

RECLAMATION

Managing Water in the West

Environmental Assessment

Buena Vista Water Storage District Water Use and Irrigation Efficiency Project

**2011 WaterSMART Grant
Funding Opportunity Announcement No. R11AF20006**



**U.S. Department of the Interior
Bureau of Reclamation
Mid-Pacific Regional Office
Sacramento, California**

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Mission Statements

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

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

Table of Contents

	Page
Section 1 Introduction.....	1
1.1 Background.....	1
1.2 Need for the Proposal.....	2
1.3 Potential Resource Issues.....	2
Section 2 Alternatives Including the Proposed Action.....	4
2.1 No Action Alternative.....	4
2.2 Proposed Action.....	4
2.2.1 Environmental Protection Measures	11
2.2.2 Best Management Practices	12
Section 3 Affected Environment and Environmental Consequences	14
3.1 Water Resources	14
3.2 Biological Resources	15
3.3 Air Quality	18
3.4 Cumulative Impacts	20
Section 4 Consultation and Coordination	22
4.1 Public Review Period.....	22
4.2 Endangered Species Act (16 USC § 1531 et seq.).....	22
Section 5 References	23

List of Acronyms and Abbreviations

AF	acre-feet
AF/y	acre-feet per year
Aqueduct	California Aqueduct
BMPs	best management practices
BVLS	Buena Vista Lake shrew
BVWSD	Buena Vista Water Storage District
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CDFG	California Department of Fish and Game
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CO	carbon monoxide
DOI	Department of the Interior
DWR	Department of Water Resources
EA	environmental assessment
Elk Reserve	Tule Elk State Natural Reserve
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ft	feet
GHG	green house gases
GKR	giant kangaroo rat
ITA	Indian Trust Assets
LOA	Live Oak Associates, Inc.
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO _x	nitrogen oxides
NO ₂	nitrogen dioxide
NRCS	National Resources Conservation Service
O ₃	ozone
PM _{2.5}	particulate matter less than 2.5 microns in size
PM ₁₀	particulate matter 2.5 to 8 microns in size
Project	Water Use and Irrigation Efficiency Project
Reclamation	Bureau of Reclamation
ROG	reactive organic gases
SCADA	supervisory control and data acquisition
Semitropic	Semitropic Water Storage District
SIP	State Implementation Plan
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SJKF	San Joaquin kit fox
SO ₂	sulfur dioxide
sq-ft	square-feet
SWP	State Water Project
TKR	Tipton kangaroo rat
USFWS	U.S. Fish and Wildlife Service
VFDs	variable frequency drives
VOC	volatile organic compounds
WSC	West Side Canal

Section 1 Introduction

In accordance with Section 102 of the National Environmental Policy Act of 1969 (42 U.S.C. 4321, et seq.), as amended, this Environmental Assessment (EA) has been prepared to examine the potential direct, indirect, and cumulative impacts to the affected environment associated with awarding a WaterSMART grant to Buena Vista Water Storage District (BVWSD). BVWSD would use the grant funding to furnish, construct, and install equipment for their Water Use and Irrigation Efficiency Project (Project). The Project involves site-specific improvements to the district's existing distribution system consisting of metered turnouts, automated control structures, and flow meters. The Project area includes BVWSD's service area and the Tule Elk State Natural Reserve (Elk Reserve) in Kern County, California (see Figure 1-1).

1.1 Background

The United States Department of the Interior's (DOI) WaterSMART (*Sustain and Manage America's Resources for Tomorrow*) Program establishes a framework to provide Federal leadership and assistance on the efficient use of water, integrating water and energy policies to support the sustainable use of all natural resources, and coordinating the water conservation activities of various DOI bureaus and offices. Through WaterSMART grants, the Bureau of Reclamation (Reclamation) provides cost-shared funding assistance on a competitive basis for projects that seek to conserve and use water more efficiently, increase the use of renewable energy and improve energy efficiency, benefit endangered and threatened species, facilitate water markets, or carry out other activities to address climate-related impacts on water or prevent any water-related crisis or conflict.

BVWSD is located in the southern San Joaquin Valley roughly 16 miles west of Bakersfield (see Figure 1-1) and has a gross service area of approximately 50,000 acres. BVWSD's service area is divided into two distinct areas, the Buttonwillow Service Area and Maples Service Area. The district's water sources include surface water supplies from the Kern River and the State Water Project (SWP) via the California Aqueduct (Aqueduct), and pumped groundwater averaging a total of 185,000 acre-feet (AF) per year (AF/y). BVWSD's main water distribution system consists of 125 miles of mostly open earthen canal, of which about five miles are lined with concrete. This system loses, on average, approximately 45,000 AF/y, which equates to roughly 24 percent of BVWSD's total annual water supplies. As a result, BVWSD has and will continue to identify problem areas within their distribution system and implement measures to address water losses.

In January 2011, BVWSD applied for a WaterSMART grant to help fund their Project when Reclamation announced Funding Opportunity Announcement No. R11AF20006. Building off past effective water conservation practices, the Project generally consists of installing metered turnouts, automated control structures, variable frequency drives (VFDs), and flow meters.

1.2 Need for the Proposal

BVWSD needs funding assistance to reduce seepage and evaporation losses, and to improve their overall water-use efficiency through site-specific distribution system improvements.

1.3 Potential Resource Issues

Due to the potential for impacts, the following resources are analyzed in this EA: water resources, land use, biological resources, and air quality.

Impacts on the following resources were considered and found to be minor, and as a result were eliminated from further discussion. Brief explanations for the impacts are provided below:

- Cultural Resources
 - The Project would occur within previously identified disturbed contexts. Actions to the canals and laterals, including the installation of supervisory control and data acquisition (SCADA) equipment, would occur within existing facilities that have not been identified as historic properties. The proposed undertaking has no potential to cause effects to historic properties pursuant to 36 CFR Part 800.3(a)(1).
- Indian Trust Assets (ITA)
 - There are no tribes possessing legal property interests held in trust by the U.S. within the Affected Environment involved with the Proposed Action. The nearest ITA is the Santa Rosa Rancheria approximately 31 miles north/northwest of the project location. The Proposed Action has no potential to affect ITA.
- Indian Sacred Sites
 - No Indian sacred sites have been identified within the footprint for the Proposed Action.
- Environmental Justice
 - There are no economically disadvantaged or minority populations within the affected environment that would be subject to disproportionate impacts.
- Land Use
 - As noted in Section 2.2, ground disturbance associated with construction are estimated to total 0.063 acres for permanent impacts and 1.82 acres for temporary impacts. All temporary impacts to land use for staging areas, excavation, and trenching will be re-compacted, re-contoured, and/or planted with native grasses similar to pre-construction conditions. All permanent impacts would involve modifications to existing facilities and would be consistent with the function and land use of the facilities. The new Elk Reserve turnouts would provide water to lands that have previously been contoured to receive water for wildlife enhancement and is consistent with the land use plan for the reserve (General Development Plan 1958).

Section 2 Alternatives Including the Proposed Action

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

2.1 No Action Alternative

Without federal funding assistance, BVWSD's 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 at all. Consequently, for the No Action Alternative, Reclamation would not award BVWSD with a WaterSMART grant to help fund the Project, and BVWSD would continue to operate and maintain their internal distribution system under existing conditions.

2.2 Proposed Action

Reclamation proposes to award BVWSD with a WaterSMART grant that would help fund the district's Project. The Proposed Action would involve making key site-specific improvements consisting of a new turnout from Semitropic Water Storage District's (Semitropic) existing 120-inch diameter pipeline, new metered turnouts for the Elk Reserve, SCADA integration, and installing VFDs and flow meters on existing headgates throughout the distribution system. More specifically, the Proposed Action involves the following components (all measurements are approximate):

- **Semitropic Turnout** – The new proposed turnout would require excavation to and construction on Semitropic's existing 120-inch pipeline that interconnects the district's distribution system with the California Aqueduct (Aqueduct). This pipeline is bi-directional and can gravity-feed water to Semitropic or water can be pumped in the reverse direction to the Aqueduct. A 54-inch diameter turnout would be constructed from Semitropic's pipeline to BVWSD's West Side Canal (WSC). The excavation area for the new turnout would be 600 square-feet (sq-ft) and would be conducted on the east side of the WSC. After installation of the new turnout is complete, fill would be returned to the excavated area and would be recompacted to preconstruction conditions. Construction equipment would require one excavator, one backhoe, two pipe delivery trucks, concrete trucks, and one crane and one dump truck. Permanent impacts involve the discharge structure into the WSC and would be 100 sq-ft. Temporary impacts for excavation would be 6,000 sq-ft and another 6,000 sq-ft would be used for the staging area. See Figure 2-1 for an overview map of the Semitropic Turnout project area.
- **Elk Reserve Turnouts** – BVWSD currently delivers water to the Elk Reserve for wetlands and groundwater recharge benefits via the East Side Canal and Outlet Canal. At times, it is difficult for BVWSD to deliver water into the Elk Reserve due to conveyance

losses. By constructing three new turnouts, BVWSD would be able to more effectively and efficiently make deliveries to the Elk Reserve (refer to Figure 2-2 for an overview map of the elk reserve turnouts).

1. **BV2 Tie-In/SWP Turnout:** would include 275 linear feet (ft) of trenching for a 48-inch diameter pipeline. Trenching would be eight ft below grade and temporarily disturb 6,000 sq-ft. Permanent impacts would be 500 sq-ft for the discharge structure. Equipment required for the construction work include one excavator, one backhoe, four delivery trucks, concrete trucks, one crane, and one dump truck. Staging area for the equipment would temporarily disturb 6,000 sq-ft of existing dirt roads. Temporarily disturbed and staging areas would be returned to preconstruction conditions.
 2. **District Tie-In Well #2:** would be similar to the BV2 Tie-In but on a smaller scale. Trenching for the pipeline would be 200 ft long, 3 ft wide, and 4 ft deep. Temporary ground disturbance would be 1,000 sq-ft. A backhoe would be required to perform the work and stored within a 4,000 sq-ft staging area. Permanent impacts would be less than 10 sq-ft. Temporary disturbance and staging area would be returned to preconstruction conditions.
 3. **Booster Pump:** construction would be similar to previous two tie-ins, but shorter. The trench would be 30 ft long by 3 ft wide by 4 ft deep and excavated using a backhoe. Temporary disturbance for the trench would be 500 sq-ft and staging area would be another 4,000 sq-ft. Temporary disturbance and staging area would be returned to preconstruction conditions. Permanent impacts would be less than 100 sq-ft on the East Side Canal bank.
- **SCADA Integration/Main Drain Flume** – BVWSD recently completed retrofitting 10 vital control structures with SCADA equipment throughout the district's vast delivery system. The Proposed Action involves retrofitting 16 more sites into the SCADA network in similar fashion, thus building on the district's system modernization program. By retrofitting the existing control structures with SCADA controls, VFDs, and meters, BVWSD can better manage deliveries to agricultural and wildlife managed lands. The control structure sites generally involve upgrading existing sites and have very little temporary and permanent impacts. Each site would require the installation of an antenna pole, electronic equipment cabinet, and trenching on the order of 20 ft long by 0.5 ft wide and 3 ft deep. Cumulatively, the 16 sites would have less than 600 sq-ft of temporary impacts and permanent impacts would be less than 100 sq-ft. There is no need for staging areas and no need for heavy equipment. Another component of the SCADA work is construction and installation of a 63-foot long flume on the existing Main Drain channel (see Figure 2-3 for an overview map of the main drain flume and Figure 2-4 for the SCADA site locations). Some minor excavation would be required to remove soil and place compacted embankment, which would be 2 ft below previous grade. Temporary disturbances would be about 4,000 sq-ft with an additional 4,000 sq-ft for staging, which would be returned to previous conditions. Permanent impacts would be 2,000 sq-ft within the Main Drain Channel.

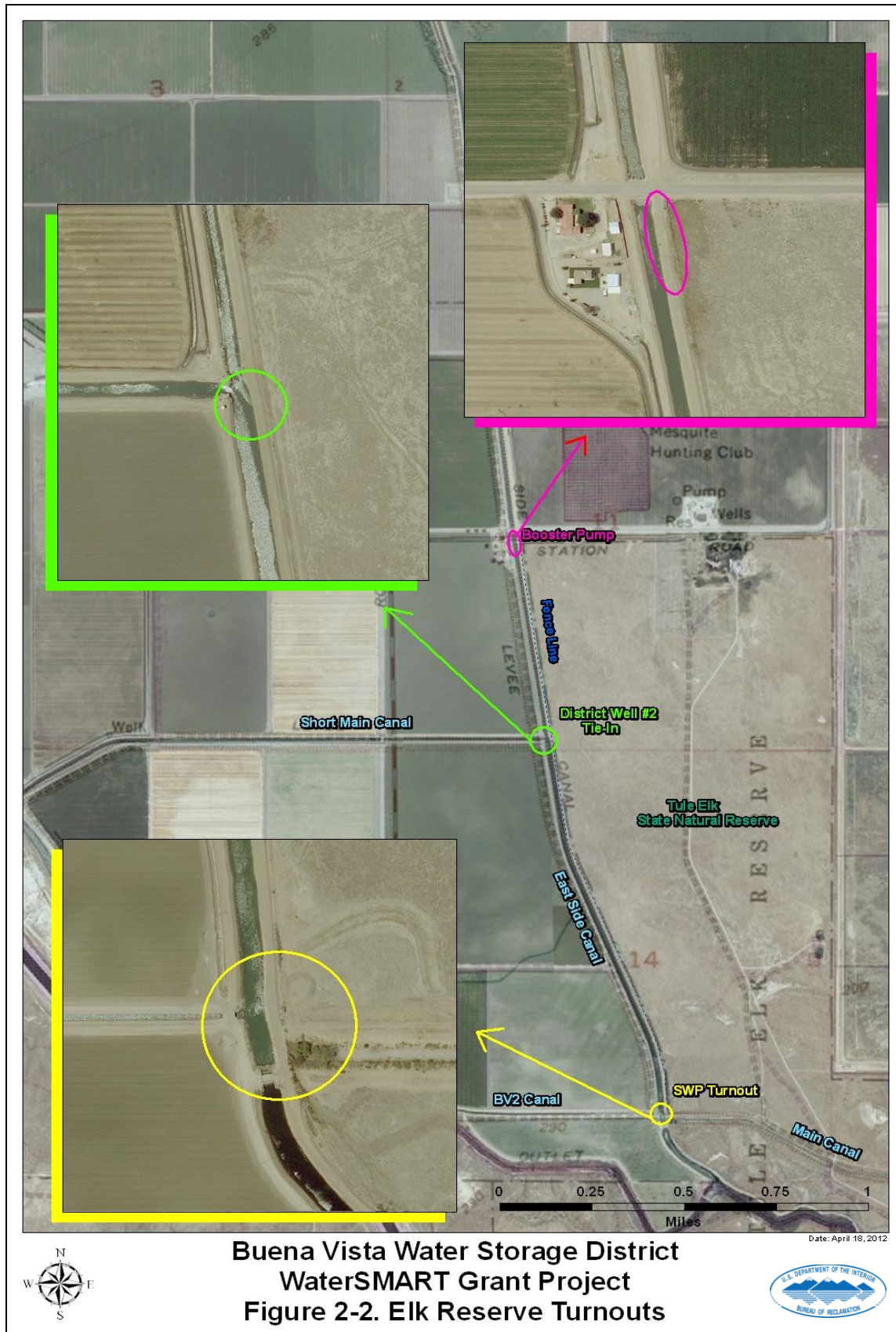
- **Headgate Meter Retrofits** – over the past 10 years, local farmers have made irrigation system improvements as they have converted from annual to permanent crops. In an effort to better facilitate this conversion, it is becoming apparent that by retrofitting headgates with continuous monitoring devices, better system efficiency can be realized. The Proposed Action involves retrofitting 45 existing headgates. Most of the 45 sites would require exposing existing underground pipes and installing new flow meters. For 35 of the sites, cumulative temporary impacts would be less than 1,000 sq-ft and no staging areas. For the remaining 10 sites that potentially would need pipe or gate replacements, the total temporary impacts would be 2,000 sq-ft with no permanent impacts and with no need for staging areas. All areas would be returned to previous conditions.

In summary, impacts associated with construction are estimated to total 0.063 acres for permanent impacts and 1.82 acres for temporary impacts. All areas of temporary disturbance would be returned to previous site conditions. Construction is expected to last four months from late 2012 through early 2013.

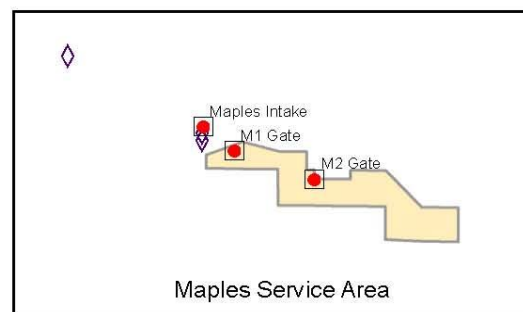
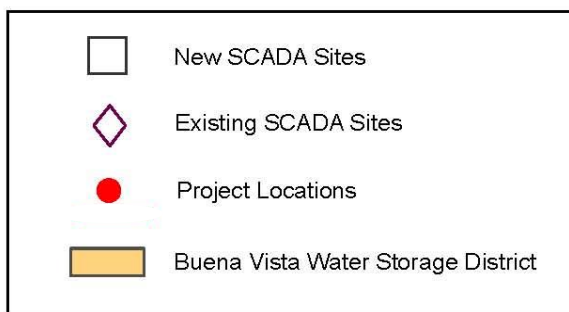
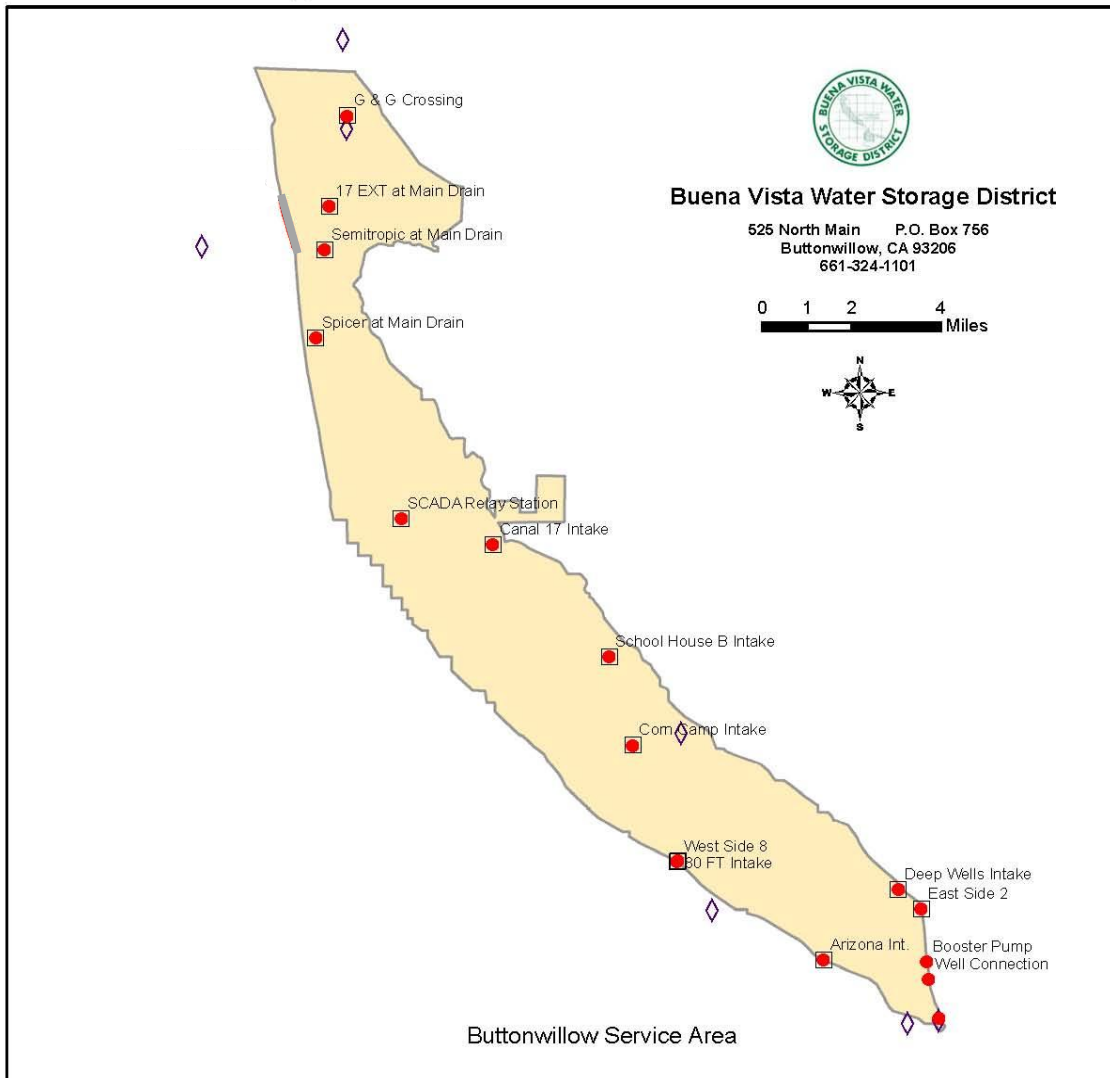
Proposed Semitropic Turnout



Figure 2-1. Semitropic Turnout Overview Map







**Buena Vista Water Storage District
WaterSMART Grant Project
Figure 2-4. SCADA Sites**

2.2.1 Environmental Protection Measures

As part of the Proposed Action, BVWSD staff and its contractors will implement the following Avoidance and Minimization Measures prior to and during construction activities to avoid and reduce environmental impacts to San Joaquin kit fox (SJKF) (*Vulpes macrotis mutica*), Tipton kangaroo rat (TKR) (*Dipodomys nitratoide nitratoide*), giant kangaroo rat (GKR) (*Dipodomys ingens*), Western burrowing owl (*Athene cunicularia*) and nesting raptors, and Buena Vista Lake shrew (BVLS) (*Sorex ornatus relictus*).

- **San Joaquin kit fox:** *U.S. Fish and Wildlife Service Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 2011). Preconstruction protocol level surveys for SJKF shall be completed no less than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities or any project activity likely to impact SJKF. U.S. Fish and Wildlife (USFWS) standard SJKF avoidance measures will be implemented during the proposed work (USFWS 2011).
- **Tipton and giant kangaroo rat:** *2007 Field Protocols for Kangaroo Rats* (CDFG 2007). Preconstruction surveys to determine the presence or signs of federally listed kangaroo rat within the project area shall be conducted no more than 30 calendar days prior to the start of construction. Pipes and culverts shall be searched for kangaroo rats prior to being moved or sealed to ensure that an animal has not been trapped. In addition, construction activities will be avoided during their breeding season (January through May) to minimize potential impacts.
- **Western burrowing owl:** *California Department of Fish and Game 2012 Staff Report on Burrowing Owl Mitigation* (CDFG 2012). Where appropriate, areas subject to ground disturbance shall be surveyed for nesting burrowing owls no fewer than 14 days and no more than 30 days prior to start of construction according to established guidelines (CDFG 2012). Appropriate avoidance, minimization, or protection measures shall be determined in consultation with the California Department of Fish and Game (CDFG) in the event an active nest is located in an area subject to disturbance, or within the typical setback (i.e., occupied burrows or nests within 150 ft of an area subject to disturbance during the non-breeding season, or within 250 ft of an area subject to disturbance during the breeding season).
- **Migratory Birds and Nesting Raptors:** This survey should be conducted during the same time and in similar manner to that for burrowing owls. Schedule initial ground disturbance, grading, and construction activity during the non-nesting season (generally August 1 to February 1 of any given year). Prior to any tree removal or surface disturbing activity during the active nesting season, the biologist will conduct a focused survey during the nesting season to identify any active nests or aeries within the project site(s). The survey will be conducted 14 to 30 days prior to the beginning of ground disturbance activities or tree removal. If no active nests are found, no further mitigation shall be required. If active nests or aeries are found during the survey, impacts shall be avoided by establishment of appropriate buffers until young have fledged as determined by consultations with the appropriate resource agency (CDFG and USFWS).
- **Buena Vista Lake shrew:** Preconstruction surveys to determine the presence or signs of BVLS within the proposed BV2 Tie-In/SWP Turnout near the Elk Reserve

and Main Drain Flume area will be conducted no more than 30 calendar days prior to the start of construction. Surveys will include identifying the presence of wetland plant associations considered habitat for BVLS. Pipes and culverts shall be searched for BVLS prior to being moved or sealed to ensure that an animal has not been trapped. If active burrows cannot be avoided, the area will be trapped no greater than 7 days prior to ground disturbing activities for five consecutive nights to determine the presence of BVLS.

Project site development may not begin until a biologist conducts the USFWS-approved preconstruction surveys, as noted above, of the action areas and the results have been reviewed by Reclamation. All small mammal burrows within the proposed construction zone will be identified during this preconstruction survey and flagged with pin flags and their location recorded using a Global Positioning System (GPS). If GKR and BVLS are found within the action area, their locations will be mapped and identified as being in areas of either permanent or temporary impacts. Movement of heavy equipment to and from the project sites, staging areas, or borrow sites will be confined to existing roadways to minimize habitat disturbance. Construction during evening hours (when SJKF and kangaroo rats are active and most vulnerable to vehicle or equipment-induced injury or mortality) will be avoided.

To prevent inadvertent entrapment of species, any excavation and backfill should be the amount that can be completed in a workday. If this is not possible, all open holes, steep-walled holes, or trenches more than 2 ft deep will be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks (wooden planks will be no less than 10 inches in width and would reach bottom of trench). Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals.

2.2.2 Best Management Practices

In addition to the Avoidance and Minimization Measures specific to listed species identified in Section 2.2.1, the following BMPs will be implemented by BVWSD and contractors working on the Project to further minimize and avoid effects to sensitive species and air quality during construction activities:

- Construction on Semitropic's pipeline will be coordinated with Semitropic in order to not interrupt normal water service from the Aqueduct to Semitropic or from Semitropic pump-back operations to the Aqueduct.
- A qualified wildlife biologist shall conduct a sensitive species education program (tailgate briefing) for all project personnel.
- A biological monitor(s) shall be present while ground-disturbing activities are occurring based on the sensitivity of the habitat in which construction is occurring. In addition to conducting preconstruction surveys for the project, the biological monitors shall aid crews in satisfying take avoidance criteria and implementing project mitigation measures, document pertinent information concerning project effects on sensitive species, and shall assist in minimizing the effects of project activities on sensitive species.
- At the SWP Turnout site, surface disturbance will be confined to areas that do not exhibit the wetland plant associations considered habitat for BVLS with an adequate buffer (not

less than 200 feet). The biological monitor will stake and flag to exclude construction activities within 200 feet of potential habitat. No work will be conducted between sunset and sunrise within 0.5 mile of potential habitat.

- Biological monitors may order work to cease if take avoidance and/or mitigation measures are violated and would notify the BVWSD representative and Reclamation.
- Unless biological monitors allow alterations to routes, all project vehicles shall be confined to existing roads or prominently staked and/or flagged access routes that are surveyed prior to use. All observed sensitive species and their habitat features such as dens, burrows or specific habitats shall be flagged as necessary to alert project personnel to their presence. All project-related flagging shall be collected and removed after completion of the project.
- All spills of hazardous materials shall be cleaned up immediately.
- Pets and firearms are prohibited on the construction site.
- All food-related trash, such as wrappers, cans, bottles, bags, and food scraps shall be disposed of daily in containers with secure covers and regularly removed from project sites.
- BVWSD shall appoint a representative who will be the point of contact; the representative will be identified during the preconstruction educational briefing.
- All project-related vehicles shall observe a speed limit of 25 miles per hour or less on all routes except as posted on State and County highway/roads or paved facility roads.
- Appropriate measures (i.e. signage) shall be undertaken to prevent unauthorized vehicle entry to off-road survey routes in sensitive habitat areas.
- Work boundaries will be delineated with flagging, temporary exclusionary fencing or other marking to minimize surface disturbance associated with project activities.
- The area of disturbance will be reduced to the smallest practical area, considering topography, placement of facilities, location of burrows, nesting sites or dens, public safety, and other limiting factors.
- To the extent practicable, previously disturbed areas will be used to stockpile excavated materials, storage of equipment, digging of slurry or borrow pits, trailer placement, vehicle parking and other surface disturbing activities.
- Dust Control Measures:
 - 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 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.
 - Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, the piles will be effectively stabilized of fugitive dust emissions utilizing sufficient water stabilizer/suppressant.

Section 3 Affected Environment and Environmental Consequences

This section of the EA provides the analysis of impacts from implementing the alternatives. The No Action Alternative reflects future conditions without the Proposed Action and serves as a basis of comparison for determining potential effects to the human environment.

3.1 Water Resources

3.1.1 Affected Environment

Buena Vista Water Storage District

BVWSD manages an average water supply of approximately 185,000 AF/y from SWP allocations, groundwater pumping, and Kern River diversions (BVWSD 2009). In addition to their in-district water users, BVWSD provides water to the Elk Reserve.

Groundwater Subbasin

BVWSD is located within the Kern County groundwater subbasin, which is one of seven subbasins designated by the Department of Water Resources (DWR) within the Tulare Lake Hydrologic Region (DWR 2006). Drainage to the groundwater subbasin is principally from the Kings, Kaweah, Tule, and Kings rivers (DWR 2005), with some contribution from applied irrigation. The average groundwater surface elevation for the Kern County groundwater subbasin is essentially unchanged from 1970 to 2000 (DWR 2006).

3.1.2 Environmental Consequences

3.1.2.1 No Action Alternative

BVWSD would continue to provide water within its service area using existing facilities. There would be no change in conditions and trends related to water resources.

3.1.2.2 Proposed Action

There would be no changes in diversions from the SWP and Kern River by BVWSD as a result of the Proposed Action.

Water conserved due to the Proposed Action could be used for wildlife enhancement, in-district irrigation, and in-county water marketing. Applied irrigation would indirectly contribute to groundwater conditions through seepage and by reducing the reliance of groundwater pumping by landowners. Water marketing would be limited to in-county actions so that the water remains within the groundwater subbasin area. Water used for wildlife enhancement would also indirectly contribute to groundwater conditions due to seepage. It would be difficult to measure the changes to groundwater surface elevation due to the Proposed Action, but the loss in seepage could be offset by the potential reduction in groundwater pumping. In addition, the water conserved would be re-applied within the county where a fraction would eventually seep back into the groundwater subbasin. As a result, there would be no adverse changes to the groundwater surface elevation due to the Proposed Action.

3.2 Biological Resources

The Endangered Species Act (ESA) of 1973, as amended, establishes a national program for the conservation of threatened and endangered species of fish, wildlife, and plants and the preservation of the ecosystems upon which they depend. Section 7 of the ESA requires Federal agencies to consult with the USFWS and/or the National Marine Fisheries Service on activities that may affect any species listed as threatened or endangered to ensure that their action(s) do not jeopardize the continued existence of those species, or result in the destruction or adverse modification of their critical habitat.

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions between the U.S. and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the MBTA provides that it is unlawful to pursue, hunt, take, capture or kill; 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 MBTA, the Secretary of the Interior may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting of any migratory bird, part, nest or egg will be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits and migratory flight patterns.

3.2.1 Affected Environment

BVWSD retained qualified biologists from Live Oak Associates Inc. (LOA) to conduct a biological survey/study of the Proposed Action area on October 3, 2011 (LOA 2012). In addition to other resources, LOA conducted biological reconnaissance surveys and focused on nesting raptors, SJKF, GKR, and TKR because the California Natural Diversity Database (CNDDB) indicated occurrences of these species within a vicinity of the Proposed Action area(s). Habitat within the Proposed Action area has been largely modified by human activity. Habitat types and land uses within the area include active and fallow agricultural/ruderal habitat, non-native grassland, and aquatic/riparian habitat in irrigation canals. There is no critical habitat for any listed species within the Proposed Action area.

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 November 29, 2011 for the following U.S. Geological Survey 7½ minute quadrangles: Buttonwillow, East Elk Hills, Millux, Semitropic, Tupman, Lokern, and Lost Hills (document number: 111129042215). Reclamation further queried the CDFG's CNDDB for records of protected species within 10 miles of the Proposed Action location (CNDDB 2010). Table 3-1 below was created from the USFWS species list, CNDDB records, LOA's findings, and additional information within Reclamation's files.

Table 3-1. Special-Status Species Potentially Occurring Within the Proposed Action Area

<u>Species</u>	<u>Status¹</u>	<u>Effects²</u>	<u>Potential to Occur in Proposed Action Area³</u>
Amphibians			
California red-legged frog (<i>Rana draytonii</i>)	T	NE	Absent. Suitable habitat absent. Extirpated from Proposed Action area (USFWS 2002).
Reptiles			
blunt-nosed leopard lizard (<i>Gambelia sila</i>)	E	NE	Absent. Suitable habitat is present on the Tule Elk Reserve; however, species has not been observed on this area of the reserve for many years. Project would not affect habitat within the Reserve.
giant garter snake (<i>Thamnophis gigas</i>)	T	NE	Absent. Suitable habitat absent from Proposed Action area. Believed extirpated from Tulare Basin (Hansen and Brode 1980).
Birds			
Western burrowing owl (<i>Athene cunicularia</i>)	Protected by MBTA		Possible. A burrowing owl feather was observed during the field survey. Several occurrences from CNDDB records indicate that this species is known to be present in the vicinity. Suitable nesting and foraging habitat does exist in the Proposed Action area.
Western snowy plover (<i>Charadrius alexandrinus nivosus</i>)	T	NE	Absent. Suitable habitat does not exist in the Proposed Action area.
Fish			
Delta smelt (<i>Hypomesus transpacificus</i>)	T	NE	Absent. No natural waterways within the species' range would be affected by the proposed action. There would be no effect to Delta pumping.
Invertebrates			
valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)	T	NE	Absent. No records in area of effect. No elderberry shrubs in or within 100 feet of action footprint.
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	NLAA	Possible. Recorded occurrences approximately 1 ½ miles from proposed SWP Turnout near Elk Reserve. Potentially suitable habitat near discharge structure on the Main Canal at SWP turnout.
giant kangaroo rat (<i>Dipodomys ingens</i>)	E	NLAA	Possible. Habitat in the Proposed Action area is suboptimal due to disturbance from agricultural production and maintenance of the West Side Canal; however, giant kangaroo rats were recently trapped at the BV8 Project Area (approximately 2.5 miles from Proposed Action Area).

Table 3-1. Special-Status Species Potentially Occurring Within the Proposed Action Area

<u>Species</u>	<u>Status</u>¹	<u>Effects</u>²	<u>Potential to Occur in Proposed Action Area</u>³
San Joaquin kit fox (<i>Vulpes macrotis mutica</i>)	E	NLAA	Possible. Several CNDDDB-recorded occurrences in the Proposed Action area. 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 (USFWS 2011) found no evidence of occurrence in area or use for foraging. Potential prey populations low.
Tipton kangaroo rat (<i>Dipodomys nitratoides nitratoides</i>)	E	NLAA	Possible. One CNDDDB-recorded occurrence in Proposed Action area. Surveys for kangaroo rats (CDFG 1990) were conducted and presence of kangaroo rats observed but most likely Herman's kangaroo rat, a sympatric species. Habitat in the Proposed Action area is suboptimal due to disturbance from agricultural production and maintenance of the West Side Canal. However, Tipton kangaroo rats were recently trapped at the BV8 Project Area (approximately 2.5 miles from Proposed Action Area).
Plants			
California jewel-flower (<i>Caulanthus californicus</i>)	E	NE	Absent. One CNDDDB-recorded occurrence north of Proposed Action area. Not found since 1935 (based on 1986 and 2008 searches). Typically found in chenopod scrub habitat which is fragmented in Proposed Action area.
Kern mallow (<i>Eremalche kernensis</i>)	E	NE	Unlikely. One CNDDDB-recorded occurrence approximately 3 miles south of Proposed Action area (last seen in 1988). Majority of Proposed Action area is disturbed or otherwise in unsuitable habitat.
San Joaquin woolly-threads (<i>Monolopia congdonii</i>)	E	NE	Unlikely. One CNDDDB-recorded occurrence northeast of Proposed Action area. Suitable habitat does not exist in Proposed Action area.
¹ Status= Listing of Federally protected species E: Listed as Endangered T: Listed as Threatened ² Effects = Effect determination NE: No Effect NLAA: May affect, is not likely to adversely affect ³ Definition Of Occurrence Indicators Possible: Species recorded in area but habitat suboptimal. Any protocol-level surveys found minimal evidence to support presence. Unlikely: Species recorded in area but habitat suboptimal or lacking entirely. Any protocol-level surveys found no evidence to support presence. Absent: Species not recorded in study area or protocol-level surveys found no evidence to support presence and/or suitable habitat. CNDDDB = California Natural Diversity Database 2011 MBTA = Migratory Bird Treaty Act			

3.2.2 Environmental Consequences

3.2.2.1 No Action

There would be no ground disturbing activities and no effect on species protected by the MBTA and ESA. Conditions related to biological resources would remain the same as existing conditions.

3.2.2.2 Proposed Action

As noted in Section 2.2.1, measures to avoid and minimize impacts to burrowing owl and other species protected by the MBTA will be implemented. More specifically, preconstruction surveys

for burrowing owl and nesting raptors will be conducted 14-30 days prior to any ground-disturbing activities, and any such activities would only occur during the non-nesting season (August 1 to February 1). If the presence of any species protected by the MBTA is confirmed during the preconstruction surveys then proper conservation measures in coordination with the CDFG and USFWS will be implemented to avoid and minimize potential adverse impacts to those species.

CNDDDB occurrences indicate that SJKF have been recorded within the general vicinity of the Proposed Action area(s). SJKF are highly mobile and could potentially use the Proposed Action area(s) for foraging. Prey availability may decrease due to temporary disturbances during construction practices. To avoid and minimize potential disturbances to SJKF, preconstruction surveys will be conducted 14 to 30 days prior to initiation of work and the 2011 USFWS SJKF measures will be implemented during construction activities. If no sign or evidence of SJKF is found during the preconstruction surveys, it is unlikely that they are present within the action area vicinity. In addition, SJKF are nocturnal and would likely be inactive when construction work is being conducted.

During construction activities, any TKR or GKR in the area would likely be inside burrows. Noise or vibration during construction could disrupt TKR and GKR behavior, possibly even causing abandonment of burrows. TKR could seek refuge in pits, trenches or pipes and become inadvertently trapped. USFWS-approved preconstruction surveys will be conducted for TKR and GKR prior to initiation of work and avoidance measures will be implemented to minimize potential impacts (refer to Section 2.2.1). If no sign or evidence of TKR and GKR is found, it is likely that they are not present within the action area vicinity. In addition, construction activities will be done outside of kangaroo rat breeding period (January through May).

Potentially suitable habitat for BVLS occurs near the SWP Turnout adjacent to the Elk Reserve. USFWS-approved preconstruction surveys will be conducted at the SWP Turnout and Main Drain Flume sites prior to initiation of work and avoidance measures will be implemented to minimize impacts to BVLS. If no sign or evidence of suitable habitat for BVLS is found, then it is likely that they are not present within the action area vicinity.

If preconstruction surveys for SJKF, TKR, GKR, and BVLS indicate that these species are still absent within the action areas, exclusionary fencing will immediately be installed. If preconstruction surveys find presence of any of the four protected species and adverse effects cannot be avoided, construction activities at the location(s) will be halted and reconsultation with the USFWS would be required. When taking into consideration the information provided in this section, and the avoidance and minimization measures and best management practices that will be implemented, Reclamation has determined that the Proposed Action *is not likely to adversely affect* the SJKF, TKR, GKR, and BVLS.

3.3 Air Quality

Section 176 (c) of the Clean Air Act (CAA) (42 U.S.C. 7506 (c)) requires that any entity of the Federal government that engages in, supports, or in any way provided financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the

applicable State Implementation Plan (SIP) required under Section 110 (a) of the CAA (42 U.S.C. 7401 (a)) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with a SIP's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards (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 will, in fact conform to the applicable SIP before the action is taken.

On November 30, 1993, the U.S. 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 direct and indirect emissions of the relevant criteria pollutant(s) and precursor pollutant(s) caused by the Proposed Action equal or exceed certain threshold amounts, thus requiring the Federal agency to make a determination of general conformity.

3.3.1 Affected Environment

The San Joaquin Valley Air Basin (SJVAB) is within the management area of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The SJVAB 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 SJVAB has reached NAAQS and CAAQS attainment status for all criteria pollutants except for O₃, PM₁₀ (CAAQS only), and PM_{2.5}. As a result, the emissions of most concern are O₃ (which includes precursors such as volatile organic compounds [VOC] and nitrogen oxides [NO_x]), PM₁₀, and PM_{2.5}. Table 3-2 below shows the attainment status and *de minimis* threshold for general conformity for the criteria pollutants of most concern.

Table 3-2. SJVAB Attainment Status and <i>De Minimis</i> Thresholds for Federal Conformity Determinations		
Pollutant	Attainment Status^a	(tons/year)
VOC (as ozone precursor)	Nonattainment ^d	10 ^b
NO _x (as an ozone precursor)	Nonattainment ^d	10 ^b
PM ₁₀	Nonattainment (CAAQS) Attainment (NAAQS)	15 ^c
PM _{2.5}	Nonattainment	100 15 ^c
^a Source: http://www.arb.ca.gov/design/adm/adm.htm ^b 40 CFR 93.153 ^c SJVAPCD Threshold ^d The SJVAB is designated as Extreme for O ₃ NAAQS		

3.3.2 Environmental Consequences

3.3.2.1 No Action Alternative

There would be no effect on conditions and trend in air quality within the SJVAB.

3.3.2.2 Proposed Action

Construction emissions would vary from day to day and by activity, depending on the timing and intensity of construction, and wind speed and direction. Generally, air quality impacts from the Proposed Action would be localized in nature and decrease with distance. Ground disturbing activities would result in the temporary emissions of fugitive dust and vehicle combustion pollutants during the following activities:

- On-site earthwork (cut/fill, excavation, compacting, and stockpiling)
- On-site construction equipment and haul truck engine emissions
- Off-site haul truck engine emission
- On-site and off-site haul truck fugitive dust emissions for paved and unpaved road travel

Calculated emissions from the Proposed Action were estimated using the EMFAC2011 model for reactive organic gases (ROG)¹, NO_x, PM₁₀, and PM_{2.5}. Total project emissions are presented in Table 3-3 below.

Table 3-3. Estimated Project Emissions ^a		
Pollutant	Construction (tons/year)	Operations (tons/year)
ROG/VOC	0.0801	0.0039
NO _x	1.9137	0.0084
PM ₁₀	4.6673	0.0001
PM _{2.5}	0.9962	0.0001

^a Source: EMFAC2011

As shown in Table 3-3 above, the Proposed Action has been estimated to emit less than the *de minimis* threshold for NO_x and ROG/VOC as O₃ precursors and PM_{2.5}; therefore, a federal general conformity analysis report is not required. In addition, PM₁₀ emissions from the Proposed Action have been estimated to be well below the SJVAPCD threshold of 15 tons/year. As noted in Section 2.2.2, dust control measures would be implemented as part of the Proposed Action to suppress emissions of particulate matter. As a result, construction activities would not emit pollutants that will exceed Federal, State, and local thresholds for the SJVAB.

3.4 Cumulative Impacts

3.4.1 Affected Environment

Through a different grant from Reclamation, BVWSD is proposing to construct a 1,500 ft-long interconnecting underground pipeline from the Aqueduct to the WSC (BV8 Turnout). The location for the BV8 Turnout project is approximately 2.5 miles west of the Elk Reserve turnouts.

¹ The term “volatile organic compounds” are synonymous with “reactive organic gases” for the purposes of this document since both terms refer to hydrocarbon compounds that contribute to ozone formation.

Landowners within BVWSD are looking to work with the Natural Resources Conservation Service (NRCS) (a Federal agency) for on-farm improvements grants that would help with their respective water use efficiency; however, the on-farm actions have not yet been identified and the scope of those potential impacts are too speculative at this time. If and when those actions have been determined, BVWSD and/or NRCS may be required to perform appropriate environmental review. The Proposed Action is not dependent on the implementation of these potential on-farm improvements.

3.4.2 Environmental Consequences

3.4.2.1 No Action Alternative

There would be no additional impacts to the human environment from what has already occurred and is reasonably to occur in the future.

3.4.2.2 Proposed Action

Water resources overall would benefit from the Proposed Action in addition to the BV8 Turnout and on-farm improvements because they all aim to conserve water and promote efficient water use within BVWSD and the surrounding area.

The BV8 Turnout project is currently undergoing separate ESA consultation with the Service. There are no other known proposed State, local, or tribal actions that are reasonably certain to occur in the Proposed Action area that could potentially result in additional impacts to protected biological resources.

Air quality emissions from a single project inevitably mix with those emissions from other projects within the same air shed, and in some cases, with those emissions from projects in adjacent air sheds. O₃ impacts are considered cumulative impacts to air quality since it requires the interaction of ROG/VOC, NO_x, and sunlight molecules. In determining the threshold amount for O₃ emissions, cumulative impacts were taken into consideration. So if the Proposed Action does not meet or exceed the 10 ton/year threshold then it also considered to not have cumulative adverse impacts to air quality. The SJVAPCD recommends considering PM_{2.5} (vehicle exhaust) and PM₁₀ (fugitive dust) emissions cumulatively from nearby projects. In the unlikely event that the construction activities involved with the Proposed Action occur at the same time as construction activities associated with the BV8 Turnout project, which is approximately 2.5 miles west of the Elk Reserve turnouts, the cumulative emissions for PM_{2.5} (less than 2.5 tons/year) and PM₁₀ (less than 10 tons/year) for both projects are still below the threshold of 15 tons/year. Construction emissions for both projects are short-term, and once built, would greatly reduce the yearly operation emissions to less than 0.0003 tons/year for both projects combined.

Greenhouse gas (GHG) impacts are considered to be cumulative impacts since any increase in GHG emissions would add to the existing inventory of gases that could contribute to climate change. The estimated GHG emissions for construction activities is 661 tons/year, which is temporary, and the estimated operation GHG emission is 31.52 tons/year. Since the amount of GHGs emitted from the Proposed Action is well below the 25,000 metric ton/year threshold, no report is required to be submitted to the U.S. Environmental Protection Agency (EPA) and California Air Resources Board.

Section 4 Consultation and Coordination

4.1 Public Review Period

Reclamation will provide the public with an opportunity to comment on this EA and a Finding of No Significant Impact.

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

Section 7 of the ESA requires Federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species.

Reclamation met with the USFWS on November 10, 2011 to discuss the Proposed Action. A second meeting was held on June 28, 2012 with Reclamation and USFWS staff to discuss the initial draft BA sent to USFWS in April 2012. On August 21, 2012 Reclamation staff met with USFWS staff to clarify the Proposed Action and to discuss the appropriate direction for ESA consultation. On September 20, 2012, Reclamation and USFWS staff met to discuss the project timeframe and get further clarification on the direction for ESA consultation. On November 6, 2012, Reclamation and USFWS staff met to discuss the ESA consultation direction after receiving preliminary results from surveys conducted at the Tule Elk Reserve.

Reclamation is requesting written concurrence from the USFWS that the Proposed Action *is not likely to adversely affect* SJKF, TKR, GKR, and BVLS.

Section 5 References

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