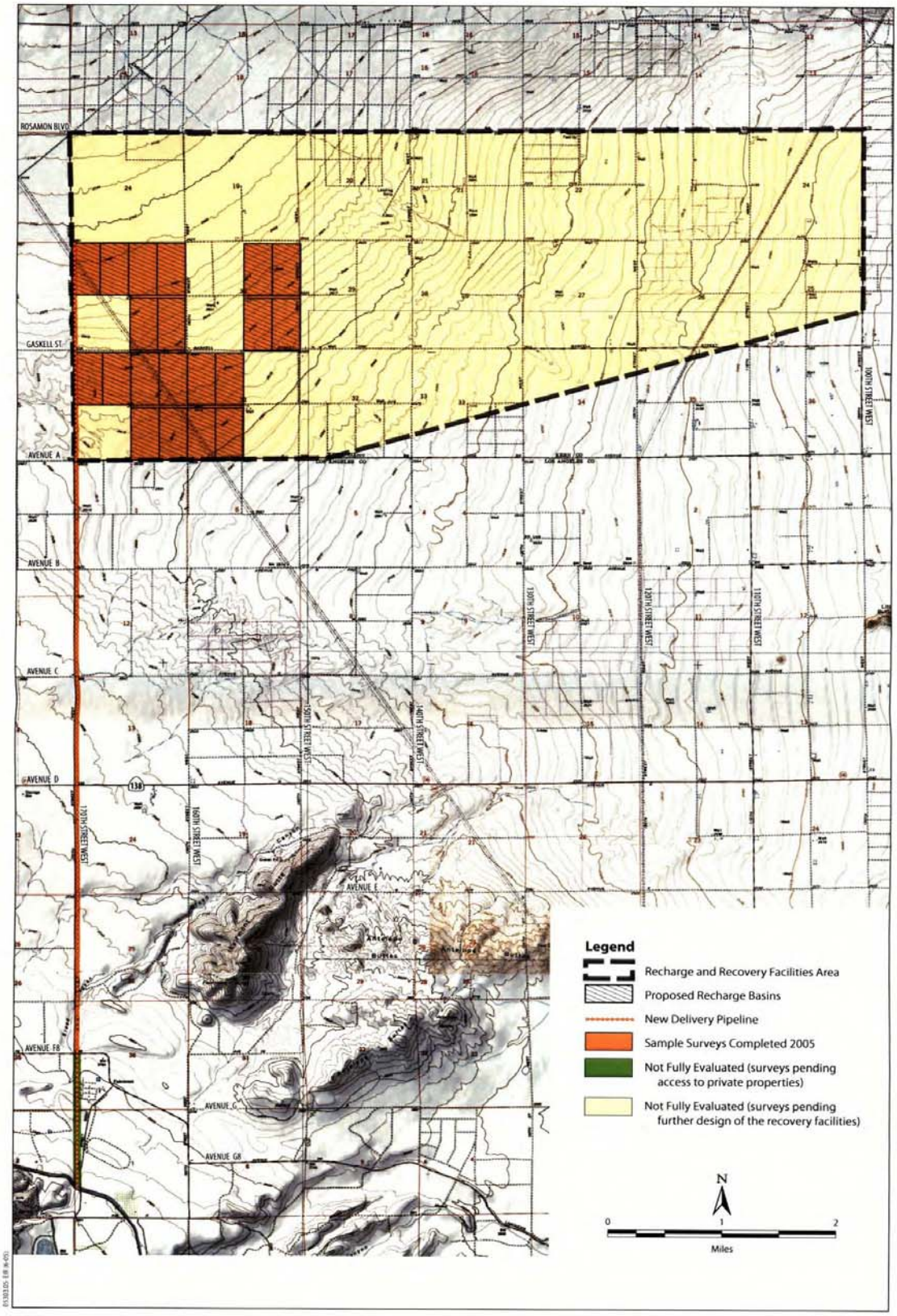

Figure 1. Topographic Map of the AVWB

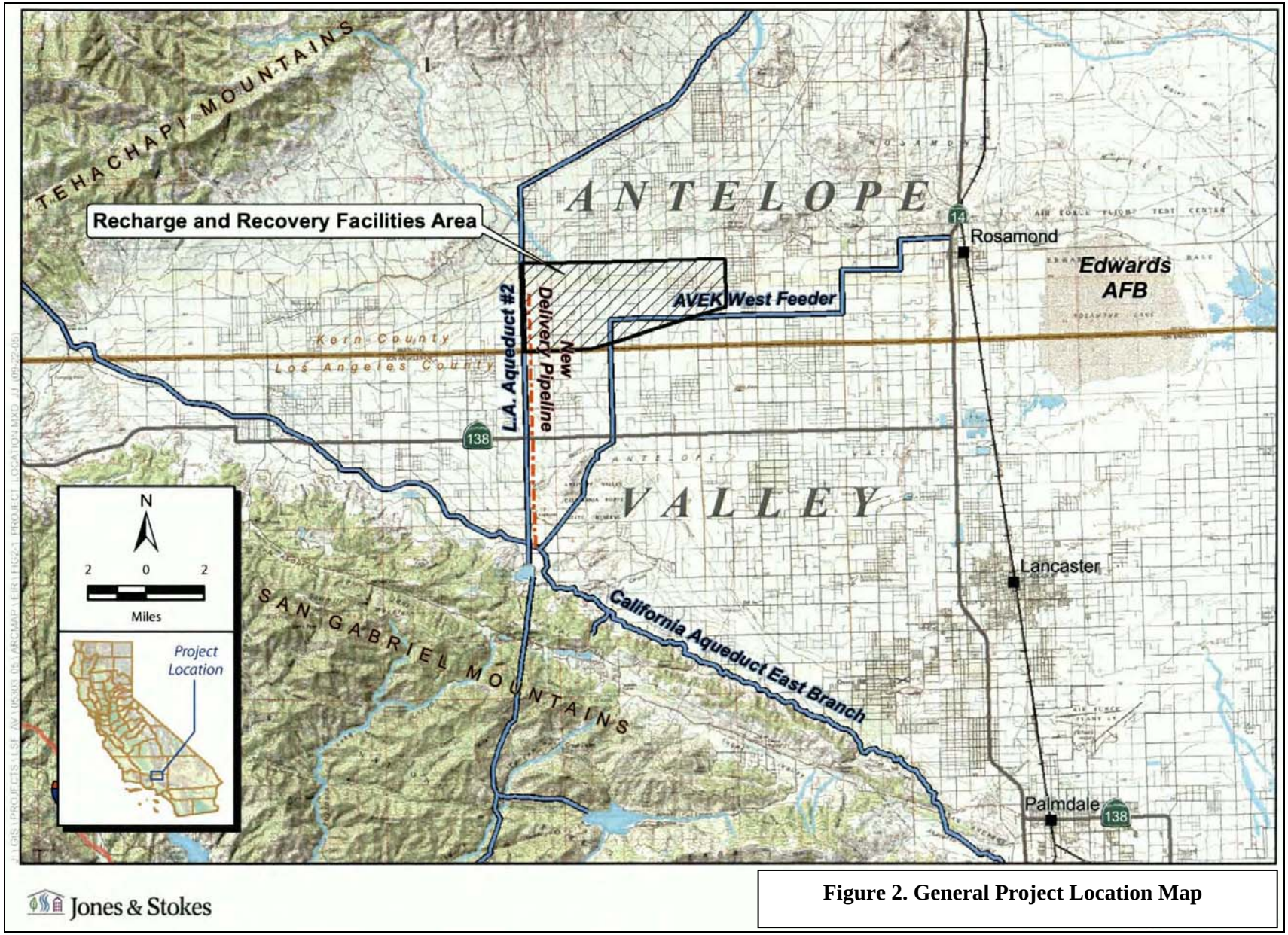

Figure 2. General Project Location Map

Section 2 Alternatives Including Proposed Action

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

Absent federal funding assistance, the project to construct recharge and recovery facilities would, at a minimum, be delayed. It is SRWBA's intent to eventually construct and operate the project; however, the timing would be speculative. Further, there is always the chance that the project would never be built. The No Action Alternative thus could have two possible scenarios: A) no change from existing conditions as the project would not be built; or B) no change from existing conditions for at least a period of time, where the length of time is unknown, after which the project would be built as described in Section 2.2 below and the impacts analyzed in Section 3 of this EA would be realized. In addition, KCPD prepared and completed an EIR for the overall project prior to applying for a Recovery Act-funded Challenge Grant, which analyzed the environmental impacts of constructing and operating the AVWB. Any other subsequent actions caused by scenario B of the No Action Alternative not already covered under Section 2.2 of this EA or KCPD's EIR is speculative at best, is outside the scope of this EA, and may require additional environmental analysis. As a result, scenario A of the No Action Alternative will be analyzed from this point forward in order to reduce repeating information since scenario B mirrors the Proposed Action (but at a later date).

2.1 No Action Alternative

Under the No Action Alternative, Reclamation would not award a Recovery Act-funded Challenge Grant to SRWBA that would help fund the construction and operation of a 160-acre basin and associated recharge and recovery facilities. The property would continue to be used primarily for agriculture. SRWBA would operate the AVWB under its current state and conditions would remain the same.

2.2 Proposed Action

Reclamation proposes to award SRWBA with a Recovery Act-funded Challenge Grant for their Initial Recharge and Recovery Facility Improvement Project (Proposed Action). The Proposed Action would improve on an existing 160-acre water banking facility by building up the existing levees to support more surface storage capacity. In addition, a new 160-acre basin would be developed immediately to the north of the existing basin, recovery wells would be constructed, and new pipelines for transmission and recovery of water would be installed.

More specifically, construction activities would include the following (refer to Figure 3 for key plan of main construction features):

- Install four new recovery wells (with the potential for up to five additional wells if funds are sufficient – indicated as a solid black dot on Figure 3); each well would be drilled to a depth of up to 1000' with the average depth being between 700'-800'; each well pump would have a pumping capacity of about 450 horsepower and would be powered with electricity; power would be drawn from existing poles located along the periphery of the project location to a transformer at each site; underground conduits would connect the transformers to each well head; a drill rig would be used to drill 38" diameter well bores; each well would be installed on top of a 5' by 5' concrete foundation; well pump and associated appurtenances would be installed on top of a 6' by 14' concrete foundation; approximately 0.1 acres of ground disturbance is required per well site;

- Development of a new 160-acre basin; construction of approximately nine diagonal contour levees that would be generally slanted in the southwest to northeast direction (similar to those of the existing basin); construction of peripheral levees along the south and east edges of the new basin; the levees would generally be 5' high, up to 8' wide on the surface, up to 24' wide at the base, and have 3:1 sloping sides; excavation for levee material would be up to 4' deep and include approximately 126,000 cubic yards of earthwork;

- Improvements to the existing 160-acre basin; where appropriate, existing levees would be raised by roughly 2' to a height of about 5' with 3:1 sloping sides; excavation for levee material would amount to an additional 44,100 cubic yards of earthwork (an estimated total of 170,100 cubic yards of earthwork would be required for levee material for both basins); graders, excavators, and tractor-drawn rigs would be used to create/modify the basin levees;

- Installation of approximately 4 miles of a new pipeline capable of serving as both the recovery/collection and transmission line ranging from 18" to 54" in diameter; construction of a turnout from the Antelope Valley East Kern Water Agency (AVEK) West Feeder pipeline to the new pipeline; approximately five turnouts would be constructed from the new pipeline to discharge water into the new basin for recharge; trenches for the pipeline would average about 10.5' deep with a maximum depth of 18' below existing grade; trench width would vary between 10'-22' wide depending on diameter of pipe and depth of trench; a cover of about 4'-6' would bury the pipeline; equipment related to this portion of work would include a backhoe, trackhoe, trenching machines, and roller

Land acquisition pertinent to the Proposed Action has already been obtained by SRWBA, so there would not be any right-of-way restrictions. Construction would begin as soon as permitted and is anticipated to be completed by September 30, 2010.

2.2.1 Environmental Protection Measures

SRWBA would implement the following environmental protection measures to reduce environmental consequences associated with the Proposed Action (Table 1). Environmental consequences for resource areas assume the measures specified would be fully implemented.

Table 1. Environmental Protection Measures

Resource	Protection Measure
Biological Resources	A protocol-level preconstruction burrowing owl survey shall be conducted within 250' of areas subject to disturbance no fewer than 14 days and no more than 30 days prior to start of construction according to established guidelines (CDFG 1995). Appropriate avoidance, minimization, or protection measures shall be determined in consultation with the California Department of Fish and Game (CDFG) in the event an active nest is located in an area subject to disturbance, or within the typical setback (i.e., occupied burrows or nests within 150' of an area subject to disturbance during the non-breeding season, or within 250' of an area subject to disturbance during the breeding season (February 1 through August 31)).
Biological Resources	Preconstruction surveys for nesting Swainson's hawks shall be performed within 0.5 mi of the project area according to established protocol and implement protective measures to minimize potential effects (CDFG 1994).
Biological Resources	Areas subject to ground disturbance shall be surveyed for active nests by a qualified biologist within 15 days of the start of construction when construction is scheduled to occur during the bird nesting season (February 1 to September 30). An appropriate buffer shall be established around active avian nests in consultation with CDFG if an active avian nest is identified during nesting season (February 1 through September 30).
Air Quality	The following dust control measures shall be implemented in order to suppress emissions of fugitive dust as a result of construction or construction-related activities: watering at graded or excavated sites; watering on untreated or untreated roads; watering of stockpile material during transport/import; watering of onsite stockpile; onsite vehicle speed limited to 15 miles per hour; and earthmoving activities should cease during excessive winds.

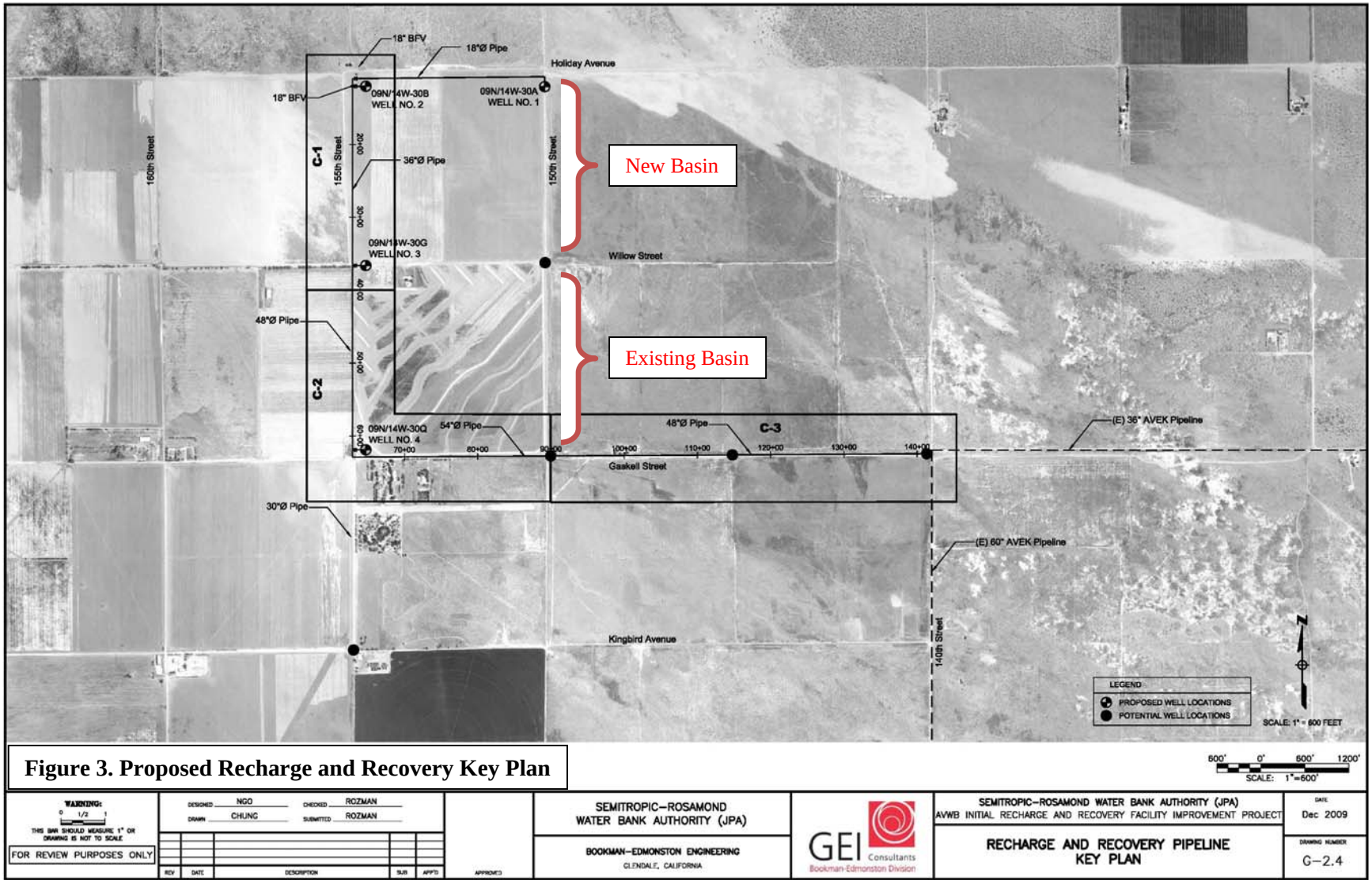

Figure 3. Proposed Recharge and Recovery Key Plan

Section 3 Affected Environment & Environmental Consequences

This section identifies the potentially affected environment and the environmental consequences involved with the Proposed Action and the No Action Alternative, in addition to environmental trends and conditions that currently exist.

3.1 Water Resources

3.1.1 Affected Environment

The Antelope Valley region has two primary water sources: 1) naturally occurring surface water and groundwater accumulated from rain and snow that falls in the Antelope Valley and surrounding mountain ranges; and 2) SWP water. The average rain fall in the Antelope Valley region ranges from 5" to 10" (AV Water Plan 2007) and SWP is used for irrigation and municipal and industrial (M&I) purposes.

State Water Project

The SWP is a water storage and delivery system of reservoirs, aqueducts, power plants and pumping plants. Its primary purpose is to store water and distribute it to urban and agricultural water suppliers in Northern California, the San Francisco Bay Area, the San Joaquin Valley, the Central Coast, and Southern California. Of the contracted water supply, 70 percent goes to urban users and 30 percent goes to agricultural users (DWR 2010). The SWP makes deliveries to two-thirds of California's population and is maintained and operated by the California Department of Water Resources (DWR). The SWP begins on the Feather River, where runoff is stored behind Oroville Dam in Butte County. The water then flows down natural channels to the Delta where it is then pumped and conveyed south via the 444 mile-long, concrete-lined California Aqueduct. Along the way, SWP is stored/regulated in the San Luis Reservoir and O'Neill Forebay. SWP deliveries to Southern California are conveyed from the San Luis Reservoir and O'Neill Forebay south towards the Tehachapi Mountains where flow is lifted 2,000 ft at the A.D. Edmonston Pumping Plant. After the Tehachapi Mountains, the California Aqueduct divides into the East and West Branches.

Antelope Valley Water Bank

At full build-out, the AVWB would encompass an 18-square mile area totaling roughly 13,440 acres, of which 1,482 acres would be dedicated for spreading basins and the rest of the property would be undisturbed except for the construction of recovery wells and associated pipelines. There would be a total of 11 spreading basins, each approximately 160 acres in size except for one 40-acre basin, and up to 40 new recovery wells. Ultimately, the AVWB would be a water banking facility capable of annual recharge and recovery of up to 100,000 AF and would allow up to 500,000 AF of total storage capacity within the underlying aquifer

Currently, the AVWB consists of one, 160-acre recharge basin. Existing banking partners of the AVWB include the San Diego Water Authority and the Rosamond Community Services District. Each of these participants has committed a portion of their SWP supplies to the following annual recharge and recovery arrangements:

- Rosedale Community Services District would be allowed to recharge up to 6,000 AF and recover up to 2,000 AF; and

- San Diego County Water Authority would be allowed to recharge up to 5,000 AF and recover up to 5,000 AF.

The SWP supplies used for recharge and recovery in the AVWB is conveyed from the East Branch of the California Aqueduct via the AVEK West Feeder pipeline. The AVWB is located entirely within the AVEK service area.

Antelope Valley East Kern Water Agency

The AVEK is a water importer, supplier and wholesaler for a 2,300-square mile region in the Mojave Desert area. To augment overdrafted groundwater resources, AVEK contracted with DWR for 141,400 AF per year (AF/y) of SWP supplies. From this annual entitlement, approximately 75,000 AF/y are used by municipal, industrial and agricultural water customers (AVEK 2010). In the three years leading up to 2006, AVEK had to turn away 30,000 to 45,000 AF due to lack of demand. These supplies could have stored in the AVWB if it had been in place and recovered in 2007-2009, which has been a period of drought with severe water shortages. The West Feeder is a 36" to 60" diameter, buried steel pipeline installed by AVEK to convey SWP water to their internal distribution system. There are 4.5 miles of conveyance lines that carry water from the AVEK West Feeder to the area proposed for the recharge basins.

Groundwater Resources

The AVWB is located within the Antelope Valley Groundwater Basin, which is a part of the South Lahontan Hydrologic Region. The groundwater basin encompasses portions of Los Angeles, Kern, and San Bernardino counties with a surface area of roughly 1,020,000 acres and an estimated storage capacity of 5,400,000 AF for parts of the basin between 20 and 220 ft in depth (Bader 1969). From 1975 through 1998, groundwater level changes ranged from an increase of 84 ft to a decrease of 66 ft (Carlson and Phillips 1998).

In the early 1900s the water table beneath the project area was 100 to 200 ft below ground surface. However, agricultural and domestic pumpage lowered the water table until AVEK began importing surface water supplies in 1974, which resulted in the stabilization of groundwater levels in the mid 1980s. The water table now averages 341 feet below ground surface, with seasonal irrigation variations of 5 to 20 feet. The project would store imported surface water in the dewatered space above the current water table (Kern County, FEIR 2006).

Recharge to the basin is primarily accomplished by perennial runoff from the surrounding mountains and hills. The Big Rock and Little Rock Creeks, in the southern part of the basin, contribute about 80 percent of runoff into the basin (Durbin 1978). Other minor recharge is from return of irrigation water and septic system effluent (Duell 1987).

Due to recent groundwater pumping, groundwater levels and flow have been altered in urban areas such as Lancaster and Edwards Air Force Base. Groundwater pumping has caused subsidence of the ground surface as well as earth fissures to appear in Lancaster and Edwards Air Force Base. By 1992, 292 square miles of Antelope Valley had subsided by more than 1 ft (Sneed and Galloway 2000; Ikehara and Phillips 1994).

Water Quality

Surface water quality in the project area is dependent on the quality of the water in the California Aqueduct because all of the surface water applied to the AVWB recharge basins would be from the SWP. This water has been used to irrigate the region since 1974. DWR analyzes water quality samples from the SWP for dissolved solids, nutrients, chloride, sulfate, sodium, trace metals, and other constituents. The nearest sampling station to the Proposed Action area is at Check 41 and is located at the Tehachapi Afterbay, approximately 18 miles upstream of AVEK's West Feeder diversion from the East Branch of the California Aqueduct. In addition, water quality samplings were conducted by SRWBA in the project area. Table 2 below compares data from Check 41 water quality samples and groundwater samples from the project area.

Table 2. Summary of SWP and Groundwater Quality Data

Analyte	Unit	SWP Check 41	Project Well	EPA MCL	CA MCL
Alkalinity	mg/L	52	140		
Arsenic	mg/L	0.003	< 0.002	0.010	0.010
Boron	mg/L	0.1	< 0.1		
Bromide	mg/L	0.26	NT		
Calcium	mg/L	15	36		
Carbon-Total Organic	mg/L	2.5	NT		
Chloride	mg/L	82	14	250[a]	
Chromium	mg/L	< 0.001	0.005	0.1	0.05
Copper	mg/L	0.001	< 0.010	1.3[a]	1.3[b]
Hardness	mg/L	79	110		
Iron	mg/L	< 0.005	< 0.050	0.3[a]	
Lead	mg/L	< 0.001	0.0004	0.015	0.015[b]
Magnesium	mg/L	10	NT		
Manganese	mg/L	NT	< 0.010	0.05[a]	
Nitrate	mg/L	0.4	11.5	10 (as N)	45 (as NO_3)
Phosphorus – Total	mg/L	0.07	< 0.1		
Selenium	mg/L	< 0.001	< 0.002	0.05	0.05
Specific Conductance	µs/cm	426	370		
Sulfate	mg/L	22	22	250[a]	
Total Dissolved Solids	mg/L	NT	230		
Turbidity	NTU	5	0.3		
Zinc	mg/L	< 0.005	0.120	5[a]	

Notes:

USEPA MCL = United States Environmental Protection Agency Maximum Contaminant level for public water supplies. (http://www.epa.gov/safewater/contaminants/index.html)

CA MCL = California Maximum Contaminant Level for public water supplies. (http://www.cdph.ca.gov/CERTLIC/DRINKINGWATER/Pages/Chemicalcontaminants.aspx)

Data Source: SWP Water Data Library, Sample Data for August 19, 2009.

[a] = secondary MCL

[b] = regulatory action level

NT = not tested

The data above suggests that local groundwater is more alkaline than SWP water and has higher concentrations for calcium, hardness and nitrate. The SWP water is slightly more turbid and has higher chloride concentrations. However, the overall quality for both SWP and groundwater quality are similar and meets or is better than State and Environmental Protection Agency maximum contaminant levels.

3.1.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, the AVWB would continue to be operated under current conditions. The SRWBA would not be able to expand on its facilities and provide for more water banking opportunities for existing and potential participants. Since SWP allocations have been reduced, landowners in the Antelope Valley Region would likely have to pump more groundwater in order to supplement its surface water supply. Without this additional recharge, groundwater level conditions in the region could worsen and may exacerbate ground subsidence.

Proposed Action

The Proposed Action is designed to recharge at least half-a-foot per day over 320 acres (160 acres existing and 160 acres proposed) which works out to be approximately 6,300 AF annually. The Proposed Action's maximum annual storage rate is 20,000 AF with a maximum annual withdrawal rate is 15,000 AF. Existing and potential participants of the AVWB would be allowed to store surplus SWP supplies during "wet years" and recover a like-amount (minus 3% for evaporation losses and 10% for aquifer contribution) during "dry years". The California Aqueduct would serve mainly as the conveyance mechanism of SWP to the AVWB as has normally occurred in the past. The AVEK West Feeder pipeline has adequate capacity for the purposes of the Proposed Action and would also serve as the main transmission line to deliver recovered water to users within AVEK for M&I uses. In turn, AVEK would make available a like-amount of its SWP supplies from the California Aqueduct to an AVWB participant or other SWP contractors. The ability of AVEK and DWR to deliver water to its respective customers would not be adversely affected.

The Proposed Action would not generate a new supply of water; rather, it would improve the reliability of Antelope Valley and the region's water resources by recharging available surplus surface water for later use when groundwater pumping is necessary. The Proposed Action does not include additional groundwater pumping; therefore, it would not contribute to ground subsidence and water-level impacts associated with groundwater pumping. Banking participants would be required to leave behind ten percent of its stored water in the groundwater basin for recharge. There would be no adverse impacts to water quality since the quality of SWP supplies and that of the groundwater are similar. The Proposed Action would improve the overall groundwater basin and improve water resources management in the Antelope Valley region.

Cumulative Impacts

It is anticipated that the AVWB would increase in size as banking partners are added until the entire project is completely built out as analyzed in the EIR. Due to the flexibility of the AVWB, it is possible to add and construct future elements as needed in a phased approach. A major consideration in the development of the project is to provide the operational flexibility to meet the needs of the future banking partners. The changing conditions of California water supplies

help to dictate the flexibility required and maintained in development of banking, marketing and supply projects. Aside from the two existing water bank users, other potential banking partners are speculative at best.

The Proposed Action would improve water resources management in the region by increasing the absorption of available water supplies, particularly during "wet-years". The long-term operation of the AVWB would result in a cumulative positive impact on groundwater levels by contributing to the protection of the local aquifer from overdraft. The AVWB operation allows for 10 percent of banked water to remain in the Antelope Valley groundwater basin which is a positive contribution to the underlying aquifer and ground subsidence throughout the region. Estimated water savings is on the order of 126,000 AF over the course of 20 years (6,300 AF average savings per year – not including evaporative losses of up to 3%).

3.2 Land Use

3.2.1 Affected Environment

The Proposed Action area is located in the Antelope Valley, a semiarid region with gently sloping land that borders the Mojave Desert. Despite the lack of rainfall, the area has been extensively used for agriculture with the benefit of irrigation since the 1960s. The Antelope Valley's first main industry was agriculture. Historically, alfalfa fields and fruit crops were grown; however farmers now are growing a wider variety of field and row crops such as carrots, onions, lettuce, and potatoes. Aside from the existing 160-acre recharge and recovery facility, the lands within the AVWB are all farmed to carrots. The Kern County General Plan designated the lands within the project area as agriculture (Kern County Planning Department 2009).

Williamson Act Standard Uniform Rules

Kern County has adopted a set of Agricultural Preserve Standard Uniform Rules that identify land uses that are considered compatible uses within agricultural preserves established under the Williamson Act. These rules are designed to restrict the uses of land enrolled in the Williamson Act contract to agricultural or other compatible uses. Agricultural uses include crop cultivation, grazing operations, livestock breeding, dairies, and uses that are incidental to agricultural uses. Other compatible uses include the construction of gas, electric, communications, water and other similar public utilities (Kern County Planning Department 2004).

3.2.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, no changes to land use would occur and SRWBA's facilities would continue to operate as currently. Existing conditions would remain the same.

Proposed Action

The Proposed Action would not conflict with any agricultural zoning or Williamson Act contracts in Kern County. Kern County has adopted a set of Agricultural Preserve Standard Uniform Rules that identified land uses considered compatible within agricultural preserves established under the Williamson Act. These rules are designed to restrict the uses of land enrolled in the Williamson Act contract to agricultural or other compatible uses. Agricultural uses include crop cultivation, grazing operations, livestock breeding, dairies, and uses that are

incidental to agricultural uses. Other compatible uses include the erection of gas, electric, communications, water and other similar public utilities (Kern County Planning Department 2004).

The Proposed Action would involve approximately 160 acres of farmland being converted into a water bank. When not being used for recharge, the basins would be used for organic farming a minimum of 8 months out of the year. Recovery wells and recharge basins are considered to be incidental uses for agriculture and is therefore compatible within agricultural preserves established under the Williamson Act contract. Therefore, the Proposed Action would not have any adverse impacts on land use.

Cumulative Impacts

At full build-out, the AVWB would encompass an 18-square mile area totaling roughly 13,440 acres, of which 1,482 acres would be dedicated for spreading basins. The remaining property would continue to be farmed as has historically occurred and would not be disturbed. Operation flexibility of the AVWB would allow basins to be rotated: while not being used for recharge, the remaining basins would be farmed as has historically occurred. The development of recovery wells and recharge facilities is considered to be an incidental agricultural use; therefore, there would be no cumulative adverse impacts to land use.

3.3 Biological Resources

3.3.1 Affected Environment

The biological resources found near the Proposed Action are similar to biological resources found in other agricultural areas of the Antelope Valley. The Proposed Action involves construction in a rural agricultural area that has been intensively farmed for several decades. Much of the remaining habitat consists of isolated fragments supporting small, highly vulnerable animal and plant populations (Reclamation 2001).

The Ventura USFWS's Database: http://www.fws.gov/ventura/speciesinfo/spplists/sl_kern_co.cfm, was accessed February 4, 2010, to determine federal protected species known or with the potential to occur in Kern County (USFWS 2010). Reclamation further queried the California Natural Diversity Database (CNDDB) for records of protected species within 10 miles of the project location (CNDDB 2010). The two lists, in addition to other information within Reclamation's files were combined to create the following list (Table 3).

Table. 3.2. Special status species that could potentially occur within affected area.

Species	***Status[1]***	***Effects[2]***	***Occurrence in the Study Area[3]***
Birds			
California Condor (*Gymnogyps californianus*)	E , X	NE	**Absent**. No individuals or habitat in area of effect.
Least Bell's Vireo (*Vireo bellii pusillus*)	E	NE	**Absent**. No individuals or habitat in area of effect.

Southwestern Willow Flycatcher (*Empidonax trallii extimus*)	E	NE	**Absent.** No individuals or habitat in area of effect. Disturbed agricultural lands do not provide habitat.
Swainson's hawk (*Buteo swansoni*)	MBTA	NE	**Possible**. Individuals and habitat occur within Little Buttes Quad.
Western burrowing owl (*Athene cunicularia hypugaea*)	MBTA	NE	**Present**. CNDDB[4] records indicate species occurs within Fairmont Butte and Little Buttes Quads.
Yellow-Billed Cuckoo (*Coccyzus americanus*)	C, MBTA	NE	**Absent**. No individuals or habitat in area of effect.
Reptiles			
Desert Tortoise Gopherus agassizzii	T , X	NE	**Absent**. No individuals or habitat in area of effect.

1 Status= Listing of Federally special status species, unless otherwise indicated
E: Listed as Endangered
MBTA: Protected by the Migratory Bird Treaty Act
T: Listed as Threatened
X: Critical Habitat designated for this species
C: Candidate - Candidate to become a proposed species
2 Effects = Effect determination.
NE: No Effect
3 Definition Of Occurrence Indicators
Present: Species recorded in area and habitat present
Possible: Reports from greater than 10 years ago and any habit present of suboptimum quality
Absent: Species not recorded in study area and/or habitat requirements not met
4 CNDDB = California Natural Diversity Database 2010

Critical Habitat The Proposed Action does not fall within designated or proposed critical habitat for any of the federal listed wildlife species identified by the USFWS.

Swainson's hawk This species is a federal species of concern and protected under the federal Migratory Bird Treaty Act (MBTA). Swainson's hawk are found in the grasslands and agricultural lands of California's Central Valley during spring and summer. The nesting season is from March 1 – September 15. They exhibit a high degree of nest site fidelity and nests are constructed in trees, and include Fremont cottonwood (*Populus fremontia*), willow (*Salix* spp.), Valley Oak (*Quercus lobata*), eucalyptus (*Eucalyptus* spp), and Joshua tree (*Yucca brevifolia*) (Bloom 1980). This species spends large amounts of time soaring over grasslands and agricultural fields in the Central Valley and can travel up to 29 km to forage for prey (Estep 1989). Swainson's hawks prey on small mammals, insects, and birds. They have adapted to the use of some croplands, predominantly alfalfa, but also grain, tomatoes, beets and other row crops for foraging (Estep 1989).

There are two records that indicate this species in Little Buttes quad approximately a mile from the Project Site (CNDDB 2010). A nest was observed in June of 2005 containing 2 adults and 1-2 young in a yard with ornamental trees and grasses. The second record also contained a nest with both adults reported June of 2005 and located in an alfalfa field next to fallow agricultural field.

Western burrowing owl This small, ground-dwelling owl is a yearlong-resident protected under the MBTA. The burrowing owl exhibits high site fidelity and lives in ground squirrel and other mammal burrows that it appropriates and enlarges for its purposes. This owl is typically found in short-grass grasslands, open scrub habitats, and a variety of open, human-altered environments and agricultural fields. Individuals present in agricultural lands will utilize cropland for foraging habitat (Gervais et al. 2000, York et al. 2002). They are active day and night and are opportunistic feeders, and their diet includes insects, amphibians, reptiles, small mammals, and grass material. Burrowing owl nesting season occurs from Feb. 1 - Aug. 31(CDFG 1995).

CNDDB-recorded occurrences indicate this species within a 10-mile radius of the Project area. The closest observation (~2.5 mile) was reported in Fairmont Buttes Quad in Sept. 2007 (CNDDB 2010).

3.3.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not provide grant funds for the construction of the project and conditions regarding biological resources would remain the same as described above. There would be no impacts to wildlife and special-status species as no new facilities would be constructed and historical operation and maintenance practices related to the AVBW Initial Recharge and Recovery Facility would continue.

Proposed Action

The Proposed Action could have temporary and permanent impacts on biological resources in the project area. Temporary impacts could occur during the construction period, and would be within temporary equipment staging and equipment movement areas and the alignment of the new delivery pipeline. The potential for impacts to wildlife and special-status species would be limited, since the project would be largely constructed within the existing recovery wells and associated pipelines.

Swainson's hawk Construction activities, such as earthmoving with heavy construction equipment occurring within the area for the proposed recharge basins could cause the failure of a Swainson's hawk nest, if a pair was nesting in the vicinity. The loss of an active Swainson's hawk nest could contribute to continuing local and statewide declines of Swainson's hawks. Because the number of Swainson's hawks that nest in the Antelope Valley is very small, the loss of even one nest could be significant because it could have a substantial adverse effect, either directly or through habitat removal, on a species identified as a migratory bird protected under the MBTA.

SRWBA would retain a qualified biologist to conduct preconstruction surveys to locate all active nest sites within 0.5 mile of the construction area. If occupied Swainson's hawk nests are found, the SRWBA, in consultation with CDFG, shall establish a buffer zone around active Swainson's hawk nests in the vicinity of the Project area.

Western burrowing owl The shoulders of roads, larger dirt mounds and berms, and other open areas provide suitable habitat for burrowing owls, especially where ground squirrel burrows and

open culverts occur. Construction activities, such as excavation and driving off road could result in the removal of active nests, if construction occurs during the nesting season (February 1 through August 31) and occupied burrows during the non-breeding season (September 1 through January 31). Because the numbers of burrowing owls nesting in the Antelope Valley is low, the loss of one nest or one occupied burrow could be a significant impact because it could have a substantial adverse effect, either directly or through habitat removal, on a species identified as a migratory bird protected under the MBTA.

There is a very limited abundance of small mammal burrows in the area (personal observation by Reclamation Biologist on November 3, 2009), and because of the great disturbance of the site and the fact that it is surrounded by active agricultural fields, any burrowing owls present in the area would most likely be transient. However, there is the possibility that Western burrowing owl could have moved into the project area, and as such, a qualified biologist must perform a pre-activity survey of the entire action area and standard avoidance measures must be implemented for Western burrowing owl as stated above (Table 1).

The Proposed Action could affect listed species if they were present. By following Environmental Protection Measures as stated in Table 1, potential impacts to burrowing owl and Swainson's hawk during the Proposed Action would be avoided. Therefore, the Proposed Action is anticipated to have no effect to Swainson's hawk, Western burrowing owl, or other listed species.

Cumulative Impacts

Biological resources would continue to be affected by other types of activities that are ongoing but unrelated to the Proposed Action. Impacts to biological resources from the implementation of the Proposed Action would occur only during construction activities. The Proposed Action, when added to other existing and proposed actions, does not contribute to cumulative impacts to wildlife resources since construction activities are short-term.

3.4 Cultural Resources

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

The Section 106 process is outlined in the Federal regulations at 36 Code of Federal Regulations (CFR) Part 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking would have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action to affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that APE, determine the effect that the

undertaking would have on historic properties, and consult with the State Historic Preservation Officer (SHPO), to seek concurrence on Reclamation's findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties.

3.4.1 Affected Environment

The project area is located in eastern Kern County, approximately 10 miles west of the unincorporated community of Rosamond in the Antelope Valley of Kern County, and 17 miles northwest of the City of Lancaster. The AVWB encompasses an 18-square mile area that has been actively cultivated for more than 20 years. The Rosamond Lake Basin in the Antelope Valley has an extensive record of prehistoric use that spans at least the last 10,000 years. While very little archaeological investigation has been conducted in the project footprint, a large number of extensive investigations on Edwards Air Force Base a few miles east of the community of Rosamond have demonstrated repeated use and long term occupation during the prehistoric period. Based on the work at Edwards and elsewhere in the region, archaeological sequences in the vicinity exhibit a complex and fragile record of human visitation and occupation extending from the last ice age until Euro-American contact. Given the sparse nature of resources in the region, people regularly moved and travelled great distances between different village locations. This makes it difficult to confidently ascertain which people would have resided in the area during any interval but many people ascribe the region to the Kitanemuk and/or the Tataviam. More recently, the area has seen limited use for more modest agricultural pursuits.

Archival investigation, consultation with interested members of the public, and pedestrian surveys were performed on the Proposed Action area of the AVWB. These efforts revealed a single cultural resource within the project area. The identified resource is an abandoned well and an associated sparse scatter of mid-20th Century refuse. This resources was evaluated for eligibility to the NRHP and was determined to not be eligible.

3.4.2 Environmental Consequences

No Action

Under the No Action Alternative, conditions related to any unidentified potentially historic properties would remain the same as before. Since there would be no change in operations and no additional ground disturbance, there would be no new impacts to potential historic properties.

Proposed Action

The Proposed Action involved activities that include excavation and these actions have the potential for impacts to historic properties. Identification efforts, as outlined in the affected environment section, were conducted and revealed that no historic properties were present within the project footprint. Reclamation, therefore determined that the proposed action would result in no historic properties being affected. SHPO concurred with this finding on January 26, 2010. In the unlikely event that project implementation revealed previously unidentified cultural resources, then procedures outlined at 36 CFR Part 800.13(B) would be followed and would ensure that significant impacts are avoided.

Cumulative Impacts
The Proposed Action would not impact historic properties; therefore, it is not expected to contribute to cumulative impacts on cultural resources.

3.5 Indian Trust Assets

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

3.5.1 Affected Environment
The nearest ITA is a Public Domain Allotment approximately 36 miles north/northeast of the project location.

3.5.2 Environmental Consequences

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

Proposed Action
There are no tribes possessing legal property interests held in trust by the U.S. in the lands involved with the Proposed Action; therefore, this action would have no effect on ITA.

Cumulative Impacts
The Proposed Action, when added to other existing and proposed actions, would not contribute to cumulative impacts to ITA, since the Proposed Action would have no effect on ITA.

3.6 Socioeconomic Resources

3.6.1 Affected Environment
The Antelope Valley Region encompasses approximately 2,400 square miles in northern Los Angeles County, southern Kern County, and western San Bernardino County. The AVWB is located in Kern County, which covers approximately 8,202 square miles, the third largest county (in acreage) in the State. The population of the Antelope Valley region is presently over 444,000

people, and is projected to swell to 641,000 by 2015 (AV Water Plan 2007). The cities of Lancaster and Palmdale are the largest incorporated communities in the Antelope Valley (Table 4).

Outside of the urbanized areas, agriculture is the predominant land use throughout the Antelope Valley region, with farmers growing a variety of crops such as carrots, onions, lettuce, and potatoes. There are small businesses that support agriculture, for example: feed and fertilizer sales, machinery sales and service, pesticide applicators, transport, packaging, marketing, etc. within the surrounding area.

Table 4. Populations of the cities of Lancaster and Palmdale; change is for the period from 2000 to 2007

City	Total Population		Numerical Change	Percent Change
	2000	2007		
Lancaster	118,718	149,624	+30,906	+26.0 %
Palmdale	116,670	144,252	+27,582	+23.6 %

Source: U.S. Census Bureau data 2008

3.6.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, the Antelope Valley region would be unable to maximize its varied water resources and improve its surface water supply reliability through groundwater banking. Socioeconomic resources related to farming and agriculture-dependent businesses may be impacted; however, most of the recovered water would be used for M&I purposes.

Proposed Action

Over the long term, the Proposed Action would facilitate an increase in the reliability of the region's surface water supply. This would subsequently help to maintain the economic viability of irrigated agriculture within the Antelope Valley. However, the recovered water would most likely be used for M&I purposes; therefore, the Proposed Action would have no adverse impacts on socioeconomic resources.

Cumulative Impacts

The Proposed Action would result in an increase in the region's M&I water supply reliability. When added to other similar existing and proposed actions, the Proposed Action would not contribute to cumulative adverse impacts on socioeconomic resources.

3.7 Environmental Justice

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

Policy Act, and to address significant and adverse effects on minority and low-income communities.

3.7.1 Affected Environment

As shown on Table 4, urban growth of cities along Highway 14 has expanded by approximately 25% since the year 2000. The demographics of valley communities have changed with the Hispanic population growing rapidly in Lancaster and Palmdale. These major cities have seen increases in Hispanic populations of 11.1% and 14.3%, respectively, since 2000 (Table 5). The population increase in the Antelope Valley has followed the trends of the State of but with more dramatic increases in Hispanic and overall populations since 2000. The overall Hispanic population in California increased from 32.4% to 36.6% from 2000 to 2007. The corresponding annual population in California increased from 33,871,648 in 2000 to 36,756,666 in 2008, an 8.5 percent increase.

Residents of the communities surrounding the AVWB rely on the region for farm-related jobs. In addition, most of these communities rely on imported surface water as their main source of M&I water.

Table 5. Hispanic populations of the cities of Lancaster and Palmdale

City		Hispanic population	Percent Hispanic
Lancaster	2000	28,644	24.1%
	2007	52,636	35.2%
	Numerical Change	+23,992	
	Percent Change	+83.8	
Palmdale	2000	43,991	37.7%
	2007	75,005	52.0%
	Numerical Change	+31,014	
	Percent Change	+70.5%	

Source: US Census Bureau 2008

3.7.2 Environmental Consequences

No Action Alternative

The AVWB would provide long-term water supply through groundwater banking of available surplus water, which some of the surrounding communities rely upon for M&I use. The No Action Alternative may result in a slight adverse impact to minority or low-income populations near the project location.

Proposed Action

To the extent that water supply reliability is improved in the Antelope Valley, it would serve to support the continued viability of available M&I water to the surrounding communities. As a result, there would be beneficial impacts to environmental justice from the implementation of the Proposed Action.

Cumulative Impacts

The Proposed Action, when added to other existing and proposed actions, would have a slight beneficial contribution to cumulative impacts associated with environmental justice. The long-term application of surplus surface water supply would result in improved M&I water reliability for the surrounding communities. The Proposed Action would not contribute to cumulative adverse impacts to environmental justice.

3.8 Air Quality

3.8.1 Affected Environment

The Proposed Action area lies within the Mojave Desert Air Basin (MDAB) and is within the jurisdiction of the Kern County Air Pollution Control District (KCAPCD). 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 Antelope 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.

The MDAB does not meet all State and Federal health-based air quality standards. To protect health, the KCAPCD 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 6 presents the emissions thresholds covering the project location's overlying air basin.

Table 6.
KCAPCD Attainment Status and Emissions Thresholds for Federal Conformity Determinations

Pollutant	Federal Attainment Status[a]	(tons/year)[b]	Estimated Project Emissions[c]
Volatile organic compounds (VOC) (as an ozone precursor)	Attainment (1-hour ozone) Nonattainment (8-hour ozone)	50	0.36
Nitrous oxides (NO_x) (as an ozone precursor)	Unclassified	50	2.15
PM_{10}	Attainment/Unclassified	100	1.19
Carbon monoxide (CO)	Attainment/Unclassified	100	3.02

[a]KCAPCD 2010 [b]40 CFR 93.153 [c]Road Construction Model 2009

3.8.2 Environmental Consequences

No Action Alternative

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

Proposed Action

Short-term air quality impacts would be associated with construction, and would generally arise from dust generation (fugitive dust) and operation of construction equipment. Fugitive dust results from land clearing, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. Fugitive dust is a source of airborne particulates, including PM_{10} and $PM_{2.5}$. Large earth-moving equipment, trucks, and other mobile sources powered by diesel or gasoline are also sources of combustion emissions, including nitrogen dioxide (NO_2), CO, VOC, sulfur dioxide, and small amounts of air toxics. The SRWBA would incorporate Environmental Protection Measures (Table 1) in order to minimize the emissions of fugitive dust.

Comparison of the estimated Proposed Action emissions (Table 6) with the thresholds for Federal conformity determinations indicates that project emissions are estimated to be below these thresholds. The Proposed Action also involves the operation of electrically-driven pumps and motors; accordingly, there would not be any direct emissions from the operation of project facilities/equipment. The air quality emissions from electrical power have already been considered in environmental documentation for the generating power plant; therefore, a conformity determination is not required. Accordingly, project construction and operations under the Proposed Action would not result adverse impacts to air quality beyond Federal thresholds.

Cumulative Impacts

It is anticipated that the AVWB would increase in size as banking partners are added until the entire project is completely built out as analyzed in the EIR. Due to the flexibility of the AVWB, it is possible to add and construct future elements as needed in a phased approach. A major consideration in the development of the project was to provide the operational flexibility to meet the needs of the future banking partners. The changing conditions of the State's water supplies help to dictate the need to further develop the rest of the overall AVWB.

The EIR analyzed the cumulative impacts of the full build-out of the AVWB project, of which the Proposed Action is a part of, and found that air quality impacts would result from the construction and operation of the project over two separate phases. At best, each phase could be completed within a single year; however, the second phase of the project would not be able to start before the completion of the first phase. Annual construction and operation emissions for each phase of the overall AVWB project were still estimated to be well below the federal thresholds. Therefore, the Proposed Action would not contribute to cumulative adverse impacts to air quality.

3.9 Global Climate Change

Climate change refers to significant 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 carbon dioxide (CO_2) 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 greenhouse gases that enter the atmosphere because of human activities are: CO_2, methane (CH_4), NO_x, and fluorinated gasses (EPA 2009b). 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 CO_2 and CH_4, 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 2009a). More than 20 million Californians rely on regulated delivery of water resources such as the SWP 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 impacts to the State's water resources and project operations. While there is general consensus in their trend, the magnitudes and onset-timing of impacts are uncertain and are scenario-dependent (Anderson et al. 2008).

3.9.1 Affected Environment

In 2002, with the passage of Assembly Bill 1493 (AB 1493), the State launched an innovative and proactive approach to dealing with GHG emissions and climate change at the state level. AB 1493 requires the California Air Resources Board to develop and implement regulations to reduce automobile and light truck GHG emissions; these regulations would apply to automobiles and light trucks beginning with their respective 2009 models (Hanemann 2007). The State has adopted Assembly Bill 32 (AB 32) and has identified GHG reduction goals; the effect of increased GHG emissions as they relate to global climate change is inherently an adverse environmental impact. While the emissions of one single project will not cause global climate change, GHG emissions from multiple projects throughout the world could result in an impact with respect to global climate change.

3.9.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, there would be no impacts to global climate change since no construction would take place and there would not be any long-term electrical energy requirement.

Proposed Action

Short-term impacts would consist of emissions during construction, which have been estimated at about 3.3 metric tons of CO_2. Long-term impacts are attributable to project operations and

would involve the generation of electrical energy to power the electric motor pumps. These emissions would vary annually, but have been estimated to average about 758 metric tons/year of CO_2, which is negligible compared to the threshold for annually reporting GHG emissions (25,000 metric tons/year), which is a surrogate for a threshold of significance. Accordingly, the Proposed Action would result in *de minimis* impacts respecting global climate change.

Cumulative Impacts

Full build-out of the overall AVWB project, of which the Proposed Action is a part of, could contribute to global climate change impacts due to emissions of CO_2 from project operations. However, the estimated CO_2 emissions from annual generation of electricity required to operate every proposed well for the AVWB project is roughly 8,000 metric tons per year, which is still well below the 25,000 metric tons per year threshold for reporting GHG emissions. As a result, the Proposed Action is not expected to contribute to cumulative adverse impacts to global climate change.

Section 4 Consultation and Coordination

Several Federal laws, permits, licenses and policy requirements have directed, limited or guided the National Environmental Policy Act analysis and decision making process of this EA.

4.1 Fish and Wildlife Coordination Act (16 USC § 651 et seq.)

The Fish and Wildlife Coordination Act (FWCA) requires that Reclamation consult with fish and wildlife agencies (Federal and State) on all water development projects that could affect biological resources. The amendments enacted in 1946 require consultation with the FWS and State fish and wildlife agencies where the "waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted or otherwise controlled or modified" by any agency under a Federal permit or license. Consultation is to be undertaken for the purpose of "preventing the loss of and damage to wildlife resources."

The Proposed Action consists of modifying existing facilities which would ultimately convey water to existing spreading ponds for groundwater recharge. The Proposed Action would not impound, divert, control or modify a body of water; therefore, the FWCA would not apply.

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

Section 7 of the Endangered Species Act requires Federal agencies to ensure that discretionary federal actions do not jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of the critical habitat of these species.

Reclamation has determined that the Proposed Action would have No Effect to species listed and critical habitats designated under the ESA, and no consultation with the FWS is required. This determination is based on the information presented previously in Section 3.3.2 and is largely reliant on the absence of listed species from areas that would be affected by the Proposed Action. Pre-construction biological surveys would be conducted before any ground-disturbing activities are to begin. If the surveys find that no special-status species are present within the project area, Reclamation's determination would remain. If the surveys detect the presence of listed species, then the Proposed Action would be paused while Reclamation revisits the ESA determination and completes any consultation that might be necessary with the USFWS.

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

The NHPA of 1966, as amended, is the primary Federal legislation that outlines the Federal Government's responsibility to consider the effects of their actions on historic properties. The 36 CFR Part 800 regulations that implement Section 106 of the NHPA describe how Federal agencies address these effects. Additionally, Native American human remains, cultural objects, and objects of cultural patrimony are protected under the Native American Graves Protection and Repatriation Act of 1990 (25 USC 32) and its implementing regulation outlined at 43 CFR Part 10. The Archaeological Resources Protection Act of 1979 (16 USC 470aa), as amended, and its implementing regulations at 43 CFR 7, protects archaeological resources on Federal land.

Pending SHPO concurrence, the Proposed Action is anticipated to not have any impacts on historic properties based on conclusions in Section 3.4.2.

4.4 Indian Trust Assets

ITA are legal interests in property held in trust by the U.S. for Federally-recognized Indian tribes or individual Indians. An Indian trust has three components: (1) the trustee, (2) the beneficiary, and (3) the trust asset. ITA can include land, minerals, federally-reserved hunting and fishing rights, federally-reserved water rights, and in-stream flows associated with trust land. Beneficiaries of the Indian trust relationship are federally-recognized Indian tribes with trust land; the U.S. is the trustee. By definition, ITA cannot be sold, leased, or otherwise encumbered without approval of the U.S. The characterization and application of the U.S. trust relationship have been defined by case law that interprets Congressional acts, executive orders, and historic treaty provisions.

The Proposed action would not affect ITA. The nearest ITA is a Public Domain Allotment approximately 36 miles north/northeast of the project location.

4.5 Migratory Bird Treaty Act (16 USC § 703 et seq.)

The MBTA implements various treaties and conventions between the U.S., Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the MBTA provides that it is unlawful to pursue, hunt, take, capture or kill, possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Subject to limitations in the MBTA, the Secretary of the Interior may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting of any migratory bird, part, nest or egg will be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits and migratory flight patterns.

The Proposed Action would not change the land use patterns of the cultivated or fallowed fields that do have some value to listed species or birds protected by the MBTA. Pending the results of the pre-construction survey for burrowing owl, it is anticipated that the Proposed Action would have no effect on birds protected by the MBTA.

4.6 Executive Order 11988 – Floodplain Management and Executive Order 11990 – Protection of Wetlands

Executive Order 11988 requires Federal agencies to prepare floodplain assessments for actions located within or affecting flood plains, and similarly, Executive Order 11990 places similar requirements for actions in wetlands.

The Proposed Action would construct facilities that would ultimately deliver water to existing spreading ponds for groundwater recharge and would not impact wetlands and/or floodplains.

4.7 Clean Air Act (42 USC § 176 et seq.)

Section 176 (c) of the Clean Air Act (CAA) (42 USC 7506 (c)) requires that any entity of the Federal government that engages in, supports, or in any way provided financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan (SIP) required under Section 110 (a) of the CAA (42 USC 7401 (a)) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with a SIP's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards and achieving expeditious attainment of those standards. Each federal agency must determine that any action that is proposed by the agency and that is subject to the regulations implementing the conformity requirements will, in fact conform to the applicable SIP before the action is taken.

As described in Section 3.8.2, the Proposed Action would not result in air quality impacts that would exceed State, Federal, and local thresholds.

4.8 Clean Water Act (16 USC § 703 et seq.)

Section 401

Section 401 of the Clean Water Act (CWA) (33 USC § 1311) prohibits the discharge of any pollutants into navigable waters, except as allowed by permit issued under sections 402 and 404 of the CWA (33 USC § 1342 and 1344). If new structures (e.g., treatment plants) are proposed, that would discharge effluent into navigable waters, relevant permits under the CWA would be required for the project applicant(s). Section 401 requires any applicant for an individual U.S. Army Corps of Engineers (Corps) dredge and fill discharge permit to first obtain certification from the state that the activity associated with dredging or filling will comply with applicable state effluent and water quality standards. This certification must be approved or waived prior to the issuance of a permit for dredging and filling.

No pollutants would be discharged into any navigable waters under the Proposed Action so no permits under Section 401 of the CWA are required.

Section 404

Section 404 of the CWA authorizes the Corps to issue permits to regulate the discharge of "dredged or fill materials into waters of the United States" (33 USC § 1344).

No activities such as dredging or filling of wetlands or surface waters would be required for implementation of the Proposed Action, therefore permits obtained in compliance with CWA section 404 are not required.

Section 5 List of Preparers and Reviewers

U.S. Bureau of Reclamation

Michael Inthavong, Natural Resources Specialist, SCCAO
Jennifer Lewis, Ph.D., Wildlife Biologist, SCCAO
Patricia Rivera, Indian Trust Assets, MP- 400
Tony Overly, Cultural Resources, MP-153
Mike Kinsey, Supervisory Natural Resources Specialist, SCCAO – Reviewer

GEI Consultants, Inc.

Lorina Ospina, Project Manager
Erin Ringer, Assistant Engineer

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