

RECLAMATION

Managing Water in the West

FINDING OF NO SIGNIFICANT IMPACT

Buena Vista Water Storage District BV8 State Water Project Turnout

FONSI-09-80

Recommended by:

Rain Healer
Natural Resources Specialist
South-Central California Area Office

Date: _____

Concurred by:

Chuck Siek
Supervisory Natural Resources Specialist
South-Central California Area Office

Date: _____

Concurred by:

Chief, Resources Management Division
South-Central California Area Office

Date: _____

Approved by:

Laura Myers
Deputy Area Manager
South-Central California Area Office

Date: _____



Introduction

In accordance with section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969, as amended, the South-Central California Area Office of the U.S. Bureau of Reclamation (Reclamation), has determined that the awarding of a Water for America Challenge Grant (Challenge Grant) to Buena Vista Water Storage District (BVWSD) will not significantly affect the quality of the human environment and an environmental impact statement is not required. This Finding of No Significant Impact is supported by Reclamation's Final Environmental Assessment (EA) Number EA-09-80, *Buena Vista Water Storage District BV8 State Water Project Turnout*, and is hereby incorporated by reference.

Background

BVWSD, located in the southern San Joaquin Valley approximately 16 miles west of Bakersfield, California, was organized in July 1924 to manage the irrigation and drainage systems and water rights originally held by Henry Miller and Charles Lux of the Miller and Lux Land Company.

As a State Water Project (SWP) contractor, BVWSD has access to five turnouts on the California Aqueduct (Aqueduct) which provides gravity-fed delivery of SWP water directly to their 125-mile long earthen canal distribution system. Annually, BVWSD system losses average 45,000 acre-feet (AF) of their Kern River and SWP water supplies to seepage and evaporation.

Reclamation provides cost-shared funding through their Challenge Grants for the following types of on-the-ground projects: (1) water conservation and efficiency projects that allow users to decrease diversions and to use or transfer the water saved; (2) water marketing projects with willing sellers and buyers, including water banks, that transfer water to other uses to meet critical needs for water supplies; (3) projects that improve water management by increasing the use of renewable energy, by increasing operational flexibility (constructing aquifer recharge facilities or making system optimization and management improvements), or by addressing endangered species and other environmental issues; and (4) pilot and demonstration projects that address the technical and economic viability of treating and using brackish groundwater, seawater, impaired waters, or otherwise creating new water supplies within a specific locale.

In January 2009, BVWSD applied for a Challenge Grant for their BV8 SWP Turnout Project which involves the construction of a new turnout on the Aqueduct and an underground pipeline to connect directly to their West Side Canal.

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

Table 1 Environmental Protection Measures and Commitments

Resource	Protection Measure
Air Quality	<p>Dust Control Measures including:</p> <ul style="list-style-type: none"> • All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, or covered with a tarp or other suitable cover or vegetative ground cover. • All onsite unpaved roads and offsite unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant. • All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking. • When materials are transported offsite, all material shall be covered or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained. • All operations shall limit or expeditiously remove the accumulation of mud and dirt from adjacent public streets at the end of each workday. • Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing <i>sufficient</i> water or chemical stabilizer/suppressant.
Biological Resources	At least thirty (30) calendar days prior to ground breaking, BVWSD shall (a) purchase any required compensation land, place a U.S. Fish and Wildlife Service (USFWS)-approved conservation easement on that land, and arrange for USFWS-approved management and endowment, or (b) deposit sufficient funds to purchase and endow sufficient compensation land with a USFWS-approved compensation bank.
Biological Resources	Biological monitor(s) shall be present during all ground disturbing activities. In addition to conducting pre-activity surveys for the project, the biological monitors shall aid crews in satisfying take avoidance criteria and implementing project Avoidance and Minimization measures, documenting all pertinent information concerning project effects on sensitive species, and shall assist in minimizing adverse effects of project activities on sensitive species.
Biological Resources	Preconstruction surveys and implementation of avoidance and minimization measures for burrowing owl (CDFG 1995).
Biological Resources	Preconstruction surveys and implementation of avoidance and minimization measures for San Joaquin kit fox (USFWS 1999).
Biological Resources	Preconstruction surveys for kangaroo rats (CDFG 1990) to identify small mammal burrows. In addition, all small mammal burrows within the proposed construction zone will be identified during this pre-activity survey and flagged with pin flags and their location recorded using a Global Positioning System (GPS). The GPS coordinates will be provided to the project engineer to be incorporated as a layer within the pipeline plans. The project engineer will, to the greatest extent practical, design the alignment of the pipeline to avoid small mammal burrows. Pipes and culverts shall be searched for kangaroo rats prior to being moved or sealed to ensure that an animal has not been trapped. Construction activities would be done outside of Tipton kangaroo rat breeding period (February through April). Work areas, including staging areas, will be clearly defined with flagging or other highly visible marking and the smallest possible area will be disturbed. Movement of heavy equipment to and from the project sites, staging areas, or borrow sites will, to the extent possible, be confined to existing roadways to minimize habitat disturbance.

Resource	Protection Measure
Biological Resources	Preconstruction surveys for blunt-nosed leopard lizard (CDFG 2004; see Appendix D). The survey protocol will be modified however, to eliminate the required spring survey period for adults. The surveys for hatchlings (Aug 1 through September 15) will be completed 14 to 30 days prior to ground clearing or construction activities on the site or other areas within 500 feet of the grassland habitat.
Biological Resources	Construction activities would be done outside of the Le Conte's thrasher breeding/nesting season (late January through early June).
Biological Resources	Three inches of extracted topsoil will be set aside during construction activities. Upon completion of construction, the salvaged topsoil, and its accompanying seedbank, will be redistributed over the construction site in order to disseminate the original seedbank over the construction area.
Biological Resources	All construction activities would be restricted to daylight hours only.

BVWSD will, to the extent necessary, submit all appropriate applications for working within a waterway including:

- California Department of Fish and Game Streambed Alteration Agreement
- Corps Clean Water Act (CWA) Section 404
- California Regional Water Quality Control Board CWA Section 401

In addition, BVWSD will acquire permits from the California Department of Water Resources for installation of a new turnout within the Aqueduct and for access to their rights-of-way.

Copies of all permits would be provided to Reclamation.

Reclamation's finding that implementation of the Proposed Action will result in no significant impact to the quality of the human environment is supported by the following factors:

FINDINGS

Water Resources

Under the Proposed Action, BVWSD will construct a new turnout on the Aqueduct and a new underground pipeline that will connect this new turnout to the district's West Side Canal. The new turnout and pipeline will enable BVWSD to conserve up to 9,000 AF per year (AFY) of their annual water supply. Over the long-term, approximately fifty percent of this conserved water will be used to help meet in-district irrigation demand and the remaining 50 percent will be used by BVWSD for in-district or out-of-district water marketing or groundwater recharge. The use of this water for irrigation and potential groundwater recharge will minimize the potential loss of groundwater recharge from the reduced seepage losses. Consequently, there will be no significant impact to groundwater resources. The Proposed Action will not increase BVWSD's SWP allocation nor will it increase or decrease their Kern River water rights water; instead it will increase BVWSD's operational flexibility and water management abilities. The placement of a cofferdam in the Aqueduct during the construction of the new turnout will reduce the amount of flow within the Aqueduct; however, the timing of this reduction will be coordinated with the California Department of Water Resources so that it will not impact their ability to deliver SWP

water to their contractors. Construction of the new outlet in the West Side Canal will be done outside of the irrigation season when the canal is not in use in order to not impact water deliveries to farmers. Therefore, there will be no significant impact to water resources as a result of the Proposed Action.

Land Use

The Proposed Action will result in the permanent conversion of 0.9 acres of land designated as Grazing Land by the California Department of Conservation. This area of land has not been used as grazing land in the recent past. Land use within the construction area of the Proposed Action will be returned to its existing condition once construction was complete. No new agricultural lands will be brought into production as a result of the water conserved from the Proposed Action. Rather, conserved water will be used to meet existing in-district demand, potential water marketing, and/or groundwater recharge. Therefore, the Proposed Action will not have a significant impact on land use.

Biological Resources

Reclamation has determined that federally-listed species and birds protected by the Migratory Bird Treaty Act that occur or could occur in the vicinity of the Proposed Action area include: western burrowing owl, Le Conte's thrasher, San Joaquin kit fox (SJKF), Tipton kangaroo rat (TKR), and blunt-nosed leopard lizard (BNLL).

Burrowing Owl

A protocol-level field survey for burrowing owl will be completed by BVWSD 14 to 30 days prior to any ground disturbance. In addition, measures for avoiding "take" of burrowing owl would be followed, as detailed in *CDFG Staff Report and Burrowing Owl Consortium Guidelines*. No effect to this species is expected if burrowing owls are absent from the area. However, if they are present, BVWSD will implement conservation measures in consultation with the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game in order to avoid or minimize any potential impacts to this species from the Proposed Action.

Le Conte's Thrasher

Reclamation has determined that Le Conte's thrasher is unlikely to be present in the Action Area. However, because there is potential habitat adjacent to the Aqueduct rights-of-way, construction activities will not be conducted during Le Conte's thrasher breeding/nesting season (late January through early June). Therefore, no effect on Le Conte's thrasher is anticipated.

Blunt-nosed Leopard Lizard

There is potential for harm to come to BNLL if they are present in the action area and from loss of habitat. Direct impacts could occur by the crushing of burrows, or entombment within burrows, and injury or mortality from construction equipment and vehicles. Surveys were negative for presence of this species and potential burrowing habitat in the area. This could be due to highly degraded habitat caused by off-road vehicle activity and trash dumping in the area. Much of the Proposed Action site is now bare soil and bounded by active agricultural fields and the California Aqueduct, and as such, BNLL is not likely to occur there. Therefore, BNLL may be affected by the Proposed Action, but is not likely to be adversely affected. Regardless, this area is within range of BNLL, and as such, additional protocol-level surveys will be required and

avoidance and mitigation measures will be employed to ensure that BNLL will not be impacted. In the event that BNLL are detected during surveys or construction activities, construction activities must be halted and USFWS contacted immediately to determine the best course of action.

San Joaquin Kit Fox

Protocol-level surveys found no evidence of species presence or suitable denning habitat in the Action Area. Nevertheless, kit foxes are highly mobile and could transverse the area for foraging purposes, and as a result, there is the potential for harm to kit foxes. Vehicles and equipment could strike kit foxes during the construction of the turnout, pipeline, and associated facilities. In addition, prey availability could decrease due to temporary disturbances during construction practices and indirectly impact kit foxes using the area for foraging. However, kit foxes are nocturnal and would likely be active when construction work is not being conducted. They have good vision and should see and be able to avoid excavations. Thus, they would avoid most disturbances.

To insure that the Proposed Action will avoid and/or minimize disturbances, injury or mortality to SJKF, preconstruction surveys for SJKF will be conducted prior to initiation of work and implementation of avoidance measures followed to minimize potential impacts. If no sign or evidence of SJKF is found, it is likely that they are not present in the vicinity and will not be directly affected by the Proposed Action. If active dens are found and cannot be avoided, the standard procedure of monitoring and excavating the dens will be implemented to ameliorate potential for harm to SJKF.

The Proposed Action site is located within established core habitat for SJKF. Three acres of limited saltbush scrub/non-native grassland habitat in the Proposed Action Area will be temporarily disturbed during excavation activities and approximately 0.3 acres of saltbush scrub will be permanently removed. This will disrupt an already fragmented scrub habitat that could be utilized by SJKF. Although, this is a small portion of the total amount of annual grassland available for use within the region of the Proposed Action, the permanent loss of core habitat may affect SJKF, and will likely adversely affect their recovering in this area.

Tipton Kangaroo Rat

The Proposed Action will eliminate 0.3 acres of scrub habitat further degrading existing poor quality habitat that could be utilized by kangaroo rats. During construction activities, any kangaroo rats in the area will likely be inside burrows. Therefore, construction of the turnout, pipeline, and associated facilities has the potential to kill or injure kangaroo rats through crushing of burrows, or entombment within a burrow, as well as direct impacts from construction equipment and vehicles. Destruction of burrow systems during construction activities could have the following impacts on kangaroo rats: 1) loss of food reserves held within burrows; 2) reduction in the ability of the kangaroo rats to maintain their optimal body temperature; and, 3) increased exposure to predators. Thus, a loss of food caches may result in reduced caloric intake and decreased energy reserves which could lead to a lower reproductive capacity and reduced viability of individuals. Additionally, noise or vibration during construction could disrupt kangaroo rat behavior, possibly even causing abandonment of burrows. Kangaroo rats could seek refuge in pits, trenches or pipes and become inadvertently trapped and killed during

construction. Consequently, the Proposed Action may affect, and is likely to adversely affect this species through habitat loss.

To insure that the Proposed Action will avoid disturbances, injury or mortality to Tipton kangaroo rats, preconstruction surveys for kangaroo rats will be conducted prior to initiation of work and implementation of avoidance measures followed to minimize potential impacts. If no sign or evidence of kangaroo rat is found, it is likely that they are not present in the vicinity and will not be directly affected by the Proposed Action. However, if any small mammal burrows are found within the proposed construction zone during this pre-activity survey, these will be flagged with pin flags and their location recorded using GPS. The GPS coordinates will be provided to the project engineer to be incorporated as a layer within the pipeline plans. The project engineer will, to the greatest extent practical, design the alignment of the pipeline to avoid small mammal burrows. Pipes and culverts shall be searched for kangaroo rats prior to being moved or sealed to ensure that an animal has not been trapped. Work areas, including staging areas, will be clearly defined with flagging or other highly visible marking and the smallest possible area will be disturbed. Movement of heavy equipment to and from the Proposed Action site, staging areas, or borrow sites will be confined to existing roadways to minimize habitat disturbance. In addition, construction activities will be done outside of Tipton kangaroo rat breeding period (February through April).

Reclamation is currently conducting endangered species consultations and compliance to address potential impacts to BNLL, SJKF, and Tipton kangaroo rat with USFWS. Such effects include loss of habitat and reduced habitat values for these species. Potential impacts will be minimized as much as possible by the incorporation of appropriate conservation measures and/or mitigation into the project description as determined under Section 7 consultation. The draft EA will not be finalized until consultation is complete.

Cultural Resources

Neither the West Side Canal, nor the Aqueduct, have been evaluated for listing on the National Register of Historic Places (National Register). Since evaluating both the canal and Aqueduct in their entirety is outside the scope of this project, Reclamation assumes, for the purposes of this undertaking, that the West Side Canal is eligible for listing on the National Register under Criterion A and the Aqueduct under Criteria A and C. Subsequently, Reclamation determined that the pipeline installation will not significantly affect the qualities that will make the West Side Canal and Aqueduct eligible for listing on the National Register. Installing a turnout on the West Side Canal and Aqueduct, which is of similar type and function as those already in use along these facilities, will not diminish their structural integrity. The water delivery pipeline connecting the Aqueduct to the West Side Canal is consistent with the purpose and function for which both facilities were built.

Reclamation sent letters to the Tule River Indian Tribe on November 24, 2009 to invite their assistance in identifying sites of religious and cultural significance pursuant to the regulations at 36 CFR Part 800.3(f)(2) and 36 CFR Part 800.4(a)(4). Reclamation also sent a letter to the Kern Valley Indian Council and other individuals on November 24, 2009 to request their assistance in identifying cultural resources in the APE pursuant to 36 CFR Part 800.4(a)(3). No responses have been received.

Reclamation consulted with the State Historic Preservation Officer (SHPO) regarding a finding that the Proposed Action will result in no significant effects to historic properties pursuant to 36 CFR Part 800.5(b) on May 21, 2010. SHPO concurred with Reclamation's findings on June 1, 2010. Since there will be no significant effects to historic properties, no cultural resources will be significantly impacted as a result of implementing the Proposed Action.

Indian Trust Assets

There will be no impacts to Indian Trust Assets as there are none in the Proposed Action area.

Environmental Justice

The Proposed Action will not cause dislocation, changes in employment, or increase flood, drought, or disease nor will it disproportionately impact economically disadvantaged or minority populations. Therefore, there will be no significant impact to Environmental Justice as a result of the Proposed Action.

Socioeconomic Resources

Under the Proposed Action, BVWSD will be able to conserve up to 9,000 AFY of their water supply. Up to 50 percent of this amount could be used in water marketing providing additional revenue for the district or in groundwater banking which could be used in reduced water supply years. Consequently, there will likely be a slight beneficial impact to socioeconomic resources within BVWSD due to the Proposed Action.

Air Quality

Operation of BVWSD's new turnout and pipeline will not contribute to criteria pollutant emissions, as water distribution will be done via gravity and will require no pumping. Additionally, emissions associated with the construction and operation of the facilities are estimated to be well below the established San Joaquin Valley Air Pollution Control District's *de minimis* thresholds; therefore, the Proposed Action will not result in a significant impact upon air quality.

Global Climate Change

Short-term mobile source emissions expected to be generated by the Proposed Action consist of on-road emissions from daily vehicle travel to and from the Proposed Action site during construction and operation of BV8, truck hauling of construction materials, and off-road emissions from construction equipment required to construct the Proposed Action facilities.

Total GHG emissions expected to be generated by construction activities, if construction were to occur for 260 days over the period of one year, will be approximately 858 metric tons of Carbon dioxide equivalents (CO_{2e}) per year. These construction emissions will be short-term, and will cease upon completion of construction.

Additionally, long-term operation and maintenance activities associated with the new facilities are expected to generate GHG emissions (approximately 47.4 metric tons of CO_{2e} per year) from vehicle trips to and from the Proposed Action site.

Total GHG emissions have been estimated to be well below the Environmental Protection Agency's 25,000 metric tons per year threshold for annually reporting GHG emissions.

Accordingly, the Proposed Action will result in below *de minimis* impacts to global climate change.

Cumulative Impacts

Cumulative impacts result from incremental impacts of a Proposed Action when added to other past, present, and reasonably foreseeable future Proposed Actions. Cumulative impacts can result from individually minor but collectively significant Proposed Actions taking place over a period of time. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. To determine whether cumulatively significant impacts are anticipated from the Proposed Action, the incremental effect of the Proposed Action was examined together with impacts from past, present, and reasonably foreseeable future Proposed Actions in the same geographic area.

BVWSD is aware of the following Proposed Actions proposed within the Buttonwillow Service Area:

- The Hydrogen Energy power plant project (HECA) is anticipated to be located in Section 10, Township 30 South, Range 24 East, Mount Diablo Meridian, in the southerly portion of the BVWSD's Service Area. HECA consists of constructing and operating a hydrogen-powered electricity generating facility that will capture and store most of its carbon-related emissions.
- According to the Kern County Planning Department, the Palm Ranch Dairy Project involves establishing a dairy farm in the vicinity of the intersection of Adohr Road and Dairy Road. At this time, very little information about the Palm Ranch Dairy Project is available, and environmental documents for the Palm Ranch Dairy Project are anticipated to be available sometime in 2010.
- The Buena Vista Water Management Program (BV Program) consists of implementing four projects designed to more effectively and beneficially manage the district's water resources and facilities. Facilities proposed for construction pursuant to the BV Program will be located throughout the Buttonwillow Service Area. The BV Program is described in detail in the document *Final Environmental Impact Report for the Buena Vista Water Storage District Buena Vista Water Management Program* dated December 2009, State Clearinghouse Number 2009011008, available for review at the BVWSD office during regular business hours.
- The West Kern Water District is developing a 480 acre groundwater banking facility near the south end of BVWSD. The facility will consist of recharge basins, groundwater monitoring wells, groundwater extraction wells, conveyance facilities. Extraction wells have a design capacity for recovery of up to 12,000 AFY. The water banking program was analyzed under an Environmental Impact Report entitled *Groundwater Banking Project* dated November 2009, State Clearing House Number 2009071022 which was finalized and a notice of determination posted on March 24, 2010.

The Proposed Action will not impact the implementation of these projects. While the emissions of one single project will not cause global climate change, GHG emissions from multiple projects could result in an impact. GHG emissions currently generated by existing district operations and by known groundwater wells within the BVWSD's Buttonwillow Service Area

total approximately 5,721 metric tons of CO_{2e} per year. Increased GHG emissions estimated to be generated by operation and maintenance of facilities pursuant to the BV Program total 12,750 metric tons of CO_{2e} per year. GHG emissions expected to result from operation and maintenance of Proposed Action facilities are approximately 47.4 metric tons of CO_{2e} per year. The combined total of BVWSD GHG emissions are well below the EPA's 25,000 metric tons per year threshold for reporting GHG emissions. Construction emissions are also well below the *de minimis* thresholds established by the San Joaquin Valley Air Pollution Control District. As a result, the Proposed Action is not expected to contribute to cumulative significant impacts to global climate change or air quality.

Since there are no impacts to land use, cultural resources, Indian Trust Assets, and Environmental Justice from the Proposed Action when examined with other past, present, and future project impacts there will be no contribution to cumulative impacts on these resources areas. Slight beneficial impacts to water resources and socioeconomics from the construction of new facilities are within historical variations and will not contribute to cumulative impacts. The loss of 0.3 acres of SJKF core habitat will have a cumulatively adverse impact on SJKF habitat; however, BVWSD will implement avoidance and minimization measures as well as any required mitigation in order to minimize this potential impact. Overall there will be no significant cumulative impacts caused by the Proposed Action.

RECLAMATION

Managing Water in the West

Draft Environmental Assessment/Initial Study

Buena Vista Water Storage District BV8 State Water Project Turnout

EA-09-80



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



**Buena Vista Water Storage District
525 North Main Street
Buttonwillow, California 93206**

August 2010

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.

The mission of Buena Vista Water Storage District is to provide the landowners and water users of its Service Area with a reliable, affordable, and usable water supply, while facilitating programs that protect and benefit the groundwater basin and better utilize water supply resources.

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List of Acronyms and Abbreviations

AF	Acre-feet
AFY	Acre-feet per year
APE	Area of Potential Effect
Aqueduct	California Aqueduct
BMPs	Best Management Practices
BNLL	Blunt-nosed leopard lizard
BV Program	Buena Vista Water Management Program
BVWSD	Buena Vista Water Storage District or District
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CDC	California Department of Conservation
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
Challenge Grant	Reclamation Water Conservation Challenge Grant
CH ₄	Methane
CNDDB	California Native Diversity Data Base
CNPS	California Native Plant Society
CO	Carbon monoxide
CO ₂	Carbon dioxide
CO _{2e}	Carbon dioxide equivalent
Corps	U.S. Army Corps of Engineers
CVP	Central Valley Project
CWA	Clean Water Act
Delta	Sacramento-San Joaquin River Delta
DWR	California Department of Water Resources
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
GHG	Greenhouse gases
GPS	Global Positioning System
HECA	Hydrogen Energy Power Plant Project
IS	Initial Study
ITA	Indian Trust Assets
LOA	Live Oak Associates, Inc.
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
N ₂ O	Nitrous oxide
NO ₂	Nitrogen dioxide
NO _x	Nitrogen oxides
O ₃	Ozone

PM ₁₀	Particulate matter between 2.5 and 10 microns in diameter
PM _{2.5}	Particulate matter less than 2.5 microns in diameter
Project	BV8 SWP Turnout Project
RCP	Reinforced concrete pipe
Reclamation	Bureau of Reclamation
ROG	Reactive Organic Gases
ROW	Rights-of-way
SCAQMD	South Coast Air Quality Management District
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SJAS	San Joaquin antelope squirrel
SJKF	San Joaquin kit fox
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SO ₂	Sulfur dioxide
SOD	South-of-Delta
SWP	State Water Project
TGS	Three Girls and a Shovel, LLC.
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile Organic Compounds

Section 1 Purpose and Need/Introduction

This Environmental Assessment (EA) / Initial Study (IS) was jointly prepared by the Bureau of Reclamation (Reclamation) as the lead federal agency and Buena Vista Water Storage District (BVWSD or District) as the lead California public agency to satisfy the requirements of both the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA).

1.1 Background/Project Description

BVWSD, located in the southern San Joaquin Valley approximately 16 miles west of Bakersfield, California (Figure 1-1), was organized in July 1924 to manage the irrigation and drainage systems and water rights originally held by Henry Miller and Charles Lux of the Miller and Lux Land Company. BVWSD's Service Area is physically divided into two distinct areas: the Buttonwillow Service Area and the Maples Service Area. The Buttonwillow Service Area comprises approximately 45,000 acres situated northwesterly of the Buena Vista Lake Bed. The Maples Service Area comprises approximately 5,000 acres situated easterly of the Buena Vista Lake Bed (see Figure 1-1).

As a State Water Project (SWP) contractor, BVWSD has access to five turnouts on the California Aqueduct (Aqueduct) which provides gravity-fed delivery of SWP water directly to their 125-mile long earthen canal distribution system. Annually, BVWSD system losses to seepage and evaporation average 45,000 acre-feet (AF) of their Kern River and SWP water supplies.

Reclamation provides cost-shared funding through their Water Conservation Challenge Grants (Challenge Grants) for the following types of on-the-ground projects: (1) water conservation and efficiency projects that allow users to decrease diversions and to use or transfer the water saved; (2) water marketing projects with willing sellers and buyers, including water banks, that transfer water to other uses to meet critical needs for water supplies; (3) projects that improve water management by increasing the use of renewable energy, by increasing operational flexibility (constructing aquifer recharge facilities or making system optimization and management improvements), or by addressing endangered species and other environmental issues; and (4) pilot and demonstration projects that address the technical and economic viability of treating and using brackish groundwater, seawater, impaired waters, or otherwise creating new water supplies within a specific locale.

In January 2009, BVWSD applied for a Challenge Grant for their BV8 SWP Turnout Project (Project) which proposes the construction of a new turnout on the Aqueduct and an underground pipeline to connect directly to their West Side Canal.

1.2 Purpose and Need/Project Objectives

California has experienced a severe drought in recent years that has reduced water supplies to many water districts. South-of-Delta (SOD) SWP and Central Valley Project (CVP) water service contractors experienced reduced water supply allocations in 2007, 2008, and 2009 due to

hydrologic conditions and regulatory requirements. The hydrologic conditions for 2010 are still evolving, and although conditions have improved somewhat since the beginning of the water year, it is likely that SOD SWP and CVP contractors will still need to supplement supplies to meet demands because of past dry years, relatively low reservoir storage levels, and overall SWP and CVP operational constraints. BVWSD, as a SOD SWP contractor, thus needs to identify additional supplies to avoid shortages for their customers.

Additionally, BVWSD's Kern River water supplies have been impacted by the reduction in storage capacity in Lake Isabella due to the dams' structural issues discovered by the U.S. Army Corps of Engineers (Corps).

The purpose of the Proposed Action is to reduce water delivery losses by directly delivering water from the Aqueduct to the West Side Canal via an underground pipeline which would create operational flexibility, allow BVWSD to reduce system losses and make such water available to in-District and/or out-of-District entities.

1.3 Scope/Project Location and Setting

This EA/IS was prepared to analyze the potential impacts of awarding a Challenge Grant under NEPA (Proposed Action) and the construction and operation of the Project under CEQA. The Project includes the construction of a new turnout on the Aqueduct (BV8) and approximately 1,500 feet of underground pipeline connecting the West Side Canal to the Aqueduct. This EA/IS was also prepared to analyze the potential impacts of the No Action Alternative.

The Project is located between BVWSD and the Aqueduct in southwestern Kern County, Section 9, Township 30 South, Range 24 East, Mount Diablo Base and Meridian.

1.4 Potential Issues

This EA/IS will analyze the affected environment of the Proposed Action/Project and the No Action Alternative in order to determine the potential direct and indirect impacts and cumulative effects to the following resources: Water Resources, Land Use, Biological Resources, Cultural Resources, Indian Trusts Assets (ITA), Environmental Justice, Socioeconomic Resources, Air Quality, Global Climate Change, Aesthetics, Agricultural Resources, Geology and Soils, Hazards and Hazardous Materials, Planning, Mineral Resources, Noise, Population and Housing, Public Services, Recreation, Utilities and Service Systems.

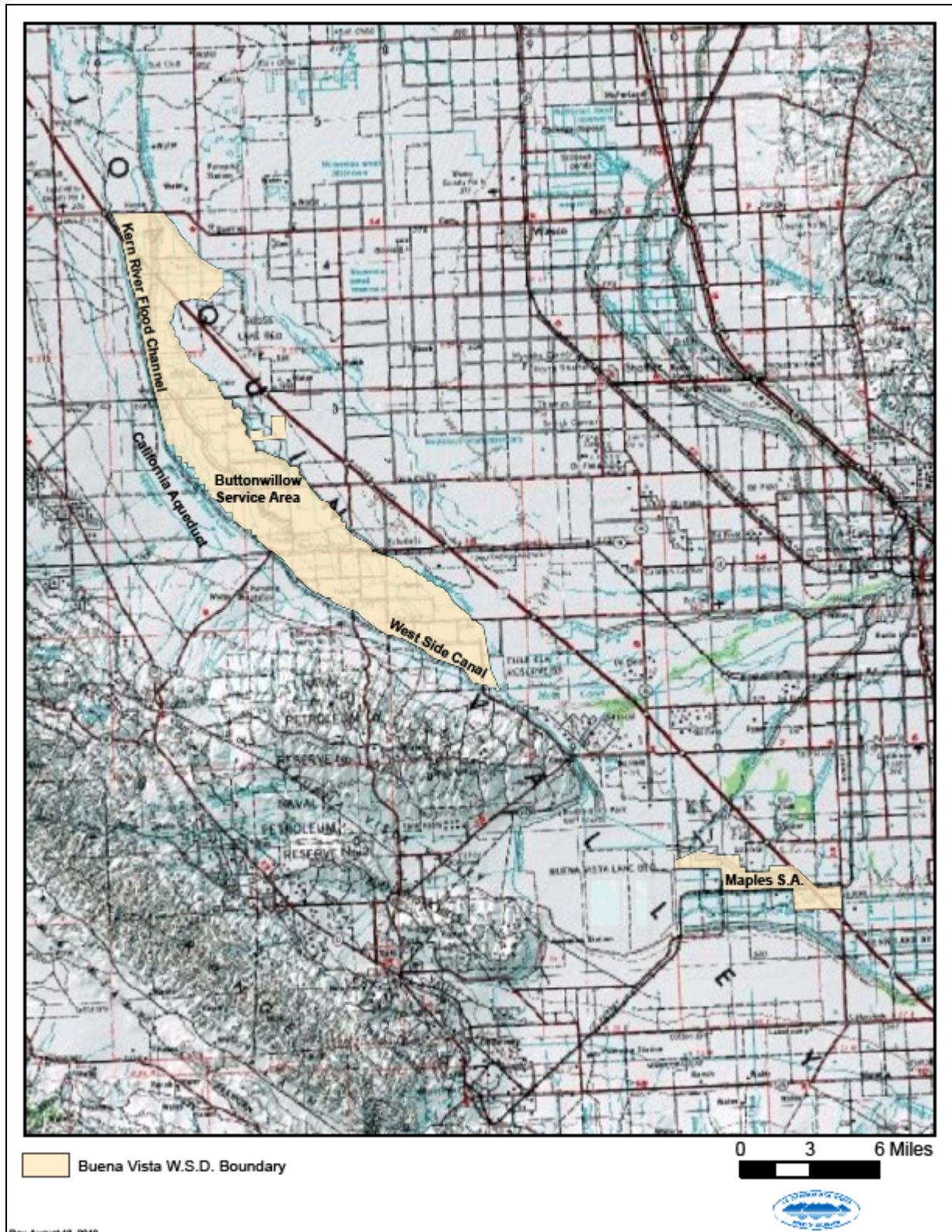


Figure 1-1 Buena Vista Water Storage District Location Map

Section 2 Alternatives Including the Proposed Action/Project

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

Without federal funding assistance (the Proposed Action), construction of the Project would, at a minimum, be delayed. It is BVWSD's intent to eventually construct and operate the Project; however, the timing would be speculative and it is possible that the Project would never be built. Consequently, the No Action Alternative 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 and 4 of this EA/IS would be realized. Any other subsequent actions caused by scenario B of the No Action Alternative not already covered under Section 2.2 of this EA/IS is speculative at best, is outside the scope of this EA/IS, 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 Challenge Grant to BVWSD that would partially fund the construction of a new turnout on the Aqueduct (BV8) and the underground pipeline that would directly connect the new turnout to the district's West Side Canal. BVWSD would continue to receive their SWP water allocations and their Kern River water supply at their existing turnouts.

2.2 Proposed Action/Project

Under the Proposed Action, Reclamation would award BVWSD with a Challenge Grant for their Project which includes construction of new turnout facilities between the Aqueduct and their West Side Canal (see Figure 2-1). Preliminary Project designs can be found in Appendix A. Construction activities would include the following:

- Construction of an approximately 1,510-foot long, 78-inch diameter, underground reinforced concrete pipeline (RCP) between the Aqueduct and West Side Canal. The pipeline would include: either a 78-inch magnetic flow meter or Venturi tube within a reinforced concrete vault near the Aqueduct, a pitot tube near the Aqueduct, and a 66-inch butterfly valve near the West Side Canal.
- Construction of a new reinforced concrete turnout on the Aqueduct. The new turnout would be approximately 20 feet tall, 19 feet wide, and 54 feet long. The turnout would

include a 78-inch cast iron sluice gate with automatic actuator, trash racks, and approximately four-foot tall by 12-foot wide galvanized steel handrails. Work within the Aqueduct would require the placement of a cofferdam to allow water flow to continue in the Aqueduct during construction of the turnout. The cofferdam would be left in place for roughly three months reducing maximum flow by approximately 50 percent over the three month time period.

- Construction of a new outlet structure in the West Side Canal upstream of the Arizona Canal. The discharge bay of the outlet structure would be approximately 17 feet wide, 25 feet long, and 14 feet tall. The discharged area around the outlet structure would be reinforced with approximately 167 cubic yards of 12-inch thick rock rip-rap above a six inch gravel bed to reduce erosion. The outlet structure would also have 5-foot tall by 18-foot wide galvanized steel handrails
- Construction of a 10-foot by 12-foot concrete electrical building on the eastern side of the RCP within 100-200 feet of the Aqueduct inlet structure. The new building would also include a 0.18 acre elevated grade pad for access from the existing Aqueduct road.
- Installation of an 8-inch diameter vent riser adjacent to the electrical building within 100-200 feet of the Aqueduct inlet structure. Standpipe would be approximately nine feet tall above ground.

RCP excavation would be 10 feet deep on average, 10 feet wide at the bottom and up to 30 feet wide at the top, with a four-foot minimum cover above the pipeline once installed. There would be a 1:1 slope where there is no shoring or bracing in the excavations. In the right-of-way (ROW) of the Aqueduct, excavation would be approximately 22 feet deep. In the ROW of the West Side Canal, excavation would be approximately 18 feet deep. Temporary trenching would occur across the Kern River Flood Channel. Once installation of the RCP is complete, the river channel would be returned as closely as possible to its original condition and grade.

Ground disturbance for the whole project would be approximately three acres (9,000 cubic yards). The top three inches of topsoil would be removed and stockpiled within the construction easement. This soil would be used to cover the disturbed area within the easement once construction is complete in order to redistribute the existing seed bank. Additional removed material would be used to backfill excavations if it fulfills engineering and construction standards. If necessary, additional fill that meets engineering and construction standards would be brought in to the project site to fill in excavations. Any excavated materials not used would be removed from the project site.

Construction equipment would include: 120-135 horsepower excavators, concrete breakers, compaction wheels, cranes, loader backhoes, graders, dump trucks, dewatering pumps (possibly), and shoring and bracing equipment. Construction would take approximately eight months once environmental review and permitting is complete.

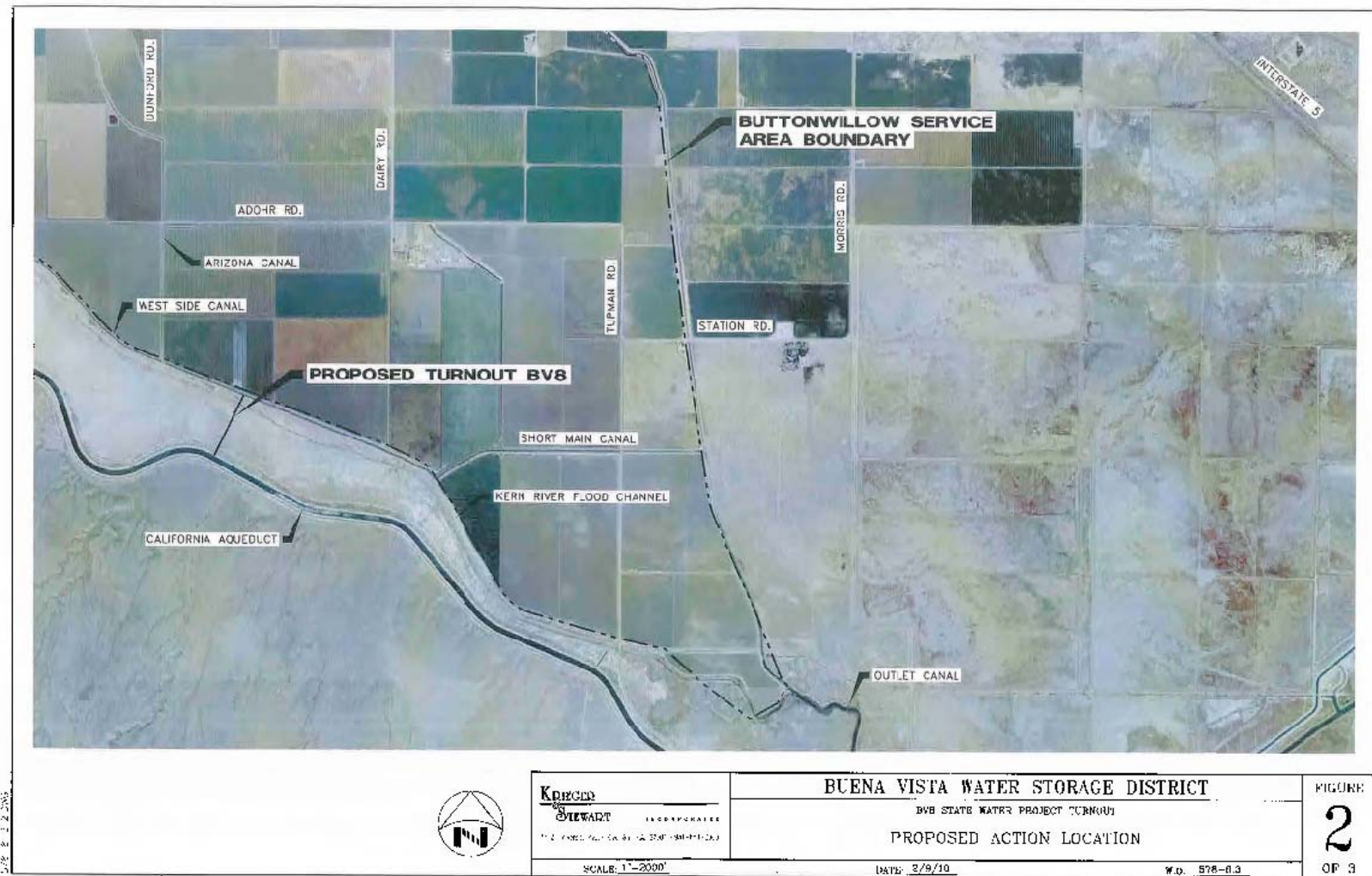


Figure 2-1 Proposed Action Site Overview

2.2.1 Operation of BV8

The BV8 facilities may be operated at any time as deemed necessary by BVWSD and pursuant to the district's contracted SWP water agreements; however, the BV8 facilities are expected to operate primarily during the BVWSD's water year, which typically extends from late May through mid-August. During operational days, BVWSD plans to send personnel to the site twice daily to adjust the valves and read the meter. BVWSD would manage resultant conserved water supplies through programs with in-district, out-of-district, or a combination of in-district and out-of-district entities.

2.2.2 Environmental Protection Measures and Commitments

BVWSD would implement the following environmental protection measures to reduce environmental consequences associated with the Proposed Action (see Table 2-1).

Environmental consequences for resource areas assume the measures specified would be fully implemented. Copies of any biological resource survey reports must be submitted to Reclamation. See Appendix C for the complete Mitigation Monitoring and Reporting Program including all best management practices (BMPs) to be implemented by BVWSD pursuant to CEQA.

Table 2-1 Environmental Protection Measures and Commitments

Resource	Protection Measure
Air Quality	Dust Control Measures including: <ul style="list-style-type: none">• All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, or covered with a tarp or other suitable cover or vegetative ground cover.• All onsite unpaved roads and offsite unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.• All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.• When materials are transported offsite, all material shall be covered or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.• All operations shall limit or expeditiously remove the accumulation of mud and dirt from adjacent public streets at the end of each workday.• Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing <i>sufficient</i> water or chemical stabilizer/suppressant.
Biological Resources	At least thirty (30) calendar days prior to ground breaking, BVWSD shall (a) purchase any required compensation land, place a U.S. Fish and Wildlife Service (USFWS)-approved conservation easement on that land, and arrange for USFWS-approved management and endowment, or (b) deposit sufficient funds to purchase and endow sufficient compensation land with a USFWS-approved compensation bank.
Biological Resources	Biological monitor(s) shall be present during all ground disturbing activities. In addition to conducting pre-activity surveys for the project, the biological monitors shall aid crews in satisfying take avoidance criteria and implementing project Avoidance and Minimization measures, documenting all pertinent information concerning project effects on sensitive species, and shall assist in minimizing adverse effects of project activities on sensitive species.
Biological Resources	Preconstruction surveys and implementation of avoidance and minimization measures for burrowing owl (CDFG 1995; see Appendix D).

Resource	Protection Measure
Biological Resources	Preconstruction surveys and implementation of avoidance and minimization measures for San Joaquin kit fox (USFWS 1999; see Appendix D).
Biological Resources	Preconstruction surveys for kangaroo rats (CDFG 1990; see Appendix D) to identify small mammal burrows. In addition, all small mammal burrows within the proposed construction zone will be identified during this pre-activity survey and flagged with pin flags and their location recorded using a Global Positioning System (GPS). The GPS coordinates will be provided to the project engineer to be incorporated as a layer within the pipeline plans. The project engineer will, to the greatest extent practical, design the alignment of the pipeline to avoid small mammal burrows. Pipes and culverts shall be searched for kangaroo rats prior to being moved or sealed to ensure that an animal has not been trapped. Construction activities would be done outside of Tipton kangaroo rat breeding period (February through April). Work areas, including staging areas, will be clearly defined with flagging or other highly visible marking and the smallest possible area will be disturbed. Movement of heavy equipment to and from the project sites, staging areas, or borrow sites will be confined, to the extent possible, to existing roadways to minimize habitat disturbance.
Biological Resources	Preconstruction surveys for blunt-nosed leopard lizard (CDFG 2004; see Appendix D). The survey protocol will be modified however, to eliminate the required spring survey period for adults. The surveys for hatchlings (Aug 1 through September 15) will be completed 14 to 30 days prior to ground clearing or construction activities on the site or other areas within 500 feet of the grassland habitat.
Biological Resources	Construction activities would be done outside of the Le Conte's thrasher breeding/nesting season (late January through early June).
Biological Resources	Three inches of extracted topsoil will be set aside during construction activities. Upon completion of construction, the salvaged topsoil, and its accompanying seedbank, will be redistributed over the construction site in order to disseminate the original seedbank over the construction area.
Biological Resources	All construction activities would be restricted to daylight hours only.

2.2.3 Environmental Permitting

Prior to construction within the Kern River Flood Channel, BVWSD would submit, to the extent necessary, all appropriate applications for working within a waterway including:

- California Department of Fish and Game (CDFG) Streambed Alteration Agreement
- Corps Clean Water Act (CWA) Section 404
- California Regional Water Quality Control Board CWA Section 401

In addition, BVWSD would acquire permits from the California Department of Water Resources (DWR) for installation of a new turnout within the Aqueduct and for access to their ROW.

Copies of all permits would be provided to Reclamation.

2.3 Alternatives Considered but Eliminated from Further Analysis

Four alternative turnout facilities were evaluated during development of the Project (see Figure 2-2). A detailed analysis and comparison of the four BV8 Project alternatives was conducted by Kennedy/Jenks Consultants, and is included in their 2008 *Feasibility Study Report for New Turnout from State Water Project Aqueduct* (Feasibility Study), which is available for review at BVWSD's office. As part of their Feasibility Study, Kennedy/Jenks Consultants used a weighted scoring methodology to rank the four alternatives based on eight comparison issues including: ROW Impacts to Parcels, Construction Costs, Ability to Recoup Infiltration Losses, Service Area

Sustainability, Operational Flexibility, West Side Canal Losses, North District Operations, and SWP Hydraulics. Based on this comparison methodology, Kennedy/Jenks concluded that Alternatives 2 and 4 ranked equally as the best alternatives.

BVWSD selected Alternative 4 as the Preferred Alternative for the following reasons: (1) it has a shorter pipeline length than Alternative 2, which results in substantially smaller areas of permanent and temporary disturbance and consequently substantial construction cost savings; and (2) construction and operation of Alternative 2 would directly affect five parcels, whereas Alternative 4 directly affects only two parcels.

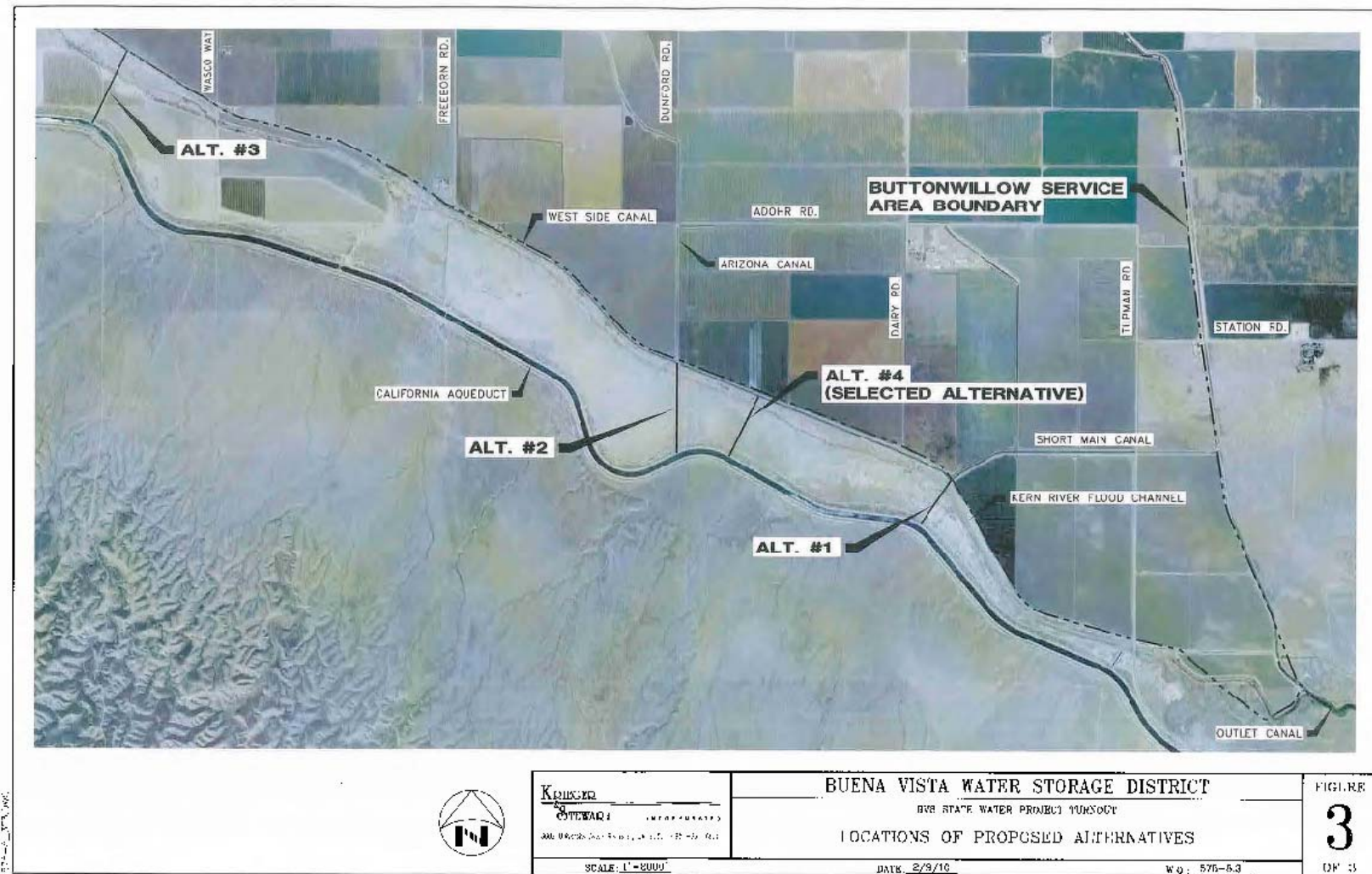


Figure 2-2 Locations of Proposed Alternatives

Section 3 NEPA Affected Environment and Environmental Consequences

This section of the EA/IS includes the NEPA analysis portion of the potentially affected environment and the environmental consequences involved with the Proposed Action and the No Action Alternative.

3.1 Water Resources

3.1.1 Affected Environment

3.1.1.1 Buena Vista Water Storage District

BVWSD lies in the trough of the southern San Joaquin Valley in Kern County. The district controls an average entitlement of about 158,000 AF per year (AFY) of surface water from the Kern River. Additional water supplies include annual (21,300 AF) and surplus (3,750 AF) SWP contract allocations, and groundwater pumping. BVWSD's average annual water supply from actual diversions, pumping, and storage release is approximately 185,000 AF (BVWSD 2009). From this, approximately three-fourths of their in-district irrigation demand is met by surface water. The remaining irrigation demand is met via replenishment of the groundwater, which is subsequently pumped by BVWSD and local landowners. The district does not directly supply any municipal and industrial water.

BVWSD operates a surface water delivery system with more than 125 miles of earthen canals which experience an average annual loss of 45,000 AF due to evaporation and seepage. Only portions of the Alejandro, East Side, and BV2 canals are concrete lined for a total of just over 5 miles. System delivery losses due to seepage and evaporation are approximately 30-35 percent for the short pre-irrigation run and approximately 28 percent of total flow for an average summer run (BVWSD 2009). Seepage losses through the unlined canals recharge the primarily unconfined aquifer below. In areas experiencing lateral flow problems from canal seepage, affected landowners occasionally will install interceptor ditches or drain lines to minimize any localized crop damage (BVWSD 2009).

3.1.1.2 Groundwater Subbasin

The southern San Joaquin Valley is located within the Tulare Lake Hydrologic Region, which is essentially a closed basin, with principal drainages from the Kings, Kaweah, Tule, and Kern Rivers (DWR 2005). These streams are the principal source of natural recharge to the underlying groundwater basin with applied irrigation also being a large contributor. The Kern County subbasin, with a surface area of approximately 1,945,000 acres, is one of seven subbasins designated by DWR within the Tulare Lake Hydrologic Region (DWR 2006). The Kern County groundwater subbasin has been identified as being critically overdrafted (DWR 2005) in large part due to the heavy reliance on groundwater pumping for irrigation. The average Kern County groundwater subbasin level is essentially unchanged from 1970 to 2000; however, the net level increased by 30 feet in the Buttonwillow/Lost Hills area in which BVWSD is located (DWR 2006).

Lake Isabella Dam

Lake Isabella is located 70 miles upstream on the Kern River approximately 45 miles northeast of Bakersfield, California. The Corps has identified dam safety concerns and has consequently reduced storage in Lake Isabella by one-third (BVWSD 2009; Corps 2010). Reduced storage behind Lake Isabella is expected to remain in effect until dam safety concerns have been resolved (Corps 2010) which is expected to be completed in 2017. This has impacted, and will continue to impact, BVWSD's ability to store their Kern River water rights water behind Lake Isabella Dam. On February 5, 2010, the U.S. Forest Service and the Corps issued a Notice of Intent to prepare a draft Environmental Impact Statement (EIS) for the *Lake Isabella Dam Safety Assurance Program* which would analyze the remediation of seismic, seepage, and hydrologic dam safety concerns (U.S. Forest Service 2010). The draft EIS is expected to be released at the beginning of 2011.

State Water Project Facilities

Water in the mainstem of the Aqueduct flows south from the Sacramento-San Joaquin River Delta (Delta) via gravity into the San Luis Joint-Use Complex, which was designed and constructed by the federal government and is operated and maintained by DWR. The joint-use facilities include: O'Neill Dam and Forebay, B.F. Sisk Dam, San Luis Reservoir, William R. Gianelli Pumping-Generating Plant, Dos Amigos Pumping Plant, Los Banos and Little Panoche Reservoirs, and the San Luis Canal from O'Neill Forebay to Kettleman City, together with the necessary electrical switchyard facilities. The San Luis Canal is the section of the Aqueduct that serves both the SWP and the federal CVP. After leaving the Joint-Use Complex, water travels through the central San Joaquin Valley and splits near Kettleman City into the Coastal Branch Aqueduct, completed in 1997, to serve San Luis Obispo and Santa Barbara counties.

3.1.2 Environmental Consequences

3.1.2.1 No Action

Under the No Action Alternative, BVWSD would continue to receive their SWP allocations from their five turnouts on the Aqueduct. There would be no impact to SWP or district facilities or groundwater levels as conditions would remain the same as existing conditions. BVWSD's Kern River water rights water would continue to have reduced storage behind Lake Isabella as described above. In addition, water losses due to seepage and evaporation would continue as it has in the past ranging from 28 to 35 percent. Consequently, there may be slight adverse impacts to BVWSD's ability to conserve their available water supply which could augment their reduced surface water allocations.

3.1.2.2 Proposed Action

Under the Proposed Action, BVWSD would construct a new turnout on the Aqueduct and a new underground pipeline that would connect this new turnout to the district's West Side Canal. The new turnout and pipeline would enable BVWSD to conserve up to 9,000 AFY of their annual water supply (BVWSD 2009). BVWSD plans to use approximately 50 percent of the conserved water to meet in-district irrigation demand with the remaining 50 percent used for in-district or out-of-district water marketing or groundwater recharge. The use of this water for irrigation and potential groundwater recharge would minimize the potential loss of groundwater recharge from the reduced seepage losses. In addition, the use of the conserved water for irrigation would reduce the need for additional groundwater pumping to meet irrigation demands. Consequently,

there would be no adverse impact to groundwater resources. The Proposed Action would not increase BVWSD's SWP allocation nor would it increase or decrease their Kern River water rights water; instead it would increase BVWSD's operational flexibility and water management abilities. The placement of a cofferdam in the Aqueduct during the construction of the new turnout would temporarily reduce the amount of flow within the Aqueduct; however, the timing of this reduction would be coordinated with DWR so that it would not impact their ability to deliver SWP water to their contractors. Construction of the new outlet in the West Side Canal would be done outside of the irrigation season when the canal is not in use in order to prevent impacts to water deliveries to farmers. Therefore, there would be no adverse impact to water resources as a result of the Proposed Action.

3.1.2.3 Cumulative Impacts

Without the Proposed Action, up to 9,000 AFY of BVWSD's surface water supply would continue to be lost due to evaporation and seepage losses. Loss of this water may require additional groundwater pumping in order to meet demand which could have slight long-term adverse impacts on groundwater levels beneath BVWSD. However, a portion of these impacts may be reduced due to the continuation of seepage losses. In addition, additional surface water supplies may be brought in by BVWSD to either offset the losses or reduce the need for groundwater pumping.

BVWSD is aware of the following actions proposed within the Buttonwillow Service Area that may impact water resources:

- The Buena Vista Water Management Program (BV Program) consists of implementing four projects designed to more effectively and beneficially manage the district's water resources and facilities. Facilities proposed for construction pursuant to the BV Program would be located throughout the Buttonwillow Service Area. The BV Program is described in detail in the document *Final Environmental Impact Report for the Buena Vista Water Storage District Buena Vista Water Management Program* dated December 2009, State Clearinghouse Number 2009011008, available for review at the BVWSD office during regular business hours.
- The West Kern Water District is developing a 480-acre groundwater banking facility near the south end of BVWSD. The facility would consist of recharge basins, groundwater monitoring wells, groundwater extraction wells, conveyance facilities. Extraction wells have a design capacity for recovery of up to 12,000 AFY. The water banking program was analyzed under an Environmental Impact Report entitled *Groundwater Banking Project* dated November 2009, State Clearing House Number 2009071022 which was finalized and a notice of determination posted on March 24, 2010.

The Proposed Action would not impact the implementation of these projects. The availability of 50 percent of the conserved water supply would reduce the need for additional groundwater pumping to meet in-district demand. Over time, this could have a slight beneficial impact to groundwater levels within the district. This may be offset by the reduction in seepage losses that would have occurred without the Proposed Action balancing out groundwater recharge within BVWSD. Additionally, the use of the remaining 50 percent of the conserved water used by BVWSD for in-district or out-of-district groundwater recharge may also slightly increase groundwater recharge. As described previously, the Proposed Action would not increase

BVWSD's SWP or Kern River water supply; therefore, there would be no cumulative impacts to surface water supplies as a result of the Proposed Action but there may be beneficial cumulative impacts to groundwater resources.

3.2 Land Use

3.2.1 Affected Environment

BVWSD Service Area is agricultural, with cotton, grain, and alfalfa as the principal crops. Cotton is the dominant crop, comprising about 38 percent of the annual cropping pattern; however cropping patterns have been shifting due to poor market conditions for cotton. The main shift has been from cotton to alfalfa, grains, and pistachios. Total crop consumptive use peaked in the 1970s, averaging about 113,000 AF. In the past 10 years consumptive use has declined to about 105,000 AF (BVWSD 2009). The cropping pattern within the BVWSD's Service Area in 2008 is listed in Table 3-1 below (BVWSD 2009).

Table 3-1 Crops within BVWSD in 2008

Crop	Acreage	Percent of Total District Cropping Pattern
Cotton	13,400 acres	38%
Alfalfa	10,100 acres	28%
Grains	5,300 acres	15%
Pistachios	3,400 acres	10%
Miscellaneous Field Crops	3,200 acres	9%

The area between the Aqueduct and the West Side Canal has been designated by Kern County as Intensive Agriculture/Flood Hazard (Kern County 2007). While zoned for agricultural use, the Proposed Action site currently consists of approximately five acres of vacant land that has been used for illegal dumping (domestic waste) and off-road vehicle use.

3.2.2 Environmental Consequences

3.2.2.1 No Action

There would be no impact to land use as conditions would remain the same as existing conditions.

3.2.2.2 Proposed Action

The Proposed Action would result in the permanent conversion of 0.9 acres of land designated as Grazing Land by the California Department of Conservation. This area of land has not been used as grazing land in the recent past. Land use within the construction area of the Proposed Action would be returned to its existing condition once construction was complete. No new agricultural lands would be brought into production as a result of the water conserved from the Proposed Action. Rather, conserved water would be used to meet existing in-district demand, potential water marketing or transfers, and/or groundwater recharge. Therefore, the Proposed Action would not have an adverse impact on land use.

3.2.2.3 Cumulative Impacts

As there are no changes to land use as a result of the Proposed Action and no new agricultural lands would be brought into production, there would be no cumulative impacts to land use as a result of the Proposed Action.

3.3 Biological Resources

3.3.1 Affected Environment

Most of the land within the BVWSD service area is devoted to irrigated agricultural production. Like much of the remaining San Joaquin Valley, the landscape is dominated by irrigated fields that are intensively managed. Habitat types for the Project Site consist of (open) ruderal/developed non-native grassland and valley saltbush scrub. The eastern portion of the proposed turnout and pipeline are flood irrigated agricultural fields, primarily alfalfa and cotton. Ruderal vegetation is located along the edges of the Kern River Flood Channel. Non-native grassland vegetation is found integrated with highly fragmented valley saltbush scrub between the Kern River Flood Channel and the California Aqueduct.

BVWSD retained a biologist from Live Oak Associates Inc. (LOA) to conduct a biological survey/study of the Proposed Action Area. Initial reconnaissance surveys were performed on July 3, 2008. LOA conducted protocol-level surveys (CDFG 1990, 1995, 2004 and U.S. Fish and Wildlife Service [USFWS] 1999) September 8-9, 11-12, and 15, 2008 and during May 21 through July 11, 2009 for blunt-nosed leopard lizard (BNLL), San Joaquin antelope squirrel (SJAS), San Joaquin kit fox (SJKF), and burrowing owl. Survey reports are available at BVWSD's office on request.

Reclamation requested an official species list from the USFWS via the Sacramento Field Office's website, http://www.fws.gov/sacramento/es/spp_list.htm on March 19, 2010 (document number 100319100618). The list is for the following U.S. Geological Survey 7½ minute quadrangles: Mouth of Kern, Taft, Fellows, Rio Bravo, Buttonwillow, East Elk Hills, Tupman, Lokern, and West Elk Hills. Reclamation further queried the CDFG's California Natural Diversity Database (CNDDB) for records of protected species within 10 miles of the Proposed Action location (CNDDB 2010). A summary table (Table 3-2) was created from LOA's findings, the USFWS species list, the CNDDB records and additional information within Reclamation's files for federally-listed special-status species. See Section 4.1.4 for discussion of State-listed special-status species.

Table 3-2 Biological Species List for the Proposed Action

<u>Species</u>	<u>Status¹</u>	<u>Effects²</u>	<u>Occurrence in the Study Area³</u>
Amphibians			
California red-legged frog (<i>Rana aurora draytonii</i>)	T	NE	Absent. Extirpated from action area (USFWS 2002).
Birds			
California Condor (<i>Gymnogyps californianus</i>)	E, X	NE	Absent. CNDDB ⁴ -recorded occurrences and designated critical habitat absent from action area.

<u>Species</u>	<u>Status¹</u>	<u>Effects²</u>	<u>Occurrence in the Study Area³</u>
Fish			
delta smelt (<i>Hypomesus transpacificus</i>)	T	NE	Absent. No natural waterways within the species' range will be affected by the proposed action. There will be no effect to Delta pumping.
Invertebrates			
valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)	T	NE	Absent. No records or habitat in area of effect.
vernal pool fairy shrimp (<i>Branchinecta lynchi</i>)	T	NE	Absent. No records or vernal pools in area of effect.
Mammals			
Buena Vista Lake shrew (<i>Sorex ornatus relictus</i>)	E	NE	Absent. No CNDDDB-recorded occurrence in action area and suitable habitat not present.
giant kangaroo rat (<i>Dipodomys ingens</i>)	E	NE	Unlikely. CNDDDB-recorded occurrences from 10 years ago located south of Aqueduct. Protocol level surveys (CDFG 1990) completed in 2008 found no evidence to support their presence and habitat noted as poor in quality. In addition, small mammal burrow density was low and not indicative of this species (LOA 2008).
San Joaquin kit fox (<i>Vulpes macrotis mutica</i>)	E	LAA	Possible. Several CNDDDB-recorded occurrences in action area. Closest reported natal den 8.5-miles northwest from Site. The area is within kit fox core habitat (USFWS 1998) and could be used as foraging habitat, though marginal because of the frequent ground disturbance in this area. Protocol level surveys for kit fox (CDFG 1990) found no evidence of occurrence in area or use for foraging (LOA 2008 and 2009).
Tipton kangaroo rat (<i>Dipodomys nitratoideus nitratoideus</i>)	E	LAA	Possible. CNDDDB-recorded occurrences in action area. Surveys conducted in 2008 found presence of kangaroo rats (CDFG 1990) but most likely Herman's kangaroo rat, a sympatric species (LOA 2008). Habitat in the action area is suboptimal due to disturbance from agricultural production and maintenance of West Side Canal.
Plants			
California jewelflower (<i>Caulanthus californicus</i>)	E	NE	Absent. No CNDDDB-recorded occurrences in action area. Found in non-native annual grasslands and historically in Saltbush scrub. Closest report from 1986 located 7 miles south in Taft Quad and believed extirpated from this area (Taylor and Davilla 1986).
Kern mallow (<i>Eremalche kernensis</i>)	E	NE	Absent. No CNDDDB-recorded occurrences in action area. Closest report 7 miles northwest of site. Kern mallow typically occurs in Saltbush Scrub natural community, where it grows under and around saltbushes.

<u>Species</u>	<u>Status</u> ¹	<u>Effects</u> ²	<u>Occurrence in the Study Area</u> ³
San Joaquin woolly-threads (<i>Monolopia congdonii</i>)	E	NE	Absent. No CNDDDB-recorded occurrences in action area. Found in non-native annual grasslands and historically in Saltbush scrub. Can occur in disturbed grounds.
Reptiles			
blunt-nosed leopard lizard (<i>Gambelia sila</i>)	E	NLAA	Unlikely. There are CNDDDB-recorded occurrences from 1990 located 2.2 miles east of Project Site. Limited saltbush scrub occurs in the Action Area and could provide shelter for leopard lizards. Protocol level surveys (CDFG 2004) were conducted in 2008 and 2009 and species not recorded from action area (LOA 2008 and 2009).
giant garter snake (<i>Thamnophis gigas</i>)	T	NE	Absent. Suitable habitat absent from Project Area (LOA 2008). Believed extirpated from Tulare Basin (Hanson and Brode 1980).
<p>1 Status= Listing of Federally special status species E: Listed as Endangered T: Listed as Threatened X: Critical Habitat designated for this species</p> <p>2 Effects = Effect determination NE: No Effect NLAA: May affect, not likely to adversely affect LAA: May affect, likely to adversely affect</p> <p>3 Definition Of Occurrence Indicators Possible: Species recorded in area but habitat suboptimal or lacking entirely Unlikely: Species recorded in area but habitat suboptimal or lacking entirely. Any protocol-level surveys did not find evidence to support presence Absent: Species not recorded in study area and/or habitat requirements not met</p> <p>4 CNDDDB = California Natural Diversity Database 2010</p>			

Migratory Birds

Western Burrowing Owl The burrowing owl (*Athene cunicularia hypugaea*) is a federal protected bird under the Migratory Bird Treaty Act (MBTA). This small ground-dwelling owl is a yearlong-resident that exhibits high site fidelity to breeding areas and nesting burrows (Rich 1984, Lutz and Plumptre 1999). They live in ground squirrel and other mammal burrows that it appropriates and enlarges for its own purposes (Martin 1973, CDFG 1995). Burrowing owls are typically found in short-grass grasslands, open scrub habitats, and a variety of open, human-altered environments, such as the edges of canals or roadways, and agricultural fields.

There are three CNDDDB-recorded occurrences within a 1-mile radius of the Proposed Action site (CNDDDB 2010). Protocol-level field surveys (CDFG 1995) within the Proposed Action area were conducted in 2008 and 2009 by looking for presence, burrows, molted feathers, eggshell fragments, cast pellets, prey remains, and whitewash at or near any burrow entrance. Evidence at one burrow did show signs of burrowing owl use, but appeared to be abandoned, as evident by spider webs and vegetation blocking the opening (LOA 2009). Therefore, burrowing owls do have the potential to occur at the Proposed Action site.

Le Conte's Thrasher Le Conte's thrasher (*Toxostoma lecontei*) has been observed within 2 miles of the Proposed Action site, and habitat suitable for Le Conte's thrasher is present onsite in the form of saltbush scrub located within the Aqueduct ROW.

Federally-listed Species

Blunt-Nosed Leopard Lizard BNLL is an endangered species that occurs on the San Joaquin Valley floor in arid areas with scattered vegetation. BNLL inhabit non-native grassland and alkali sink scrub communities of the valley floor marked by poorly drained, alkaline, and saline soils (Montanucci 1965). The Proposed Action area is flooded on occasion and includes maintained ditch banks and levee roads. The area is highly degraded by off-road vehicle activity and trash dumping in the area. Agricultural development and urbanization have largely degraded and fragmented the habitat. All of these factors contribute to the poor habitat quality in the Proposed Action vicinity (LOA 2008).

There are two CNDDDB-recorded occurrences for BNLL within a 5-mile radius of the Proposed Action site (CNDDDB 2010). The 1981 record was 3.2 miles northwest of the Proposed Action site along the Aqueduct. The second record, from 1990, was approximately 2.5 miles east of the West Side Canal (CNDDDB 2010). Approved protocol-level field surveys (CDFG 2004) for BNLL hatchlings were conducted for the Proposed Action site on September 8 to September 15, 2008 and for adults on May 21 through July 11, 2009 (LOA 2008 and 2009).

San Joaquin Kit Fox SJKF is federally listed as an endangered species. Their diet varies based on prey availability, and includes small to mid-sized mammals, ground-nesting birds, and insects. SJKF excavate their own dens, or use other animals, and human-made structures (culverts, abandoned pipelines, and banks in sumps or roadbeds). Primary reasons for the species decline include loss and degradation of habitat (USFWS 1998). The Proposed Action site is located within established core habitat for SJKF (CNDDDB 2010).

Potential denning sites are available along the bank of the canals and in surrounding hillsides two miles south of the Proposed Action site. Alfalfa fields within the vicinity of the Proposed Action area could provide foraging habitat for the SJKF by providing rodent and insect prey. However, agricultural practices such as cultivation, irrigation, and chemical treatments result in elevated disturbances within this area, thus limiting denning opportunities and food availability to SJKF. Protocol-level surveys for SJKF (CDFG 1990) were conducted in 2008 and 2009 and found no evidence to support their presence in the vicinity of the site (LOA 2008 and 2009). However, the Proposed Action site still has the potential to be utilized by SJKF for denning, foraging, and movement purposes.

Tipton Kangaroo Rat This species was federally listed as endangered in 1988 (USFWS 1988) and is included in the Recovery Plan for Upland Species of the San Joaquin Valley, California (USFWS 1998). Tipton kangaroo rats are restricted to scattered, isolated areas of south-central California and inhabit arid-land vegetative communities with level or nearly level terrain located within the floor of the Tulare Basin. Kangaroo rats are primarily nocturnal and active year round. Their diet consists primarily of seeds (from grasses and forbs), but they will also consume leaves, stems, buds, fruit, and insects.

There are two CNDDDB-recorded occurrences within a 3-mile radius of the Proposed Action site (CNDDDB 2010). Protocol level field surveys (CDFG 1990, see Appendix D) for kangaroo rat species were completed in 2008 at the Proposed Action site which detected signs of tail drags, dust baths, droppings, and tracks near the few identified burrows and were indicative of kangaroo rats (LOA 2008).

3.3.2 Environmental Consequences

3.3.2.1 No Action

There would be no impact to biological resources since there would be no ground disturbing activities and conditions would remain the same as existing conditions.

3.3.2.2 Proposed Action

The majority of special-status plants and animals would most likely not occur within the boundaries of the disturbed land areas as described in Table 3-2 above. However, federally-listed species and birds protected by the MBTA that occur or could occur in the vicinity of the Proposed Action area include: western burrowing owl, Le Conte's thrasher, San Joaquin kit fox, Tipton kangaroo rat, and blunt-nosed leopard lizard. See Section 4.1.4 for discussion of State-listed special-status species.

Migratory Birds There are potential burrow sites at the Proposed Action site that could be utilized by burrowing owl. A protocol-level field survey for burrowing owl would be completed by BVWSD 14 to 30 days prior to any ground disturbance in order to determine their presence. In addition, measures for avoiding "take" of burrowing owl would be followed, as detailed in *CDFG Staff Report and Burrowing Owl Consortium Guidelines* (CDFG 1995, see Appendix D). No effect to this species is expected if burrowing owls are absent from the area. However, if they are present, BVWSD would implement conservation measures in consultation with USFWS and CDFG to avoid or minimize any potential impacts to this species from the Proposed Action.

Reclamation has determined that Le Conte's thrasher is unlikely to be present in the Action Area. However, because there is potential habitat adjacent to the Aqueduct ROW, construction activities would not be conducted during Le Conte's thrasher breeding/nesting season (late January through early June). Therefore, no effect on Le Conte's thrasher is anticipated.

Blunt-Nosed Leopard Lizard There is potential for harm to come to BNLL if they are present in the action area and from loss of habitat. Direct impacts could occur by the crushing of burrows, or entombment within burrows, and injury or mortality from construction equipment and vehicles. However, surveys were negative for presence of this species and potential burrowing habitat in the area. This could be due to highly degraded habitat caused by off-road vehicle activity and trash dumping in the area. Much of the Proposed Action site is now bare soil and bounded by active agricultural fields and the Aqueduct, and as such, BNLL is not likely to occur there. Therefore, BNLL may be affected by the Proposed Action, but is not likely to be adversely affected. Regardless, this area is within range of BNLL, and as such, additional protocol-level surveys would be required. Avoidance and mitigation measures would be employed to ensure that BNLL would not be impacted. In the event that BNLL are detected during surveys or construction activities, construction activities must be halted and USFWS contacted immediately to determine the best course of action.

San Joaquin Kit Fox Protocol-level surveys found no evidence of species presence or suitable denning habitat in the Action Area (LOA 2008 and 2009). Nevertheless, kit foxes are highly mobile and could traverse the area for foraging purposes, and as a result, there is the potential for harm to kit foxes. Vehicles and equipment could strike kit foxes during the construction of the turnout, pipeline, and associated facilities. In addition, prey availability could decrease due to

temporary disturbances during construction practices and indirectly impact kit foxes using the area for foraging. However, kit foxes are nocturnal and would likely be active when construction work is not being conducted. They have good vision and should see and be able to avoid excavations. Thus, they would avoid most disturbances.

To insure that the Proposed Action would avoid and/or minimize disturbances, injury or mortality to SJKF, preconstruction surveys for SJKF (USFWS 1999) would be conducted prior to initiation of work and implementation of avoidance measures followed to minimize potential impacts (see Appendix D). If no sign or evidence of SJKF is found, it is likely that they are not present in the vicinity and would not be directly affected by the Proposed Action. If active dens are found and cannot be avoided, the standard procedure of monitoring and excavating the dens would be implemented to ameliorate potential for harm to SJKF.

However, three acres of limited saltbush scrub/non-native grassland habitat in the Proposed Action Area would be temporarily disturbed during excavation activities and approximately 0.3 acres of saltbush scrub would be permanently removed. This would disrupt an already fragmented scrub habitat that could be utilized by SJKF. Although, this is a small portion of the total amount of annual grassland available for use within the region of the Proposed Action, the permanent loss of core habitat may affect SJKF, and would likely adversely affect their recovering in this area.

Tipton Kangaroo Rat The Proposed Action would eliminate 0.3 acres of scrub habitat further degrading existing poor quality habitat that could be utilized by kangaroo rats. During construction activities, any kangaroo rats in the area would likely be inside burrows. Therefore, construction of the turnout, pipeline, and associated facilities has the potential to kill or injure kangaroo rats through crushing of burrows, or entombment within a burrow, as well as direct impacts from construction equipment and vehicles. Destruction of burrow systems during construction activities could have the following impacts on kangaroo rats: 1) loss of food reserves held within burrows; 2) reduction in the ability of the kangaroo rats to maintain their optimal body temperature; and, 3) increased exposure to predators. Thus, a loss of food caches may result in reduced caloric intake and decreased energy reserves which could lead to a lower reproductive capacity and reduced viability of individuals. Additionally, noise or vibration during construction could disrupt kangaroo rat behavior, possibly even causing abandonment of burrows. Kangaroo rats could seek refuge in pits, trenches or pipes and become inadvertently trapped and killed during construction. Consequently, the Proposed Action may affect, and is likely to adversely affect this species through habitat loss.

To insure that the Proposed Action would avoid disturbances, injury or mortality to Tipton kangaroo rats, preconstruction surveys for kangaroo rats (CDFG 1990) would be conducted prior to initiation of work and implementation of avoidance measures followed to minimize potential impacts (see Appendix D). If no sign or evidence of kangaroo rat is found, it is likely that they are not present in the vicinity and would not be directly affected by the Proposed Action. However, if any small mammal burrows are found within the proposed construction zone during this pre-activity survey, these would be flagged with pin flags and their location recorded using GPS. The GPS coordinates would be provided to the project engineer to be incorporated as a layer within the pipeline plans. The project engineer would, to the greatest extent practical,

design the alignment of the pipeline to avoid small mammal burrows. Pipes and culverts shall be searched for kangaroo rats prior to being moved or sealed to ensure that an animal has not been trapped. Work areas, including staging areas, would be clearly defined with flagging or other highly visible marking and the smallest possible area would be disturbed. Movement of heavy equipment to and from the Proposed Action site, staging areas, or borrow sites would, to the extent possible, be confined to existing roadways to minimize habitat disturbance. In addition, construction activities would be done outside of Tipton kangaroo rat breeding period (February through April).

Reclamation is currently conducting endangered species consultations and compliance to address potential impacts to BNLL, SJKF, and Tipton kangaroo rat with USFWS. Such effects include loss of habitat and reduced habitat values for these species. Potential impacts would be minimized as much as possible by the incorporation of appropriate conservation measures and/or mitigation into the project description. The draft EA will not be finalized until consultation is complete.

3.3.2.3 Cumulative Impacts

Numerous activities continue to eliminate habitat for listed and proposed threatened and endangered species in the southern San Joaquin Valley. Habitat loss and degradation affecting both animals and plants continue as a result of urbanization, oil and gas development, road and utility ROW management, flood control projects, climate change, grazing by livestock, and agricultural practices. Listed and proposed animal species are also affected by poisoning, shooting, increased predation associated with human development, and reduction of food sources. All of these non-Federal activities are expected to continue to adversely affect listed and proposed species in the southern San Joaquin Valley.

The Proposed Action would temporarily disturb 3.0 acres of saltbush scrub/nonnative grassland habitat during construction activities. This habitat is already degraded and would be returned to its pre-existing condition once construction is complete. Further, the native seedbank present within the topsoil would be preserved prior to construction as described in Section 2.2.2. However, the Proposed Action would eliminate 0.3 acres of saltbush scrub habitat that is considered core habitat for SJKF and which could be utilized by other special-status species. BVWSD would implement USFWS recommended conservation measures and/or mitigation in order to minimize potential cumulative impacts once consultation with USFWS is complete.

3.4 Cultural Resources

Cultural resources 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 (National Register). Those resources that are on or eligible for inclusion in the National Register are referred to as historic properties.

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 will 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 will have on historic properties, and consult with the State Historic Preservation Office, 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

BVWSD contracted Three Girls and A Shovel, LLC (TGS) to survey the project area for cultural resources. The survey included four alternative routes, Alternative 4 being chosen for the pipeline. TGS conducted a records search at the Southern San Joaquin Valley Information Center prior to a pedestrian survey that included the APE (Pruett 2008). Two prehistoric sites, three prehistoric isolates, and two historic bottles were located during the survey. Portions of the Aqueduct and West Side Canal were also documented. Site 1 consists of 11 flakes (4 chalcedony, 6 chert, and 1 basalt). Site 2 consists of 5 flakes (1 chalcedony and 4 chert). These flakes are adjacent to site P-15-2464, which was destroyed during construction of the Aqueduct, and are likely associated with this site. Isolate IF1 was identified as an obsidian needle. Isolates IF2 and IF3 are individual chert flakes. Isolates IF4 and IF5 are individual Listerine bottles that pre- and post-date 1920, respectively (Pruett 2008). The West Side Canal segment within the survey area is an unlined earthen structure with a top width of about 25 feet. The Aqueduct segment located within the survey area is concrete lined with a top width of 40 feet and depth of 30 feet.

The only cultural resources located within the APE are a 100-foot long portion of the West Side Canal and a 100-foot long portion of the Aqueduct. Isolate IF1 was also located within the APE, but was collected for sourcing at the Northwest Research Obsidian Studies Laboratory in Corvallis, Oregon. The West Side Canal was acquired by BVWSD in 1929 along with a series of irrigation canals and drains that had been in use beginning in the 1850s. The West Side Canal has remained in use as an integral part of the BVWSD distribution system that serves the west side of the San Joaquin Valley in Kern County. The Aqueduct is the main conveyance structure for the SWP and is the longest water channel in California, measuring 450 miles long. The portion of the Aqueduct north of Kettleman City is known as the San Luis Canal, which is part of Reclamation's CVP. The Aqueduct provides drinking water to the central coast and southern California and is a primary source of irrigation water for Fresno, Kern, and Tulare Counties.

3.4.2 Environmental Consequences

3.4.2.1 No Action

There would be no impact to cultural resources since there would be no ground disturbing activities and conditions would remain the same as existing conditions.

3.4.2.2 Proposed Action

Neither the West Side Canal, nor the Aqueduct, have been evaluated for listing on the National Register. Since evaluating both the canal and Aqueduct in their entirety is outside the scope of this project, Reclamation assumes, for the purposes of this undertaking, that the West Side Canal is eligible for listing on the National Register under Criterion A and the Aqueduct under Criteria A and C.

Reclamation determined that the proposed pipeline installation would not adversely affect the qualities that would make the West Side Canal and Aqueduct eligible for listing on the National Register. Installing a turnout on the West Side Canal and Aqueduct, which is of similar type and function as those already in use along these facilities, would not diminish their structural integrity. The proposed water delivery pipeline connecting the Aqueduct to the West Side Canal is consistent with the purpose and function for which both facilities were built.

Reclamation sent letters to the Tule River Indian Tribe on November 24, 2009 to invite their assistance in identifying sites of religious and cultural significance pursuant to the regulations at 36 CFR Part 800.3(f)(2) and 36 CFR Part 800.4(a)(4). Reclamation also sent a letter to the Kern Valley Indian Council and other individuals on November 24, 2009 to request their assistance in identifying cultural resources in the APE pursuant to 36 CFR Part 800.4(a)(3). No responses have been received.

Reclamation consulted with the State Historic Preservation Officer (SHPO) regarding a finding that the Proposed Action would result in no adverse effects to historic properties pursuant to 36 CFR Part 800.5(b) on May 21, 2010. SHPO concurred with Reclamation's findings on June 1, 2010 (see Appendix E).

Since there would be no adverse effects to historic properties, there would be no substantial adverse impact to cultural resources as a result of implementing the Proposed Action.

3.4.2.3 Cumulative Impacts

As there are no adverse impacts to historic properties and there would be no substantial adverse impact to cultural resources, there would be no cumulative adverse impacts to cultural resources as a result of the Proposed Action.

3.5 Indian Trust Assets

ITA are legal interests in assets that are held in trust by the United States Government 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 United States 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. Assets can be real property, physical assets, or intangible property rights, such as a lease, or right to use something. ITA cannot be sold, leased or otherwise alienated without United States' approval. Trust assets may include lands, minerals, and natural resources, as well as 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 the Tule River Reservation approximately 55 miles northeast of the Proposed Action area.

3.5.2 Environmental Consequences

3.5.2.1 No Action

There would be no impacts to ITA as conditions would remain the same as existing conditions.

3.5.2.2 Proposed Action

There would be no impacts to ITA as there are none in the Proposed Action area.

3.5.2.3 Cumulative Impacts

As there are no impacts to ITA, there would be no cumulative adverse impacts to ITA as a result of the Proposed Action

3.6 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 (February 11, 1994) mandates Federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.

3.6.1 Affected Environment

Kern County relies to a large extent, either directly or indirectly, on agriculture for employment. Median family income within Kern County falls approximately \$20,000 below the state's (U.S. Census Bureau 2008). Approximately 47 percent of the population within Kern County is of Hispanic or Latino origin, which compares to about one-third for the state as a whole (see Table 3-3). The market for seasonal workers on local farms also draws thousands of migrant workers, commonly of Hispanic origin from Mexico and Central America, increasing populations within these small communities during peak harvest periods.

Table 3-3 Kern County Demographics

Demographics	Kern County		California	
	Estimate	Percentage	Estimate	Percentage
Total Population	800,458	--	36,756,666	--
Male	--	42.7	--	50
Female	--	48.3	--	50
Two or more races	--	2.1	--	2.6
White	--	41.1	--	42.3
Black or African American	--	6.4	--	6.7
American Indian	--	1.8	--	1.2
Asian	--	4.0	--	12.5
Native Hawaiian/Pacific Islander	--	0.2	--	0.4
Hispanic	--	47.1	--	36.6

Source: U.S. Census Bureau 2008

BVWSD's Service Area, including the vicinity of the Proposed Action site, is primarily agricultural and is not heavily populated. The most populated area is the community of Buttonwillow, with a population of approximately 1,266 and a 68.4 percent Hispanic population (U.S. Census Bureau 2008). Buttonwillow is approximately 6 miles northwesterly of the Proposed Action site.

3.6.2 Environmental Consequences

3.6.2.1 No Action

There would be no impact to Environmental Justice as conditions would remain the same as existing conditions.

3.6.2.2 Proposed Action

The Proposed Action would not cause dislocation, changes in employment, or increase flood, drought, or disease nor would it disproportionately impact economically disadvantaged or minority populations. Therefore, there would be no adverse impact to Environmental Justice as a result of the Proposed Action.

3.6.2.3 Cumulative Impacts

As there are no impacts to Environmental Justice, there would be no cumulative impacts as a result of the Proposed Action.

3.7 Socioeconomic Resources

3.7.1 Affected Environment

The agricultural industry significantly contributes to the overall economic stability of the San Joaquin Valley. Agriculture and its related industries is the second largest industry within Kern County (Table 3-4). The market for seasonal workers on local farms draws thousands of migrant workers each year. BVWSD is an agricultural district and does not supply municipal or industrial water supplies. Between 2006 and 2008, Kern County's unemployment rate of 9.5 percent exceeded the state average. The number of people below the poverty level was also greater than the state average. Additionally, the number of families in Kern County below the

poverty line was nearly double the state's average (U.S. Census Bureau 2010). Additional Kern County economic characteristics can be found in Table 3-4 below.

Table 3-4 Kern County Economic Characteristics 2006-2008 Estimates

Economic Characteristic	Kern County		California	
	Estimate	Percentage	Estimate	Percentage
Population 16 years and over	34,8228	--	28,139,366	--
Per capita income	20,410	--	29,405	--
Median Household Income	50,419	--	69,659	--
Unemployed	--	9.5	--	6.9
Families below poverty level	--	16.6	--	9.6
Under 18 below poverty	--	27.2	--	17.9
Industries				
Agricultural and related	40,988	13.2	339,633	2.0
Construction	25,150	8.1	1,284,152	7.6
Manufacturing	16,655	5.4	1,770,277	10.5
Wholesale trade	10,223	3.3	590,137	3.5
Retail trade	33,793	10.9	1,869,838	11.1
Transportation and related	17,276	5.6	798,965	4.7
Information	4,545	1.5	514,954	3.1
Finance and Insurance	14,207	4.6	1,215,793	7.2
Professional and related	26,205	8.4	2,022,993	12.0
Educational and Health	59,659	19.2	3,248,747	19.3
Arts and Entertainment	24,792	8.0	1,555,226	9.2
Non-administrative services	14,603	4.7	876,807	5.2
Public administration	22,094	7.1	747,344	4.4

Source: US Census Bureau 2010

3.7.2 Environmental Consequences

3.7.2.1 No Action

There may be a slight adverse impact to socioeconomic resources for BVWSD as conserved water would not be available for water marketing. However, overall there would be no impact to socioeconomic resources as conditions would remain the same as existing conditions within the county and within BVWSD's Service Area.

3.7.2.2 Proposed Action

Under the Proposed Action, BVWSD would be able to conserve up to 9,000 AFY of their water supply. Up to 50 percent of this amount could be used in water marketing providing additional revenue for the district or in groundwater banking which could be used in reduced water supply years. In addition, the use of the remaining 50 percent for irrigation supplies would potentially reduce costs to BVWSD due to reduced groundwater pumping costs or the need to purchase additional surface water supplies. Consequently, there would likely be a slight beneficial impact to socioeconomic resources within BVWSD due to the Proposed Action.

3.7.2.3 Cumulative Impacts

There may be adverse impacts to socioeconomic resources under the No Action Alternative as water lost to seepage and evaporation may require the need for purchase of additional water supplies and/or the increase in groundwater pumping in order to meet irrigation demand.

The Proposed Action may have slight beneficial impacts to socioeconomics over the long-term due to potential additional annual revenue that could be generated from water marketing as well as the energy savings from reduction in groundwater pumping. Additionally, conserved water may reduce the need for purchase of additional water supplies. Consequently, the Proposed Action may have slight beneficial cumulative impacts to socioeconomic resources.

3.8 Air Quality

Section 176 (C) of the Clean Air Act [CAA] (42 USC 7506 (C)) requires any entity of the federal government that engages in, supports, or in any way provides 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 Federal CAA (42 USC 7401 (a)) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with SIP's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards (NAAQS) 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 would, in fact conform to the applicable SIP before the action is taken.

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 the Proposed Action equal or exceed certain *de minimis* amounts thus requiring the federal agency to make a determination of general conformity.

3.8.1 Affected Environment

The Proposed Action lies within the San Joaquin Valley Air Basin (SJVAB) under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). 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. NAAQS and California Ambient Air Quality Standards (CAAQS) have been established for the following criteria pollutants: carbon monoxide (CO), ozone (O₃), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), inhalable particulate matter between 2.5 and 10 microns in diameter (PM₁₀), particulate matter less than 2.5 microns in diameter (PM_{2.5}), and lead. The CAAQS also set standards for sulfates, hydrogen sulfide, and visibility.

The pollutants of greatest concern in the San Joaquin Valley are CO, O₃, O₃ precursors such as volatile organic compounds (VOC), reactive organic gases (ROG) and nitrogen oxides (NO_x), as well as PM₁₀, and PM_{2.5}. The SJVAB has reached Federal and State attainment status for CO, NO₂, and SO₂. Federal attainment status has been reached for PM₁₀ but is in non-attainment for

O₃ and PM_{2.5} (see Table 3-5). State attainment status has also been reached for lead but is in non-attainment for both PM₁₀, and PM_{2.5}.

Table 3-5 San Joaquin Valley Attainment Status

Pollutant	Averaging Time	California Standards		National Standards	
		Concentration	Attainment Status	Concentration	Attainment Status
O ₃	8 Hour	0.070 ppm (137 µg/m ³)	Nonattainment	0.075 ppm	Nonattainment
	1 Hour	0.09 ppm (180 µg/m ³)	Nonattainment	--	--
CO	8 Hour	9.0 ppm (10 mg/m ³)	Attainment	9.0 ppm (10 mg/m ³)	Attainment
	1 Hour	20.0 ppm (23 mg/m ³)	Unclassified	35.0 ppm (40 mg/m ³)	Unclassified
NO ₂	Annual arithmetic mean	0.030 ppm (56 µg/m ³)	Attainment	0.053 ppm (100 µg/m ³)	Attainment
	1 Hour	0.18 ppm (338 µg/m ³)	Attainment	--	--
SO ₂	Annual average	--	--	0.03 ppm (80 µg/m ³)	Attainment
	24 Hour	0.04 ppm (105 µg/m ³)	Attainment	0.14 ppm (365 µg/m ³)	Attainment
	1 Hour	0.25 ppm (655 µg/m ³)	Attainment	--	--
PM ₁₀	Annual arithmetic mean	20 µg/m ³	Nonattainment	--	--
	24 Hour	50 µg/m ³	Nonattainment	150 µg/m ³	Attainment
PM _{2.5}	Annual Arithmetic mean	12 µg/m ³	Nonattainment	15 µg/m ³	Nonattainment
	24 Hour	--	--	35 µg/m ³	Attainment
Lead	30 day average	1.5 µg/m ³	Attainment	--	--
	Rolling-3 month average	--	--	0.15 µg/m ³	Unclassified
	Rolling-3 month average	--	--	0.15 µg/m ³	Unclassified

Source: CARB 2010; SJVAPCD 2010; 40 CFR 93.153

ppm = parts per million

mg/m³ = milligram per cubic meter

µg/m³ = microgram per cubic meter

-- = No standard established

3.8.2 Environmental Consequences

3.8.2.1 No Action

There would be no impact to air quality as conditions would remain the same as existing conditions.

3.8.2.2 Proposed Action

Operation of BVWSD's new turnout and pipeline would not contribute to criteria pollutant emissions, as water distribution would be done via gravity and would require no pumping. However, emissions would be associated with the construction of the Proposed Action facilities. Air quality emissions for construction activities associated with the Proposed Action were calculated with the South Coast Air Quality Management District's (SCAQMD) *Off-Road Mobile Source Emission Factors* (see Table 3-6).

Table 3-6 Estimated Peak Day Construction Equipment Exhaust Emissions⁽¹⁾

Equipment Type and Use			Pollutants (lbs/day)					
Equipment Type	Quantity	No. of Hours in Operation	CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5} ⁽³⁾
Excavator	1	8	4.4648	1.1864	9.2016	0.0104	0.5104	0.4542
Cement/Mortar Mixer	1	8	0.3472	0.0808	0.4792	0.0008	0.0280	0.0249
Wheeled Loader	1	8	4.0624	1.1520	9.2296	0.0096	0.5208	0.4635
Dump Truck	1	8	0.2688	0.0864	0.5160	0.0008	0.0288	0.0256
Water Truck	1	8	0.2688	0.0864	0.5160	0.0008	0.0288	0.0256
Grader	1	8	1.8552	0.5488	4.1280	0.0048	0.2248	0.2000
Fork Lift	1	8	5.0512	1.3784	11.4704	0.0120	0.6024	0.5361
Subtotals			16.3184	4.5192	35.5408	0.0392	1.9440	1.7299
Worker Vehicles: 20 miles per day	8	-	1.3224	0.1464	0.1472	0.0016	0.0136	0.0121
Pipe Hauling: 150 miles per day	1 Truck	-	2.7654	0.3884	3.0937	0.0041	0.1127	0.1003
Excavated Material Hauling: 150 miles per day	2 Trucks	-	5.5313	0.7768	6.1874	0.0081	0.2253	0.2005
Additional PM ₁₀ for Fugitive Dust			-	-	-	-	40	8.4000
TOTALS			29.9375	5.8308	44.9691	0.0530	42.2956	10.4428
Construction Threshold (lbs/day) ⁽²⁾			548	274	274	150	548	55
Exceed Daily Threshold? (Yes/No)			No	No	No	No	No	No

⁽¹⁾ Off-road mobile equipment emissions are based on Off-Road Mobile Source Emission Factors (Scenario Years 2007-2025) provided by SCAQMD on their website <http://www.aqmd.gov/ceqa/handbook/offroad/offroad.html>, last updated April 24, 2008. On-road vehicle emissions are based on On-Road Vehicles (Scenario Years 2007-2026) emission factors provided by SCAQMD on their website <http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>, last updated April 24, 2008.

⁽²⁾ Peak daily construction significance thresholds for air pollutant emissions shown (except SO_x and PM_{2.5}) were established by SJVAPCD are set forth in the *Guide for Assessing and Mitigating Air Quality Impacts* (SJVAPCD, 2002) are based on methodologies developed by CARB. Thresholds listed for SO_x and PM_{2.5} are those that have been established by SCAQMD, based on methodologies developed by CARB, and were used in the absence of thresholds established by SJVAPCD.

⁽³⁾ Pursuant to the SCAQMD document *South Coast Air Quality Management District Final-Methodology to Calculate Particulate Matter (PM)_{2.5} and PM_{2.5} Significance Thresholds* (October 2006), fugitive PM emissions are estimated to be comprised of 21% PM_{2.5}, while off-road combustion PM is estimated to contain 89% PM_{2.5}. Based on this, PM_{2.5} emissions are estimated to be approximately 10.4428 pounds per day on a typical peak day.

Additionally, Table 3-7 includes air pollutant emissions expected to be generated during ongoing operation and maintenance of the Proposed Action facilities resulting from vehicle trips to the Proposed Action site. Vehicle trip air pollutant emissions were estimated based on a roundtrip driving distance of approximately 15.6 miles from the BVWSD's office in Buttonwillow to the proposed BV8 facilities. BVWSD estimates two daily roundtrips to the BV8 facilities, for a total daily mileage of 31.2 miles. Maintenance trips would be made as needed and are expected to be infrequent; therefore, maintenance trips are not included in the calculation. Because operation during the BVWSD's water season varies depending on a number of factors (e.g., temperature, seasonal rainfall, evapotranspiration, etc.), the calculation includes 100 days as the typical number of operational days in a year.

Table 3-7 Estimated Operation Air Pollutant Emissions

	CO	NO _x	ROG	SO _x	PM ₁₀	PM _{2.5}
Pounds Per Mile ⁽¹⁾	0.00826276	0.00091814	0.00091399	0.00001077	0.00008698	0.00005478
Pounds Per Day ⁽²⁾	0.2578	0.02864	0.02852	0.0003360	0.002714	0.001709
Pounds Per Year ⁽³⁾	25.78	2.864	2.852	0.03360	0.2714	0.1709

(1) On-road vehicle emissions are based on On-Road Vehicles (Scenario Year 2010) emission factors provided by SCAQMD on their website <http://www.aqmd.gov/ceqa/handbook/offroad/onroad/onroad.html>, accessed January 5, 2010.

(2) Based on one light- to medium-duty vehicle traveling a total of 31.2 miles per day.

(3) Based on 100 operating days per year.

As summarized in Table 3-8, construction and operation air pollutant emissions are estimated to be well below the established SJVAPCD's *de minimis* thresholds; therefore, the Proposed Action would not result in an adverse impact upon air quality.

Table 3-8 Summary of Proposed Action Emissions

Pollutant	Proposed Action Operations Emissions (pounds/day)	Proposed Action Construction Emissions (pounds/day)	<i>de minimis</i> ⁽¹⁾ (pounds/day)
VOC/ROG (as an ozone precursor)	0.02852	5.8308	274
NO _x (as an ozone precursor)	0.02864	44.9691	274
PM ₁₀	0.002714	42.2956	548
CO	0.2578	29.9375	548

(1) Sources: SJVAPCD 2010; 40 CFR 93.153

3.8.2.3 Cumulative Impacts

In addition to the BV Program and the 480-acre groundwater recharge facility discussed previously, BVWSD is aware of the following actions proposed within the Buttonwillow Service Area:

- The Hydrogen Energy power plant project (HECA) is anticipated to be located in Section 10, Township 30 South, Range 24 East, Mount Diablo Meridian, in the southerly portion of the BVWSD's Service Area. HECA consists of constructing and operating a hydrogen-powered electricity generating facility that would capture and store most of its carbon-related emissions. Detailed information about HECA is available to the public on the California Energy Commission website at http://www.energy.ca.gov/sitingcases/hydrogen_energy/index.html.
- According to the Kern County Planning Department, the Palm Ranch Dairy Project involves establishing a dairy farm in the vicinity of the intersection of Adohr Road and Dairy Road. At this time, very little information about the Palm Ranch Dairy Project is available, and environmental documents for the Palm Ranch Dairy Project are anticipated to be available sometime in 2010.

Construction of these projects may cumulatively impact air quality if they were built at the same time; however, it is unlikely that this would occur. In addition, each project would be required to meet State and local air quality emission standards.

Construction, operation and maintenance emissions for the Proposed Action are well below the *de minimis* thresholds established by the SJVAPCD and are expected to be temporary in duration. As a result, the Proposed Action is not expected to contribute to cumulative adverse impacts to air quality.

3.9 Global Climate

Climate change refers to significant change in measures of climate (e.g., temperature, precipitation, or wind) lasting for decades or longer. Many environmental changes can contribute to climate change [changes in sun's intensity, changes in ocean circulation, deforestation, urbanization, burning fossil fuels, etc.] (EPA 2010a)

Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). Some GHG, such as carbon dioxide (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 oxide (N₂O), and fluorinated gasses (EPA 2008a).

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 2010b).

3.9.1 Affected Environment

More than 20 million Californians rely on the SWP and CVP. 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 California'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).

California Assembly Bill 32, the Global Warming Solutions Act of 2006, mandates the reduction of GHG emissions in California to 1990 levels by the year 2020. Currently there are no established significance thresholds for GHG in the SJVAB or in California.

3.9.2 Environmental Consequences

3.9.2.1 No Action

There would be no impact to global climate change as conditions would remain the same as existing conditions.

3.9.2.2 Proposed Action

Short-term mobile source emissions expected to be generated by the Proposed Action consist of on-road emissions from daily vehicle travel to and from the Proposed Action site during construction and operation of BV8, truck hauling of construction materials, and off-road emissions from construction equipment required to construct the Proposed Action facilities.

Table 3-9 lists estimates of daily construction equipment emissions. The estimated mobile source (on-road) emissions estimated to be generated by worker vehicles (0.09 metric tons) and material hauling (0.26 metric tons) during construction of the Proposed Action facilities are approximately 0.35 metric tons of CO₂ equivalent (CO_{2e}) emissions per year. All combustion activities resulting from construction within the Proposed Action area would contribute approximately 3.3 metric tons of CO_{2e} emissions per day (see Table 3-9).

Table 3-9 Estimated Daily Construction Equipment GHG Emissions

Equipment Type and Use			Emission Factors (Pounds/day)			Emission Factors (Metric Tons/day)
Equipment Type	Quantity	Hours of Operation	CO ₂	CH ₄	N ₂ O	Total CO _{2e}
Excavator	1	8	120	0.0134	0	0.44
Cement/Mortar Mixer	1	8	7.2	0.0009	0	0.03
Wheeled Loader	1	8	109	0.013	0	0.40
Dump Truck	1	8	260	0.0224	0	0.95
Water Truck	1	8	123	0.0095	0	0.45
Fork Lift	1	8	54.4	0.0062	0	0.20
Grader	1	8	133	0.0155	0	0.48
Subtotals						2.94
			Emission Factors (kg/mile)			
Worker Vehicles: 20 miles per day	8		0.519	0.036	0.047	0.09
Material Hauling: 50 miles per day	3 Trucks		1.726	0.021	0.017	0.26
Total Emissions						3.29

Source: California Air Resource Board OFFROAD 2007 Emissions Model

Total GHG emissions expected to be generated by construction activities, if construction were to occur for 260 days over the period of one year, would be approximately 858 metric tons of CO_{2e} per year. These construction emissions would be short-term, and would cease upon completion of construction.

Operation and maintenance activities associated with the new facilities are expected to generate GHG emissions resulting from vehicle trips to and from the Proposed Action site as described previously. BVWSD plans to operate the Proposed Action facilities primarily during dry years, but may operate said facilities at any time, as determined necessary and appropriate by the district. Operation will usually take place during BVWSD's water year, which typically occurs from late May to mid-August. The number of operational days was also rounded to 100 days per year for calculations. GHG emissions estimated to be generated during operation of the Proposed Action are set forth in Table 3-10, and consist of approximately 47.4 metric tons of CO_{2e} per year.

Table 3-10 Estimated Operational GHG Emissions

	Kilograms per mile ⁽¹⁾	Kilograms per day ⁽²⁾	Kilograms CO _{2e} per day	Metric Tons CO _{2e} per day	Metric Tons CO _{2e} per year ⁽³⁾
CO ₂	0.519	16.1928	16.1928	0.0162	1.62
CH ₄	0.036	0.11232	2.3587	0.00236	0.236
N ₂ O	0.047	1.4664	454.5840	0.455	45.5
Total CO_{2e}	---	---	473.1355	0.47356	47.4

(1) Emissions factors were derived from CARB's OFFROAD2007 Emissions Model.

(2) Based on one light- to medium-duty vehicle traveling a total of 31.2 miles per day.

(3) Based on 100 operating days per year.

As shown in Table 3-9 and 3-10, GHG emissions have been estimated to be well below the EPA's 25,000 metric tons per year threshold for annually reporting GHG emissions (EPA 2009). Accordingly, the Proposed Action would result in below *de minimis* impacts to global climate change.

3.9.2.3 Cumulative Impacts

While the emissions of one single project would not cause global climate change, GHG emissions from multiple projects could result in an impact. GHG emissions currently generated by existing district operations and by known groundwater wells within the BVWSD's Buttonwillow Service Area total approximately 5,721 metric tons of CO_{2e} per year. GHG emissions expected to result from operation and maintenance of Proposed Action facilities are approximately 47.4 metric tons of CO_{2e} per year. The combined total of BVWSD GHG emissions are well below the EPA's 25,000 metric tons per year threshold for reporting GHG emissions and are not expected to cumulatively impact GHG emissions.

Section 4 CEQA Environmental Factors and Mandatory Findings of Significance

This section of the EA/IS includes the CEQA analysis portion of potentially affected issues that may result from implementation and operation of the proposed Project. As the term "Proposed Action" has specific meaning under NEPA and for the purpose of this document refers only to the awarding of federal funds, "Project" will be used within this section. Additionally, the use of "significant" or "significance" within this section is specific to CEQA and does not pertain to the use of "significant" under NEPA. Refer also to the CEQA Environmental Checklist Form included in Appendix B herein.

4.1 Discussion of Potentially Affected Environmental Factors

4.1.1 Aesthetics

There are no officially designated state scenic highways located in Kern County. There are several eligible scenic highways located in the eastern portion of Kern County; however, the nearest one, State Highway 14, is greater than 60 miles easterly of the Project site. Further, facilities pursuant to the Project would be constructed on land between two man-made surface water channels (Aqueduct and West Side Canal) adjacent to a flood plain. The area is sparsely

vegetated, and there are no trees or rock outcroppings present; therefore, the Project does not have the potential to substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. A majority of the Project facilities are belowground structures, and aboveground portions of Project facilities will be relatively unobtrusive. Visual impacts will be less than significant.

The Project does not include any features that would create substantial new sources of light or glare. Any lighting included in the Project would be for safety and security and would be directed downward. Consequently, the Project does not have the potential to substantially degrade the existing visual character or quality of the Project area or its surroundings.

4.1.2 Agricultural Resources

The Project would result in the permanent conversion of 0.9 acres of land designated by the California Department of Conservation (CDC) as Grazing Land to non-agricultural use (CDC 2006). Based on the fact that this area of land has not been used for grazing for the past several years, and its current use appears to be illegal dumping and off-road vehicle use, BVWSD has determined that the conversion of this area to non-agricultural use is less than significant.

The Project site is not designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance by the CDC nor is there a Williamson Act contract in effect on the parcels that would be disturbed by the Project (CDC 2006; Kern County 2007). The Project does not have the potential to conflict with existing zoning for agriculture or with a Williamson Act contract.

4.1.3 Air Quality and Climate Change

Impacts have been discussed in Sections 3.8 and 3.9.

4.1.4 Biological Resources

Analysis of federally listed species and birds protected under the MBTA can be found in Section 3.3 above. As previously described, LOA conducted an initial biological survey on July 3, 2008 and species-specific biological surveys May 2009 through July 2009. No sensitive species were observed during any of the surveys; however, records searches of the CNDDDB and the California Native Plant Society (CNPS) Electronic Inventory indicate the potential presence of some State-listed sensitive species at the Project site (LOA 2008). BVWSD would incorporate mitigation measures and best management practices included in the Mitigation Monitoring and Reporting Program for the Project in order to avoid, or reduce to a level less than significant, adverse impacts upon biological resources. See the Mitigation Monitoring and Reporting Program attached to the Draft Mitigated Negative Declaration in Appendix C for a complete listing of mitigation measures and BMPs.

Special Status Plant Species

Recurved larkspur (*Delphinium recurvatum*) and oil neststraw (*Stylocline citroleum*) are listed by CDFG as Species of Special Concern and are also included on CNPS List 1B (plants rare, threatened, or endangered in California or elsewhere). Biological field surveys were not conducted during phenological time periods appropriate for detecting all sensitive botanical resources; therefore, it is possible that recurved larkspur and oil neststraw, if present onsite, could have been desiccated beyond identification. Although not detected onsite during

biological field surveys, the Project site contains habitat suitable for recurved larkspur and oil neststraw, and these species were identified in a records search of the CNDDDB as having previously been identified in the general vicinity of the Project site. BVWSD would conduct a pre-construction survey during the appropriate phenological period (April through June) as well as salvage of the topsoil in order to preserve the existing seedbank (see Mitigation Bio 1 in Appendix C).

Potential Foraging Habitat for Special Status Animal Species

As previously described, construction of the Project facilities would result in temporary and permanent disturbance to ruderal non-native grassland and saltbush scrub habitat. To offset impacts resulting from removal of 3 acres of ruderal non-native grassland vegetation that could be used for foraging by special status animal species, BVWSD would designate compensatory habitat at the Kern Water Bank or any other approved mitigation bank. Said compensatory habitat would be designated at a ratio of 1.1 to 1 for temporarily disturbed areas, for a total of 3.3 acres. Permanent removal of 0.3 acre of saltbush scrub in the Aqueduct ROW would be offset by designation of compensatory habitat at a ratio of 3 to 1, for a total of 0.9 acres. Therefore, total compensatory habitat to be designated is 4.2 acres (see Mitigation Bio 2 in Appendix C).

Special Status Animal Species

American badger (*Taxidea taxus*) is considered a California Species of Special Concern and occurs in a variety of open habitats, including grasslands, shrublands, savannahs, and meadows. American badgers were not observed onsite during surveys by LOA, and the CNDDDB did not identify any previously-recorded observations of American badger within a 3-mile radius of the Project site; however, American badger is known to occupy non-native grassland within the region, and it has the potential to forage over the Project site or be a transient in the area. BVWSD would implement pre-construction surveys in order to determine presence of American badger (see Mitigation Bio 6 in Appendix C).

SJAS (*Ammospermophilus nelsoni*) is listed as Threatened by CDFG. Suitable habitat for SJAS is present on the Project site; however, said habitat has been severely degraded by trash dumping and off-highway vehicle use. Surveys conducted by LOA at the Project site did not reveal the presence of SJAS; however, SJAS have been identified within one mile of the Project site, in the Aqueduct ROW. BVWSD would implement pre-construction surveys in order to determine presence of SJAS (see Mitigation Bio 8 in Appendix C).

4.1.5 Cultural Resources

This analysis of potential impacts upon cultural resources includes the following three categories of resources: historical resources, archaeological resources, and paleontological resources. Such resources are assessed in the context of the Project's APE which consists of an area extending between the Aqueduct and the West Side Canal of approximately 1,510 feet in length and approximately 100 feet wide (50 feet on each side of the centerline) in the southwesterly quarter of Section 9, Ttownship 30 South, Range 24 East, Mount Diablo Base and Meridian. Project construction would include trenching to depths ranging from 13 feet to 22 feet below ground surface, with a bottom width of approximately 10 feet and a top width of approximately 30 feet.

Historical and Archaeological Resources

Although there are no resources within the Project's APE that are listed in the National Register, the California Inventory of Historic Places, California State Historic Landmarks, or the California Points of Historic Interest, the archaeological report prepared by TGS identified two historic resources (Aqueduct and West Side Canal), one historic isolate (IF4), and one archaeological isolate (IF1) within the Project's APE (Pruett 2008).

The Aqueduct and the West Side Canal are each considered historic resources and have been recorded on appropriate forms as described under Section 3.4.1. Because the Project would not alter the form or function of the Aqueduct or the West Side Canal, and would not alter, either directly or indirectly, any of the characteristics of these two resources that may qualify them for inclusion in the National Register, the Project would not adversely affect the Aqueduct or the West Side Canal or result in a substantial adverse change in the significance of these two resources.

IF4 is a pre-1920 medicinal Listerine bottle and IF1 is "an obsidian needle", approximately 9.2 centimeters long (Pruett 2008). IF1 is not eligible for listing on the National Register because it has been removed from its original location and all information potential has been exhausted; however, IF1 has been drawn, photographed, and recorded to the Secretary of the Interior's standards. CEQA Guidelines Section 15064.5(c)(4) states that "if an archaeological resource is neither a unique archaeological nor an historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment"; therefore, the Project would not result in a significant adverse impact upon any known historical or archaeological resources.

CEQA Guidelines Section 15064.5, subdivision (e), requires that excavation activities be stopped whenever human remains are uncovered and that the county coroner be called in to assess the remains. In order to fulfill this requirement, BVWSD has included mitigation measures within their Mitigation Monitoring and Reporting Program which is attached to the draft Mitigated Negative Declaration in Appendix C.

In addition to the mitigation provisions pertaining to accidental discovery of human remains, the CEQA Guidelines also require that a lead agency make provisions for the accidental discovery of historical or unique archaeological resources. Therefore, BVWSD has also included mitigation measures in their Mitigation Monitoring and Reporting Program to comply with these guidelines (see Appendix C). Consequently, any significant adverse impacts upon historical or archaeological resources would be avoided or reduced to a level less than significant by implementation of these mitigation measures.

Paleontological Resources

Paleontological resources, potential impacts thereto, and recommended mitigation are described in the 2008 paleontological sensitivity analysis report titled, *Paleontological Sensitivity Analysis for Buena Vista Water District New Canal Construction*, dated November 22, 2008 (Paleontological Analysis), a copy of which is included in Appendix F of the Feasibility Study (Kennedy/Jenks Consultants 2008), which is available at the BVWSD's office for review upon request.

The Paleontological Analysis describes various sediments in the Project area, including near-shore depositional sediments. Of the various depositional environments identified in the Paleontological Analysis, "... the near-shore zone is the most likely to contain vertebrate or significant invertebrate fossils. In Ice Age time, animals could have been trapped and preserved in quicksand on the margins of Lake Buttonwillow. Mammoth, bison, horse, and other mammal remains have been found in...other Ice Age lakes in southern California. Fragmentary vertebrate fossil remains and teeth (rodents) have been found in surface soils throughout the San Joaquin Valley."

The near-shore depositional environment that may be impacted by the Project is described in the text, and depicted in Figure 7, of the Paleontological Analysis (Kennedy/Jenks Consultants 2008). Based upon the recommendations of the Paleontological Analysis, a paleontologist will be present during excavations in the near-shore depositional environment zone in order to identify paleontological resources that may be uncovered during construction of Project facilities. Mitigation measures intended to avoid or reduce potential impacts upon paleontological resources have been incorporated into the Project and are set forth in the Mitigation Monitoring and Reporting Program attached to the Mitigated Negative Declaration for the Project (see Appendix C). Consequently, any significant adverse impacts upon paleontological resources would be avoided or reduced to a level less than significant by implementation of these mitigation measures.

4.1.6 Geology and Soils

BVWSD's Service Area is not located within a known fault zone. The nearest fault is the White Wolf Fault, which is located approximately six miles southeasterly of the Maples Service Area (CDC 1998). The San Andreas Fault (Parkfield) is located greater than twenty miles westerly of the Buttonwillow Service Area (CDC 1998). The Project does not include any activities that could expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, liquefaction, or landslides. In addition, the Project does not include any activities that would have the potential to result in any soil erosion or loss of topsoil. BVWSD would implement mitigation measure BIO 1: Special Status Plant Species, which includes measures involving salvaging topsoil. BIO 1 is included in the Mitigation Monitoring and Reporting Program in Appendix C.

Project facilities are located on soils classified as Buttonwillow clay, drained and Garces silt loam (U.S. Department of Agriculture [USDA] 2009). Buttonwillow clay, drained is a fine-textured soil with high shrink-swell potential, while Garces silt loam is not known to be expansive (USDA 1988). Although Buttonwillow clay, drained is known to have expansive properties, the facilities proposed pursuant to the Project are not intended for human occupation and would not create substantial risks to life or property. Facilities pursuant to the Project would not be located on a geologic unit or soil that is unstable or that would become unstable as a result of said facilities. The Project is not expected to result in loss, injury, or death involving onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.

4.1.7 Hazards and Hazardous Materials

The Project does not involve the generation of any hazardous emissions or the transport, use, storage, or disposal of any hazardous materials and would not create a significant hazard to the

public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. In addition, the Project site is not located on or adjacent to a site which is included on the list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, as available on www.envirostor.dtsc.ca.gov, which is a publicly-accessible database maintained by the California Department of Toxic Substances Control. The Project would not be impacted by hazardous materials sites.

4.1.8 Hydrology and Water Quality

Facilities included in the Project are primarily belowground. Aboveground facilities include the outlet structure in the West Side Canal, the turnout structure in the Aqueduct, and an electrical building and associated appurtenances thereto within the Aqueduct ROW. These aboveground facilities are not of a size sufficient to contribute substantial quantities of runoff; therefore, the Project would not create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.

The Project site is mostly located in Zone X, which is defined as "areas determined to be outside the 0.2 percent annual chance floodplain" (Homeland Security 2008). The northernmost portions of facilities pursuant to the Project, which cross beneath the Kern River Flood Channel and are adjacent to, or in, the West Side Canal ROW are located in areas designated Zone A, which is defined as Special Flood Hazard Areas Subject to Inundation by the one percent Annual Chance Flood (100-Year Flood), with No Base Flood Elevations Determined (Homeland Security 2008). The Project does not include any features that would substantially alter existing drainage patterns in the site or area.

The Project does not include the extraction or use of groundwater and would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge.

The Project does not include placement of any structures that would impede or redirect flood flows in a 100-year flood hazard area. The Project does not include construction of any facilities that are intended for human occupation. Further, the Project area is not located near any bodies of water of a size sufficient to result in seiches or tsunamis. The Project would not expose people or structures to inundation by seiche, tsunami, or mudflow.

BVWSD would comply with all applicable water quality standards, waste discharge requirements, and the requirements of the Central Valley Regional Water Quality Control Board. In addition, standard construction BMPs would be incorporated during construction in order to avoid, or reduce to a level of insignificance, adverse impacts that may occur from soil erosion, storm water runoff, or both, as a result of construction activities pursuant to the Project. Therefore, the Project would not substantially degrade water quality. A list of the BVWSD's standard construction BMPs is available from the district upon request.

4.1.9 Land Use and Planning

Impacts have been discussed in Section 3.2.

4.1.10 Mineral Resources

There are no known mineral resources at the Project site. The Project does not have the potential to impact the availability of any mineral resources or mineral resource recovery sites.

4.1.11 Noise

The Project would result in noise generated during construction and operation of BV8 facilities. Construction noise would be less than significant and short-term. Noise generated during operation would result from approximately two vehicle trips by district personnel to the BV8 facilities per day. Noise generated during operation would be minimal and less than significant. All noise resulting from the Project would comply with the Noise Element of the Kern County General Plan (Kern County 2007) and with the noise control provisions set forth in Chapter 8.36 of the Ordinance Code of Kern County.

The Project would not generate excessive levels of groundborne vibration or groundborne noise. The nearest potentially occupied building is approximately one mile away from the Project site, and any groundborne noise or groundborne vibration generated during construction activities is not likely to be perceptible at that distance from the site.

4.1.12 Population and Housing

The Project does not include any features that would require the destruction or relocation of existing housing or the construction of replacement housing. In addition, the Project does not include destruction or construction of any housing, and would not increase or decrease the number of available dwelling units in the area. The Project would not displace any people. The Project is intended to improve BVWSD's operational flexibility and would have no effect on population growth.

4.1.13 Public Services

The Project does not include any features or facilities that would require additional or unusual fire protection resources, enhanced levels of police protection, nor does it have the potential to increase or decrease the area's population, and would therefore not result in a greater or lesser demand for schools or parks.

4.1.14 Recreation

The Project does not have the potential to increase or decrease the area's population, and would therefore not result in increased or decreased use of parks or other recreational facilities. Additionally, the Project does not include recreational facilities and would not require the construction or expansion of any recreational facilities.

4.1.15 Transportation and Traffic

There would be a temporary increase in traffic during construction of the Project facilities, which would be minimal and short-term. Operation of facilities pursuant to the Project is expected to result in two vehicle trips by district personnel per day to the site. Vehicle trips would generally take place on operational days during BVWSD's water year, which typically extends from late May through mid-August.

Traffic resulting from the Project would not increase traffic substantially in relation to the existing traffic load and capacity of the street system. The Project would not result in any

substantial changes in land, water, or air traffic patterns. The Project does not include any features which would significantly impact traffic patterns or which would exceed any level of service standards established for designated roads or highways.

4.1.16 Utilities and Service Systems

The Project would not require or result in construction of new water or wastewater treatment facilities or the expansion of existing facilities and would not generate wastewater. In addition, the Project would not require or result in the construction or expansion of any storm water drainage facilities. Small quantities of solid waste may be generated during construction of facilities pursuant to the Project; however, said quantities of solid waste would be minimal and would be accommodated by a local landfill.

4.2 Mandatory Findings of Significance

If unmitigated, the Project may significantly impact biological, cultural, or paleontological resources; therefore, mitigation measures intended to avoid, or reduce to a level less than significant, adverse impacts to biological, cultural, and paleontological resources are set forth in Appendix C of the EA/IS. With incorporation of said mitigation measures, the Project is not expected to have a significant effect upon biological, cultural, or paleontological resources. Refer to Appendix B for the CEQA Checklist and Appendix C for the proposed Mitigation Monitoring and Reporting Program which is attached to the draft Mitigated Negative Declaration.

Section 5 Consultation and Coordination

Several federal and state laws, permits, licenses, and policy requirements have directed, limited, or guided the NEPA and CEQA analyses and decision making processes of this EA/IS and are listed below.

5.1 California Fish and Game Code (Sections 1600 et seq.)

Section 1602 of the CDFG Code requires an entity to notify the CDFG of any proposed activity that may substantially modify a river, stream, or lake. BVWSD will submit a Notification of Lake or Streambed Alteration to CDFG prior to implementing the Project.

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

Section 7 of the Endangered Species Act requires Federal agencies, in consultation with the Secretary of the Interior and/or Commerce, 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.

The Proposed Action would support existing uses and conditions. Construction-related activities would temporarily disturb 3 acres of saltbush scrub/nonnative grasslands and permanently

remove 0.3 acres of saltbush scrub. Temporarily disturbed habitat would be returned to pre-existing conditions.

Reclamation has initiated Section 7 consultation with the USFWS on the BNLL, SJKF, and Tipton kangaroo rat. Reclamation will not finalize the draft EA until consultation with the USFWS has been completed. No anadromous fishes or their critical habitat occur in the affected area; therefore, no consultation with the National Marine Fisheries Service is needed.

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

Reclamation sent letters to the Tule River Indian Tribe on November 24, 2009 to invite their assistance in identifying sites of religious and cultural significance pursuant to the regulations at 36 CFR Part 800.3(f)(2) and 36 CFR Part 800.4(a)(4). Reclamation also sent a letter to the Kern Valley Indian Council and other individuals on November 24, 2009 to request their assistance in identifying cultural resources in the APE pursuant to 36 CFR Part 800.4(a)(3). No responses have been received.

Reclamation consulted with SHPO regarding a finding that the Proposed Action would result in no adverse effects to historic properties pursuant to 36 CFR Part 800.5(b) on May 21, 2010. SHPO concurred with Reclamation's findings on June 1, 2010 (see Appendix E).

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

The MBTA implements various treaties and conventions between the United States and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the Act provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to 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 Act, 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.

Preconstruction surveys for migratory birds would be completed and appropriate avoidance, minimization, and protection measures would be followed in consultation with USFWS and CDFG if active nests are located in the area of disturbance. Therefore, the Proposed Action would have no effect on birds protected under the MBTA.

5.5 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 floodplains, and similarly, Executive Order 11990 places similar requirements for actions in wetlands. The Proposed Action is partially located within a

floodplain; however, Reclamation has determined that a floodplain assessment is not necessary for the Proposed Action. The floodplain will be returned to its existing conditions when construction pursuant to the Proposed Action has been completed.

5.6 Clean Water Act (33 USC § 1311 et seq.)

Section 401

Section 401 of the 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 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.

BVWSD will, to the extent necessary, apply for a Section 401 Water Quality Certification from the Regional Water Quality Control Board, Central Valley Region prior to implementing the Proposed Action.

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). BVWSD will, to the extent necessary, apply for a 404 Permit prior to implementing the Proposed Action.

Section 6 List of Preparers and Reviewers

Bureau of Reclamation

Rain Healer, Natural Resources Specialist, SCCAO
Jennifer Lewis, Wildlife Biologist, SCCAO
Amy Barnes, Archaeologist, MP-153
Patricia Rivera, ITA, MP-400
Dave Woolley, Water Conservation Specialist, SCCAO
Chuck Siek, Supervisory Natural Resources Specialist, SCCAO
Patti Clinton, Natural Resources Specialist, SCCAO
Michael Inthavong, Natural Resources Specialist, SCCAO

Buena Vista Water Storage District

David F. Scriven, District Consulting Engineer, Krieger & Stewart
Dan Bartel, Engineer-Manager, Buena Vista Water Storage District
David Hampton, Assistant Engineer, Buena Vista Water Storage District

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