

# Initial Study/Proposed Mitigated Negative Declaration Bethany Reservoir Sediment Removal Project



Prepared for:



California Department of Water Resources

**AECOM**

May 2014

Initial Study/Proposed Mitigated Negative Declaration  
Bethany Reservoir Sediment Removal Project



Prepared for:

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May 2014

**Date:** May 28, 2014

**To:** Responsible and Trustee Agencies, Interested Parties, and Organizations

**Subject: NOTICE OF INTENT TO CONSIDER ADOPTION OF A PROPOSED MITIGATED NEGATIVE DECLARATION FOR THE BETHANY RESERVOIR SEDIMENT REMOVAL PROJECT**

The California Department of Water Resources (DWR) has directed the preparation of an initial study (IS) and intends to adopt a mitigated negative declaration (MND) for the Bethany Reservoir Sediment Removal Project (proposed project) in compliance with the California Environmental Quality Act (CEQA) and State CEQA Guidelines.

**Project Title:** Bethany Reservoir Sediment Removal Project

**Lead Agency:** DWR, Division of Operations and Maintenance

**Project Location:** Bethany Reservoir is located in northeastern Alameda County, approximately 10 miles northwest of the city of Tracy and 20 miles northeast of the city of Livermore.

**Project Description:** The proposed project consists of removing accumulated sediment at the submerged intake structure and placing the sediment at the South Bay Pumping Plant disposal site.

**Environmental Review Process:** DWR has directed the preparation of an IS/MND on the proposed project in accordance with the requirements of CEQA. The IS/MND describes the proposed project and provides an assessment of the proposed project's potential significant adverse impacts on the environment. It concludes that the proposed project would not have any significant adverse effects on the environment after implementation of mitigation measures.

**Public Review Period:** The IS/MND is being circulated for public review and comment for a review period of 30 days starting on May 28, 2014. Written comments should be submitted and received at the following address no later than close of business (4:00 p.m.) on June 27, 2014.

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**To Review or Obtain a Copy of the Environmental Document:** Copies of the IS/MND may be reviewed at the following locations:

DWR's Web site: <http://www.oandm.water.ca.gov/>

California Department of Water Resources  
Division of Operations and Maintenance  
1416 Ninth Street, Sixth Floor  
Sacramento, CA 95814

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# PROPOSED MITIGATED NEGATIVE DECLARATION

**PROJECT:** Bethany Reservoir Sediment Removal Project

**LEAD AGENCY:** California Department of Water Resources (DWR), Division of Operations and Maintenance

**PROJECT LOCATION:** Bethany Reservoir is located in northeastern Alameda County, approximately 10 miles northwest of the city of Tracy and 20 miles northeast of the city of Livermore.

**PROJECT DESCRIPTION:** DWR is proposing to perform maintenance activities in Bethany Reservoir. The proposed project consists of removing accumulated sediment at the submerged intake structure and placing the sediment at the South Bay Pumping Plant disposal site. Sediment removal is necessary to prevent obstruction of or damage to the outlet works and to prevent environmental issues created when sediment-rich waters are allowed to flow into an earth-lined drainage channel downstream of the dam. The annual exercising of intake valves at the reservoir has not occurred in 5 years because of the accumulation of sediment.

**FINDINGS:** An initial study/proposed mitigated negative declaration (IS/MND) has been prepared to assess the project's potential effects on the environment and the significance of those effects. Based on the analysis conducted in the IS, it has been determined that implementing the proposed project would not have any significant adverse effects on the environment after adoption and implementation of mitigation measures. This conclusion is supported by the following findings:

1. The proposed project would have no effects related to agriculture and forestry resources, land use and planning, mineral resources, population and housing, and recreation.
2. The proposed project would have a less-than-significant impact on aesthetics, greenhouse gases, hazards and hazardous materials, noise, public services, transportation and traffic, and utilities and service systems.
3. The proposed project would have a less-than-significant impact on air quality, biological resources, cultural resources, geology and soils, and hydrology and water quality. This less-than-significant impact conclusion assumes adoption and implementation of the mitigation measures discussed in the IS.
4. The proposed project would not have the potential to substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; substantially reduce the number or restrict the range of an endangered, rare, or threatened species; or eliminate important examples of the major periods of California history or prehistory.
5. The proposed project would not have the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.
6. The proposed project would not have possible environmental effects that are individually limited but cumulatively considerable. "Cumulative considerable" means that the incremental effects of an

individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probably future projects.

7. The environmental effects of the proposed project would not cause substantial adverse effects on human beings, either directly or indirectly.
8. The proposed project incorporates all mitigation measures listed below and described in the IS.

**MITIGATION MEASURES:** The following mitigation measures will be implemented as part of the project to avoid, minimize, rectify, reduce or eliminate, or compensate for potentially significant environmental impacts. Implementation of these mitigation measures would reduce the potentially significant environmental impacts of the proposed project to less-than-significant levels:

**Mitigation Measure AQ-1: Reduce Construction-Related Emissions from Off-Road Equipment and Heavy-Duty Vehicles.**

*The following measures recommended by the BAAQMD shall be implemented to reduce construction-related emissions associated with off-road equipment and heavy-duty vehicles (BAAQMD 2012):*

- ▶ *All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day, as necessary to control fugitive dust.*
- ▶ *All haul trucks transporting soil, sand, or other loose material off-site shall be covered.*
- ▶ *All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.*
- ▶ *All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.*
- ▶ *All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.*
- ▶ *All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.*
- ▶ *A publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints shall be posted at the construction site. The person identified as the contact shall respond and take corrective action within 48 hours. The air district's phone number shall also be visible to ensure compliance with applicable regulations.*
- ▶ *Idling time of diesel-powered construction equipment shall be no more than 5 minutes.*
- ▶ *All contractors shall be required to use equipment that meets ARB's most recent certification standard for off-road heavy-duty diesel engines.*

**Timing:** *Before and during construction as appropriate*

**Responsibility:** DWR

**Mitigation Measure BIO-1: Avoid Impacts on Special-Status Amphibians.**

*The following measures shall be implemented to avoid, minimize, and mitigate potential impacts on California tiger salamander and California red-legged frog at the project site:*

- ▶ *No project-related activities that would affect California tiger salamander and/or California red-legged frog shall be allowed outside of the project site boundary. Construction fencing shall be placed along the site boundary to clearly mark the limits of project-related activities in areas that are not developed (i.e., parking lots do not require fencing).*
- ▶ *All project-related traffic shall be restricted to designated access roads, routes, and construction areas within the site boundary. No vehicular or pedestrian traffic shall be allowed outside of the designated site boundary unless it uses the existing designated access roads and routes.*
- ▶ *Before any project-related activities within the site boundary are initiated, preconstruction surveys shall be conducted by a USFWS- and CDFW-approved biologist(s) for California tiger salamander and California red-legged frog. Preconstruction clearance surveys shall be completed no more than 24 hours before ground disturbance is initiated. Any California tiger salamanders or California red-legged frogs found on the project site shall be removed by an- approved biologist(s) and translocated under the direction and authorization of USFWS and CDFW.*
- ▶ *Before any site preparation/construction activities are initiated, a USFWS- and CDFW-approved biologist shall conduct an education and training session for essential construction personnel. The training program shall instruct the essential construction personnel on how to identify California tiger salamanders and California red-legged frogs, what to do if a California tiger salamander or California red-legged frog is encountered during construction activities, and the legal context regarding these species. The essential construction personnel are then responsible for training and informing their staff on the avoidance and minimization procedures and legal context regarding these species.*
- ▶ *If a California tiger salamander or California red-legged frog is observed within the project site by a worker, the USFWS-approved biologist will be informed immediately. All work shall be halted and machinery shall be turned off within 100 feet of the animal until a USFWS-approved biologist can capture and remove the animal from the work area. DWR will notify USFWS and CDFW within 2 business days of the siting.*
- ▶ *The proposed project shall use materials for erosion control, such as filter fabrics and fiber rolls, with spaces between weaving or netting small enough to prevent potential entrapment of California tiger salamanders or California red-legged frogs (less than one-quarter square inch) or shall use alternative materials that do not have weaving or netting.*
- ▶ *Within 4 hours prior to the valve exercise, preconstruction surveys for California red-legged frog shall be conducted within the receiving earth-lined ditch by a USFWS- and CDFW-approved biologist(s). An approved biologist shall be present on-site at the time of the valve test and shall monitor the earth-lined ditch for the presence of California red-legged frogs immediately before and after the valve test. Any California red-legged frogs found within the earth-lined ditch shall be collected and temporarily held by a USFWS approved biologist*

holding a valid 10(a)1(A) permit for handling California red-legged frog. Frogs would be retained in an appropriate container for the duration of the valve exercise test and returned to the earth-lined ditch after the valve exercise test. Prior to the valve exercise test, DWR shall prepare a California red-legged frog collection and relocation plan and submit for review and approval by USFWS.

**Timing:** Before and during construction and valve exercise

**Responsibility:** DWR

### **Mitigation Measure BIO-2: Avoid Impacts on Western Pond Turtle.**

The following measures shall be implemented to avoid, minimize, and mitigate potential impacts on western pond turtle at the project site:

- ▶ Before any site preparation/construction activities are initiated, a qualified biologist shall conduct an education and training session for essential construction personnel. The training program shall instruct the essential construction personnel on how to identify western pond turtle, what to do if a western pond turtle is encountered during construction activities, and the legal context regarding this species.
- ▶ If a turtle is encountered during dredging, workers shall temporarily stop work until the turtle has moved away from the construction site on its own or a qualified biologist has moved the turtle to a safe location.

**Timing:** Before and during construction

**Responsibility:** DWR

### **Mitigation Measure BIO-3: Avoid Impacts on Special-Status Birds.**

The following measures shall be implemented to avoid, minimize, and mitigate potential impacts on special-status birds at or near the project site:

- ▶ If the proposed project is constructed during the Swainson's hawk nesting season (March 1 through September 15), then focused surveys for nests of Swainson's hawk shall be conducted within 0.25 mile of proposed construction. To the extent feasible, guidelines provided in Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in the Central Valley (Swainson's Hawk Technical Advisory Committee 2000) shall be followed for Swainson's hawk nest surveys. If active nests of Swainson's hawks are detected during surveys, impacts on nesting Swainson's hawks shall be avoided by establishing appropriate buffers around active nest sites. No project activity shall commence within the buffer areas until a qualified biologist has determined in coordination with CDFW that the young have fledged, the nest is no longer active, or that reducing the buffer would not result in disturbance to nesting activities. CDFW guidelines recommend implementation of 0.25- or 0.5-mile-wide buffers, but the size of the buffer may be adjusted if a qualified biologist, in consultation with CDFW, determines that such an adjustment would not be likely to adversely affect nesting activities. Monitoring of the nest by a qualified biologist during construction activities may be required if the activity has potential to adversely affect the nest.

- ▶ Nesting surveys shall also be conducted by a qualified wildlife biologist for white-tailed kite, other raptors, and other migratory birds if construction activities will occur from February 1 through August 31. Surveys shall be conducted by a qualified wildlife biologist within 500 feet of proposed construction no more than 10 days before the start of construction activities. If white-tailed kite, other raptor, or migratory bird nests are detected within 500 feet of construction activities, appropriate protective buffers specific to the biology and sensitivity of the species and sufficiently large to avoid construction-related disturbance to nesting activities shall be established, as determined by a qualified biologist. Monitoring of any active nest by a qualified biologist during construction activities may be required if the activity has potential to adversely affect the nest.
- ▶ Take avoidance surveys for BUOW shall be conducted by a qualified biologist no less than 14 days before the start of construction activities to ensure that BUOW would not be affected by project activities. These surveys shall be consistent with guidance provided by the 2012 CDFW burrowing owl staff report (DFG 2012). If an active burrow is found, clear, visible markers shall be placed in the area to demarcate the burrow location so that workers and vehicles traveling in or out of the area will avoid disturbing the area. Appropriate buffer zones, visual screens, or other site-specific measures will be implemented to minimize disturbance impacts on active burrows, consistent with agency guidance (DFG 2012), while project-related activities are occurring.
- ▶ If active nests of protected birds are found, DWR will consult with CDFW and other experts for assistance in developing site-specific solutions, as needed, and to determine if monitoring is needed. If monitoring is needed, monitoring will be conducted by a qualified biologist throughout project implementation to determine the effectiveness of buffers, visual screens, or other measures, and to determine whether the vehicle traffic is jeopardizing an active nest.

**Timing:** Before and during construction

**Responsibility:** DWR

**Mitigation Measure BIO-4: Avoid Impacts on Special-Status Mammals.**

The following measures shall be implemented to avoid, minimize, and mitigate potential impacts on special-status mammals at or near the project site:

- ▶ All site access and staging shall limit disturbance to the specified project footprints and avoid sensitive habitats.
- ▶ Project activities shall not take place at night, when SJKF is most active. Off-road travel outside of designated project areas shall be prohibited.
- ▶ Preconstruction surveys for SJKF shall be conducted by a USFWS-approved biologist no less than 14 days and no more than 30 days before the beginning of ground disturbance and/or project activities, in accordance with the Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or during Ground Disturbance (USFWS 2011b). If suitable dens are found, the status of all dens shall be determined and mapped. Written results of preconstruction surveys shall be sent to USFWS within 5 days after survey completion and before the start of ground disturbance and/or construction activities. If a natal/pupping den is discovered on the project site or within 200 feet of the project boundary, USFWS shall be notified immediately, and under no circumstances shall the den be disturbed or destroyed without prior authorization. If the

*preconstruction survey reveals an active natal pupping or new information, DWR shall contact USFWS and CDFW immediately to obtain the necessary take authorization/permit.*

- ▶ *Exclusion zones from SJKF dens, measured outward from the entrance or cluster of entrances, shall be 50 feet for potential or atypical dens, which can be marked with flagging, and 100 feet for known dens, which shall be demarked by a fence around the den. Fencing material is subject to USFWS approval.*
- ▶ *A biological monitor shall be on-site to assist the construction crew with environmental issues as necessary. If SJKF or American badger individuals are encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the individuals will not be harmed.*
- ▶ *DWR shall notify USFWS and CDFW immediately if any SJKF or American badger individuals are found on-site and shall submit a report to include date(s), location(s), habitat description, and any collective measures taken to protect the species. If an SJKF is inadvertently injured or killed, DWR shall notify USFWS and CDFW immediately. All land-based construction activities shall cease if an SJKF is encountered, and all land-based construction shall remain stopped until it moves out of the work area unassisted. The biological monitor shall be required to report any take to USFWS immediately by telephone and, within 1 day of the incident, by electronic mail or written letter. Capture and relocation of trapped or injured listed species may be attempted only by USFWS-approved personnel.*
- ▶ *All construction pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for SJKF before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If SJKF is discovered inside a pipe, that section of pipe shall not be moved until the SJKF has moved away on its own or the USFWS and CDFW have been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the SJKF has escaped.*
- ▶ *No firearms shall be allowed on the project site.*
- ▶ *Noise shall be minimized to the extent feasible at the project site to avoid disturbing SJKF.*
- ▶ *No pets shall be permitted on the project site.*

**Timing:** *Before and during construction*

**Responsibility:** *DWR*

**Mitigation Measure BIO-5: Minimize Fill of Jurisdictional Waters of the United States and Waters of the State during Construction, and Compensate for Impacts.**

*The following measures shall be implemented to minimize impacts on jurisdictional waters of the United States:*

- ▶ *Locate all staging areas, parking areas, equipment, and storage areas for fuel, lubricants, and solvents in areas away from waters of the United States and waters of the state.*
- ▶ *Implement any additional measures determined necessary during the CWA Section 404 and 401 and the Lake and Streambed Alteration Agreement Section 1602 permitting processes before and/or during project*

construction. Additional measures might include, but not be limited to, implementing additional construction best management practices (BMPs) to avoid potential impacts on water quality from sedimentation and erosion.

**Timing:** Before and during construction

**Responsibility:** DWR

**Mitigation Measure CUL-1: Halt Ground-Disturbing Construction Activities if Cultural Materials Are Discovered.**

The following measures shall be implemented to avoid or minimize potential impacts on cultural materials:

- ▶ If cultural materials (e.g., unusual amounts of shell, animal bone, flaked stone, bottle glass, ceramics, structure/building remains) are discovered during project construction, ground disturbances in the immediate vicinity of the find shall be halted immediately, and a qualified professional archaeologist shall be notified regarding the discovery. The archaeologist shall determine whether the resource is potentially significant as per the CRHR and identify appropriate management steps needed to protect and secure identified resources.

**Timing:** During construction

**Responsibility:** DWR

**Mitigation Measure CUL-2: Halt Construction Activities if Any Human Remains Are Discovered.**

The following measures shall be implemented to avoid or minimize potential impacts on human remains:

- ▶ The procedures for the treatment of discovered human remains are described in Sections 7050.5 and 7052 of the California Health and Safety Code and Section 5097 of the California Public Resources Code. In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, such activities that may affect the remains shall be halted, and DWR or its designated representative shall be notified. DWR shall immediately notify the county coroner and a qualified professional archaeologist. If the coroner determines that the remains are those of a Native American, the coroner must contact the NAHC by telephone within 24 hours of making that determination (California Health and Safety Code, Section 7050.5[c]).
- ▶ DWR's responsibilities for acting upon notification of a discovery of Native American human remains are identified in detail in Section 5097.9 of the California Public Resources Code. DWR or its appointed representative and the professional archaeologist shall consult with a Most Likely Descendant (MLD) determined by the NAHC regarding the removal or preservation and avoidance of the remains and shall determine whether additional burials could be present in the vicinity.

Assuming that an agreement can be reached between the MLD and DWR or its representative with the assistance of the archaeologist, these steps would minimize or eliminate adverse impacts on the uncovered human remains.

**Timing:** During construction

**Responsibility:** DWR

### **Mitigation Measure GEO-1: Prepare and Implement a Storm Water Pollution Prevention Plan.**

*DWR shall obtain coverage under the State Water Resources Control Board's National Pollutant Discharge Elimination System stormwater permit for general construction activity (Order 2009-0009-DWQ), including preparation and submittal of a project-specific SWPPP at the time the notice of intent to discharge is filed. The SWPPP shall identify and specify the following details:*

- ▶ *the use of an effective combination of robust erosion and sediment control BMPs for use on the project site at the time of construction that would reduce the potential for runoff and the release, mobilization, and exposure of pollutants from project-related construction sites (may include but would not be limited to temporary erosion control and soil stabilization measures, sedimentation ponds, check dams, and silt fences);*
- ▶ *the pollutants likely to be used during construction that could be present in stormwater runoff and those that could be present in the dredged sediments;*
- ▶ *spill prevention and contingency measures, including measures to prevent or clean up spills of hazardous waste and of hazardous materials used for equipment operation, and emergency procedures for responding to spills;*
- ▶ *the means of waste disposal;*
- ▶ *personnel training requirements and procedures that would be used to ensure that workers are aware of permit requirements and proper installation methods for BMPs specified in the SWPPP; and*
- ▶ *the appropriate personnel responsible for supervisory duties related to implementation of the SWPPP.*

*Where applicable, BMPs identified in the SWPPP shall be in place throughout all site work and construction activities. BMPs may include but would not be limited to the following measures:*

- ▶ *Implement temporary erosion and sediment control measures in disturbed areas to minimize discharge of sediment into nearby drainage conveyances, in compliance with state standards in effect at the time of construction. These measures may include silt fences, staked straw bales or wattles, sediment/silt basins and traps, geofabric, sandbag dikes, and temporary vegetation.*
- ▶ *Establish permanent vegetative cover to reduce erosion in areas disturbed by construction by slowing runoff velocities, trapping sediment, and enhancing filtration and transpiration.*
- ▶ *Use drainage swales, ditches, and earth dikes to control erosion and runoff by conveying surface runoff down sloping land, intercepting and diverting runoff to a watercourse or channel, preventing sheet flow over sloped surfaces, preventing runoff accumulation at the base of a grade, and avoiding flood damage along roadways used to transport sediment.*

*A copy of the approved SWPPP shall be available at all times on the construction site.*

### **Greenhouse Gas Emissions – Best Management Practices (BMPs)**

- ▶ *BMP 1: Evaluate project characteristics, including location, project work flow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines,*

*electric drive trains, or other high-efficiency technologies are appropriate and feasible for the project or specific elements of the project.*

- ▶ *BMP 2: Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines.*
- ▶ *BMP 3: Ensure that all feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, use alternative fuels, such as propane or solar, to power generators to the maximum extent feasible.*
- ▶ *BMP 7: Minimize idling time by requiring that equipment be shut down after 5 minutes when not in use (as required by the state airborne toxics control measure [Title 13, Section 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site, and provide a plan for enforcing this requirement.*
- ▶ *BMP 8: Maintain all construction equipment in proper working condition, and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an air quality control plan before construction begins.*
- ▶ *BMP 9: Implement a tire inflation program on the project site to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every 2 weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an air quality management plan before construction begins.*
- ▶ *BMP 10: Develop a project-specific ride share program to encourage the use of carpools, shuttle vans, transit passes, and/or secure bicycle parking for construction worker commutes.*
- ▶ *BMP 15: Evaluate the feasibility of restricting all material hauling on public roadways to off-peak traffic congestion hours. During construction scheduling and execution minimize, to the extent possible, uses of public roadways that would increase traffic congestion.*

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# INITIAL STUDY

## Bethany Reservoir Sediment Removal Project

- 1. Project Title** Bethany Reservoir Sediment Removal Project
- 2. Lead Agency Name and Address** California Department of Water Resources  
1416 Ninth Street  
Sacramento, CA 95814
- 3. Contact Person and Phone Number** Gerald Snow  
Chief, Regulatory Compliance Section  
California Department of Water Resources  
Division of Operations and Maintenance  
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Sacramento, CA 95814  
(916) 653-7213  
Fax: (916) 653-8250  
E-mail: gerald.snow@water.ca.gov
- 4. Project Location** The project area is located in northeastern Alameda County, approximately 10 miles northwest of the city of Tracy and 20 miles northeast of the city of Livermore.
- 5. Project Sponsor's Name** California Department of Water Resources
- 6. General Plan Designation** Parklands
- 7. Zoning** Parklands
- 8. Description of Project** The proposed project consists of removing accumulated sediment at the submerged intake structure at Bethany Dam and placing the sediment at the South Bay Pumping Plant disposal site.
- 9. Surrounding Land Uses and Setting** Surrounding land uses include open space, grazing, and wind farms. See the "Environmental Setting" discussion for each issue area in Chapter 3, "Environmental Checklist," for details regarding surrounding land uses.
- 10. Other Public Agencies Whose Approval Is Required** U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, California State Lands Commission, Central Valley Regional Water Quality Control Board, San Francisco Bay Area Air Quality Management District, State Office of Historic Preservation.

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## ACRONYMS AND OTHER ABBREVIATIONS

°F	degrees Fahrenheit
AB	Assembly Bill
ACSO	Alameda County Sheriff's Office
APE	Area of Potential Effects
ARB	California Air Resources Board
BAAQMD	Bay Area Air Quality Management District
Banks Pumping Plant	Harvey O. Banks Pumping Plant
BMP	best management practice
B.P.	Before Present
BUOW	western burrowing owl
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CGS	California Geological Survey
CH <sub>4</sub>	methane
CNEL	community noise equivalent level
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> e	carbon dioxide equivalent
Cortese List	Hazardous Waste and Substances Sites List
CRHR	California Register of Historical Resources
CWA	Clean Water Act
dB	decibel(s)
dBA	A-weighted decibel(s)
Delta	Sacramento–San Joaquin Delta
diesel PM	diesel particulate matter
DOC	California Department of Conservation
DSOD	California Division of Safety of Dams
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
ECAP	<i>East County Area Plan</i>
EPA	U.S. Environmental Protection Agency

ESA	federal Endangered Species Act
FE	listed as endangered under the federal Endangered Species Act
FEMA	Federal Emergency Management Agency
FP	fully protected under the California Fish and Game Code
FT	listed as threatened under the federal Endangered Species Act
FTA	Federal Transit Administration
GGERP	<i>Climate Action Plan Phase 1: Greenhouse Gas Emissions Reduction Plan</i>
GHG	greenhouse gas
HCP/NCCP	habitat conservation plan/natural community conservation plan
HFC	hydrofluorocarbons
I-	interstate
in/sec	inches per second
IS	initial study
L <sub>dn</sub>	day-night average noise level
L <sub>eq</sub>	average noise level
L <sub>max</sub>	maximum noise level
LOS	level of service
L <sub>v</sub>	velocity level in decibels
MLD	Most Likely Descendant
MND	mitigated negative declaration
MT	metric tons
MTC	Metropolitan Transportation Commission
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NO <sub>x</sub>	oxides of nitrogen
NO <sub>2</sub>	nitrogen dioxide
N <sub>2</sub> O	nitrous oxide
O&M Division	California Department of Water Resources, Division of Operations and Maintenance
PFC	perfluorocarbons
PM <sub>2.5</sub>	particulate matter less than 2.5 microns in diameter
PM <sub>10</sub>	particulate matter less than 10 microns in diameter
PPV	peak particle velocity
ROG	reactive organic gases
SBPP	South Bay Pumping Plant
SFBAAB	San Francisco Bay Area Air Basin
SF <sub>6</sub>	sulfur hexafluoride

SJKF	San Joaquin kit fox
SO <sub>2</sub>	sulfur dioxide
SRA	State Recreation Area
SSC	California species of special concern
ST	listed as threatened under the California Endangered Species Act
State Parks	California Department of Parks and Recreation
SWP	State Water Project
SWPPP	storm water pollution prevention plan
TAC	toxic air contaminant
TPH	total petroleum hydrocarbons
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VdB	vibration decibels
VMT	vehicle miles traveled
X	critical habitat under the federal Endangered Species Act

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# 1 INTRODUCTION

The California Department of Water Resources (DWR), Division of Operations and Maintenance (O&M Division), proposes maintenance actions to remove and dispose of accumulated sediment at the Bethany Forebay Dam submerged intake structure, approach apron, and dam outlet works to ensure safe and reliable operations. DWR's O&M Division is responsible for operating and maintaining the intake and outlet structures. The annual exercising of intake valves at the reservoir has not occurred in 5 years because of the accumulation of sediment. Sediment removal is necessary to prevent obstruction of or damage to the outlet works and to prevent environmental issues created when sediment-rich waters are allowed to flow into an earth-lined drainage ditch downstream of the dam. The Bethany Reservoir Sediment Removal Project (proposed project) involves sediment removal in the Bethany Forebay around the submerged intake structure and approach apron.

## 1.1 BACKGROUND

As described more fully in Chapter 2, "Project Description," implementing the proposed project would involve removing sediment at the submerged intake structure and placing the sediment at the South Bay Pumping Plant (SBPP) disposal site.

The California Environmental Quality Act (CEQA)<sup>1</sup> requires state and local governmental agencies to consider the potential adverse environmental effects of projects over which they have discretionary authority before taking action on those projects and prohibits public agencies from approving projects as proposed if there are feasible alternatives or feasible mitigation measures available that would substantially lessen a proposed project's significant environmental effects (Public Resources Code Section 21002). Under CEQA, there is one lead agency, which is the public agency with primary responsibility over approval of the proposed project. DWR is the lead agency for this proposed project and has responsibilities that it must fulfill before committing to certain courses of action. DWR considers CEQA review to be a prerequisite to approving and executing the proposed project.

## 1.2 PURPOSE OF DOCUMENT

An initial study (IS) is prepared by a lead agency to determine whether a project may have a significant effect on the environment (State CEQA Guidelines Section 15063[a]) and thus to determine which environmental document should ultimately be prepared. In accordance with State CEQA Guidelines Section 15070, a:

public agency shall prepare...a proposed negative declaration or mitigated negative declaration...when:  
(a) The Initial Study shows that there is no substantial evidence...that the project may have a significant impact on the environment, or (b) The Initial Study identifies potentially significant effects but revisions to the project plans or proposal are agreed to by the applicant and such revisions would reduce potentially significant effects to a less-than-significant level.

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<sup>1</sup> Public Resources Code Section 21000 et seq.; California Code of Regulations Title 14, Section 15000 et seq. (hereafter referred to as the State CEQA Guidelines).

Under this circumstance, the lead agency prepares a written statement describing its reasons for concluding that implementing the proposed project would not have a significant effect on the environment and therefore that preparation of an environmental impact report is not required.

As described in Chapter 3, “Environmental Checklist,” of this IS, implementing the proposed project might result in significant environmental impacts, but those impacts, if they would occur, would be reduced to a less-than-significant level by implementing mitigation measures that have been agreed to and would be implemented by DWR. Therefore, an IS and mitigated negative declaration (MND) are the appropriate documents for compliance with CEQA requirements. This IS and the proposed MND conform to these requirements and to the content requirements of Section 15071 of the State CEQA Guidelines.

The primary purpose of this document is to identify for decision makers and the public the environmental consequences of implementing the proposed project. This disclosure document is being made available to the public for a 30-day public review period: from May 28, 2014 through June 27, 2014.

Written comments should be addressed to:

Gerald Snow  
Chief, Regulatory Compliance Section  
California Department of Water Resources  
Division of Operations and Maintenance  
1416 Ninth Street, Sixth Floor  
Sacramento, CA 95814  
Fax: (916) 653-8250  
E-mail: gerald.snow@water.ca.gov

After comments are received from the public and reviewing agencies, DWR may (1) adopt the MND and approve the proposed project, (2) undertake additional environmental studies, or (3) abandon the project. If the project is approved, DWR could proceed to implement all or part of the project.

A copy of this IS and the proposed MND are available for public review at the following locations:

DWR’s Web site: <http://www.woandm.water.ca.gov/>

California Department of Water Resources  
Division of Operations and Maintenance  
1416 Ninth Street, Sixth Floor  
Sacramento, CA 95814

### **1.3 DOCUMENT ORGANIZATION**

This IS is organized as follows:

- ▶ **Chapter 1, “Introduction,”** provides an introduction and background to the environmental review process and the purpose of the project. It also describes the purpose and organization of this document.

- ▶ **Chapter 2, “Project Description,”** describes the purpose of the project and provides a detailed description of the project.
- ▶ **Chapter 3, “Environmental Checklist,”** presents an analysis of environmental issues identified in the CEQA Environmental Checklist and states whether implementing the project would result in no impact, a less-than-significant impact, a less-than-significant impact with mitigation incorporated, a potentially significant impact, or a significant and unavoidable impact.
- ▶ **Chapter 4, “References,”** identifies the references used in preparation of this IS.
- ▶ **Chapter 5, “Report Preparers,”** identifies the individuals who prepared this document.
- ▶ **Appendix A, “Air Quality and Greenhouse Gas Emission Calculations,”** presents calculations for emissions that would be generated during project activities.

A guide to acronyms and other abbreviations used in this document is presented after the table of contents.

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## 2 PROJECT DESCRIPTION

### 2.1 PROJECT LOCATION AND GENERAL DESCRIPTION

#### 2.1.1 PROJECT LOCATION

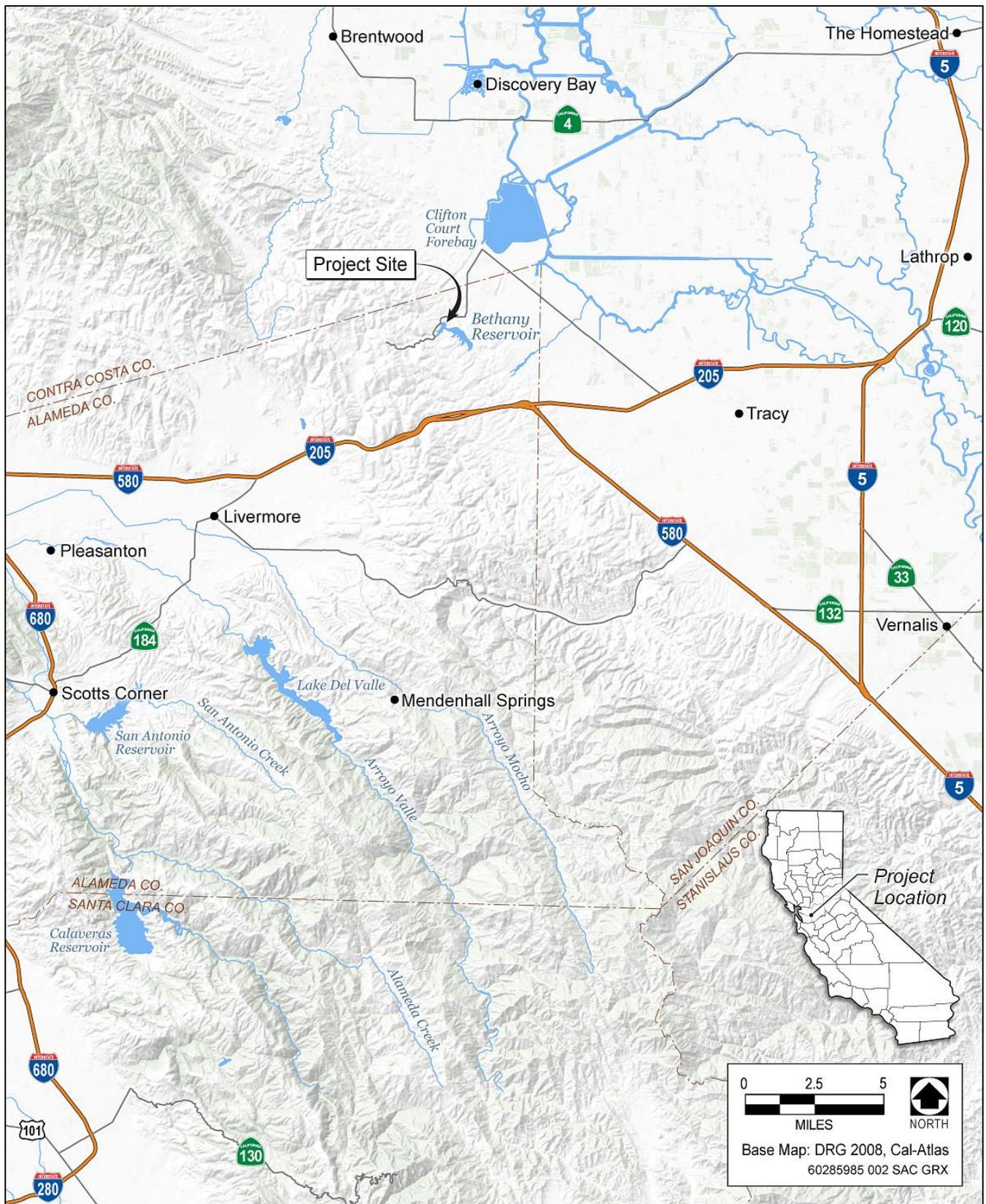
The Bethany Dams and Reservoir (State Dam No. 1-045) are located in Alameda County, California, approximately 10 miles northwest of the city of Tracy, 20 miles northeast of Livermore, and 7 miles off of Interstate 580 (I-580) at the Grant Line Road exit (Exhibit 2-1). The survey area, consisting of the project site and a surrounding 250-foot buffer, is located within the Bethany Reservoir State Recreation Area (SRA) and can be accessed via the park's entrance off Christensen Road (Exhibit 2-2). The proposed sediment removal activities would occur at the north end of Bethany Forebay, a smaller water body separated from the larger reservoir by a wide excavated channel, and around the forebay intake and approach channel. Project site activities would use paved roads, parking areas, and a boat ramp facility at the Bethany Reservoir SRA for maintenance equipment staging and material storage (Exhibit 2-3).

#### 2.1.2 PROJECT BACKGROUND AND SUMMARY OF ACTIVITIES

Bethany Dams and Reservoir are part of the California State Water Project (SWP), which was created to store and supply water for the San Francisco Bay Area, the San Joaquin Valley, the central coast, and southern California. The reservoir is impounded by five homogeneous earthfill dams (Bethany Forebay Dam and Dams 1–4). Bethany Reservoir serves as a forebay for the South Bay Pumping Plant (SBPP), an afterbay for the Harvey O. Banks Pumping Plant (Banks Pumping Plant) in the Sacramento–San Joaquin Delta (Delta), and as the northernmost conveyance section of the California Aqueduct.

Currently, water is conveyed from Clifton Court Forebay and the Banks Pumping Plant to Bethany Forebay via the California Aqueduct. From the Bethany Reservoir, water continues to flow into the California Aqueduct by gravity and is pumped into the South Bay Aqueduct via the SBPP. Normal reservoir operating elevations typically range between 239 and 244 feet above mean sea level. The maximum operating surface elevation of the reservoir is 244.5 feet. Maximum and minimum operating storage are approximately 4,200 and 4,800 acre-feet, respectively.

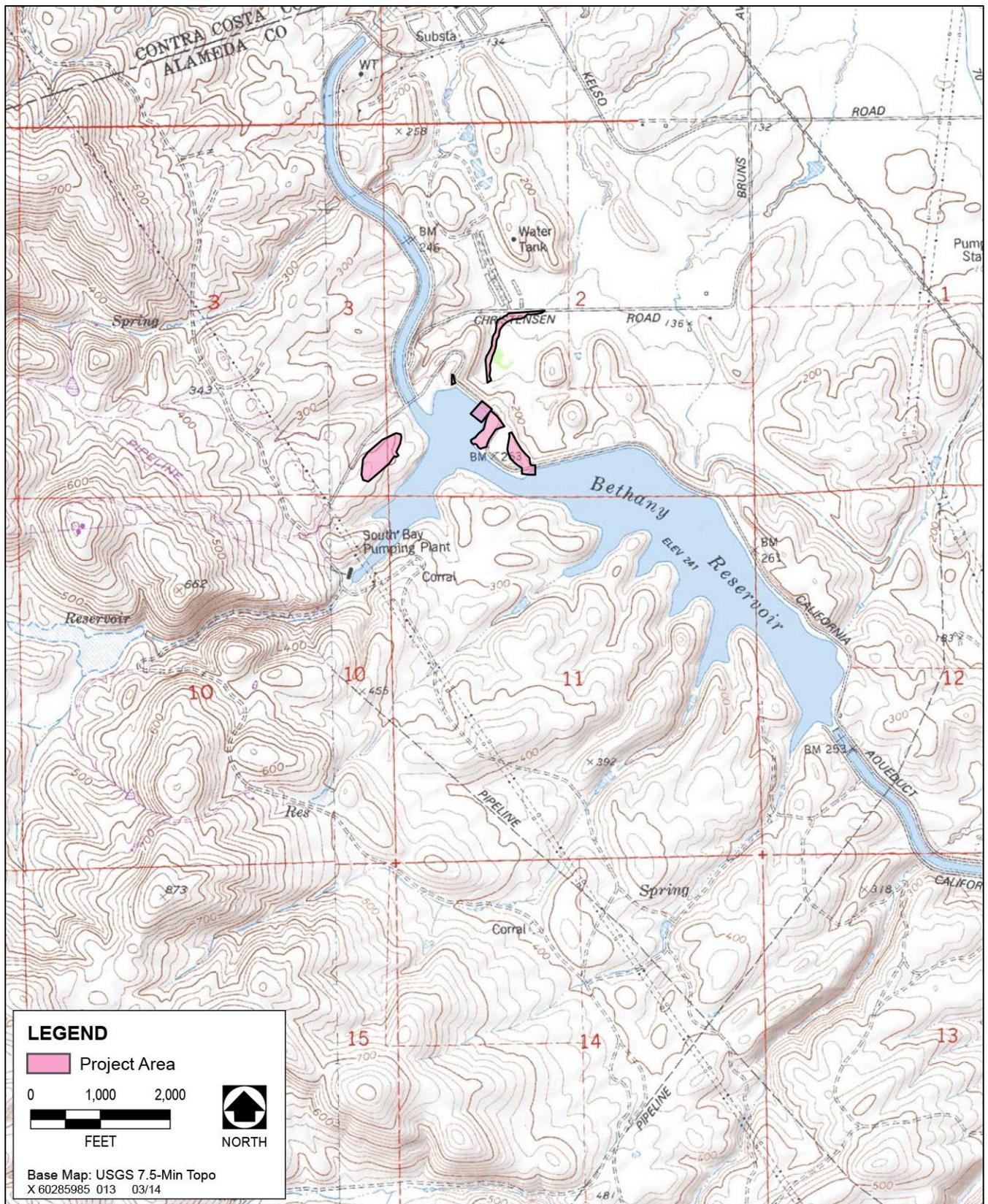
For dewatering purposes, inlet-outlet works were constructed on the north abutment of Bethany Forebay Dam. The outlet works consist of an intake approach channel apron, an intake structure with a trash rack and stop log guide, inlet-outlet valves and conduit, and a horseshoe-shaped concrete access tunnel used for inspections and maintenance. The intake is located approximately 53.5 feet below the reservoir's maximum operating surface elevation of 244.5 feet. Flows are conveyed from the intake via a 60-inch-diameter reinforced, cast-in-place pressure conduit to a valve vault and 48-inch-diameter butterfly valve that provides control for dewatering. Downstream of the tunnel's portal structure, the 48-inch-diameter line reaches a concrete-encased manifold, near the toe of the dam, that formerly provided connection to the nearby abandoned canal and pumps. A 24-inch-diameter outlet bypass line conveys flows from the manifold to the energy dissipater structure near the toe of the dam. Beyond this structure, flows enter the Forebay Outlet Structure (i.e., earth-lined ditch).



Source: Data compiled by AECOM in 2013

**Exhibit 2-1**

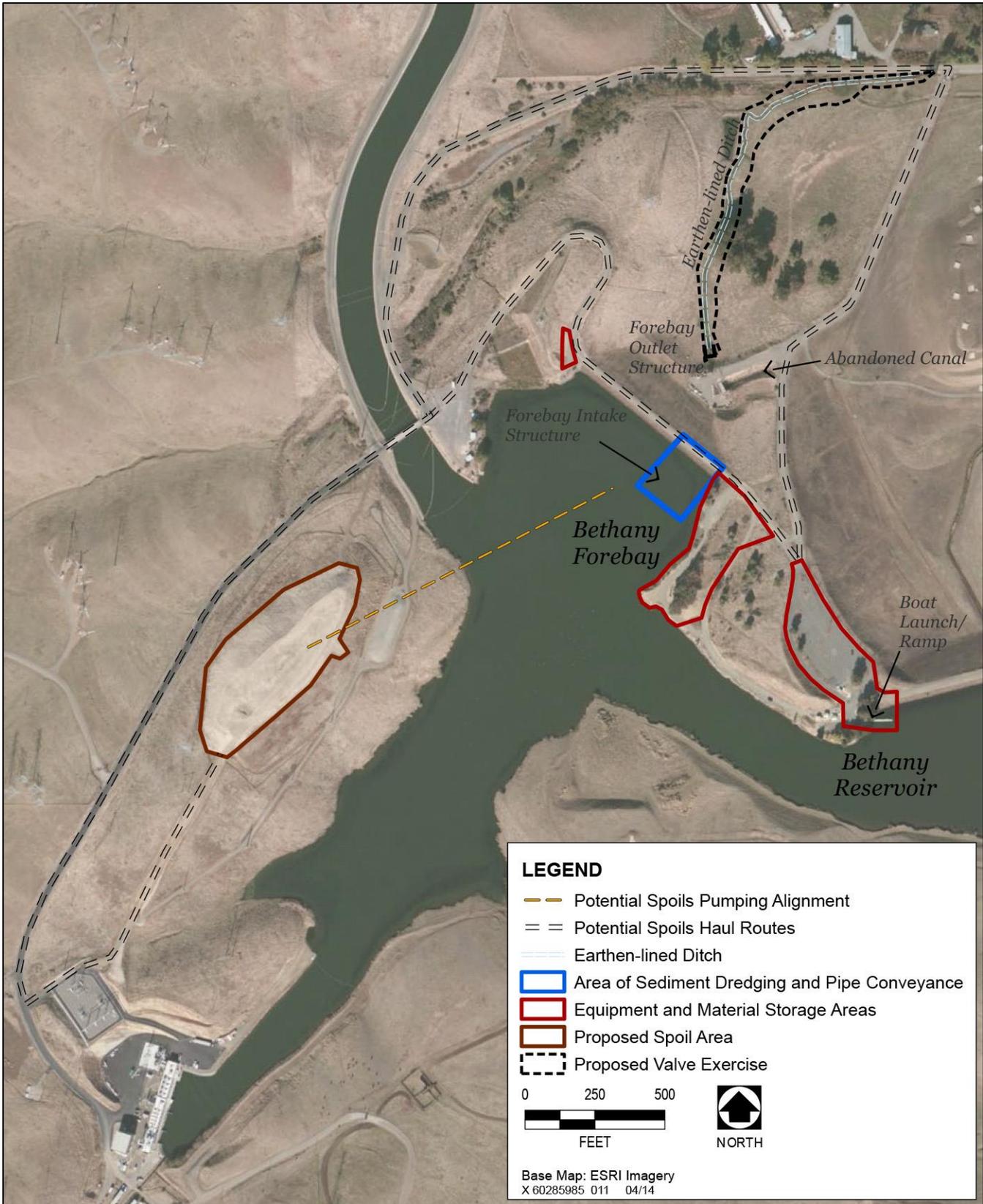
**Regional Vicinity Map**



Source: Data provided by DWR and compiled by AECOM in 2013

**Exhibit 2-2**

**Project Location Map**



Source: Data provided by DWR and compiled by AECOM in 2013

**Exhibit 2-3**

**Location of Proposed Project Activities**

Annual exercising of the 24-inch gate valve and 48-inch butterfly valve on the outlet structure last occurred in 2006 when sediment had accumulated on the intake structure and approach apron. In September 2011, an underwater inspection determined that the intake structure and approach apron were buried under approximately 4.5 to 5 feet of silt that is in a generally loose state that would create significant turbidity if disturbed. Sediment removal via hydraulic dredging would allow the annual exercising of the outlet work valves and bring Bethany Reservoir in compliance with California Division of Safety of Dams (DSOD) requirements.

The proposed project involves removing the sediment and silt from the submerged intake structure and approach apron using hydraulic dredging and placing it at the SBPP disposal site located west of the reservoir (DWR 2013). DWR would conduct a valve exercise test on the outlet works after hydraulic dredging is complete to ensure that the outlet works valves will operate in an emergency and provide a controlled release of water and controlled drawdown of the reservoir. Testing of the outlet works valves would be conducted in late summer or fall on a yearly basis for up to 5 years, as required by DSOD.

### **2.1.3 PROJECT PURPOSE**

The purpose of the proposed project is to remove sediment from around the Bethany Forebay Dam intake structure and approach apron to ensure safe and reliable operations. Sediment removal is required both to ensure that the O&M Division can safely reduce reservoir levels under emergency conditions and to allow for annual exercising of valves to ensure mechanical operability. The O&M Division is concerned that operating the outlet works under existing conditions could obstruct and/or damage the outlet works and could create adverse environmental issues by allowing sediment-rich waters to flow into the earth-lined drainage ditch downstream of the dam.

## **2.2 PROPOSED PROJECT**

The proposed project maintenance activities include removing accumulated sediment at the submerged intake structure and approach apron at the Bethany Forebay Dam outlet works. To minimize turbidity impacts on water quality and avoid damage to the intake structure, a boat-mounted or shore-based hydraulic or “suction” dredging would be used as the method of sediment removal. The boat ramp located at the Bethany Reservoir SRA would be used for boat access. Equipment and material would be stored in three areas around Bethany Forebay Dam (Exhibit 2-3).

The hydraulic dredging, including equipment staging, would be completed within approximately 5 days. Removal of sediment surrounding the intake structure and approach channel is anticipated to take 1–3 working days. Although specific dates when the work would occur have not been selected and would depend on permit approval, work is anticipated to occur in summer/fall 2014.

Before dredging operations would begin, an underwater turbidity curtain would be installed to minimize the mixing of reservoir water inside and outside of the dredging footprint and to provide a target area for the dredging operation. A boat-mounted or shore-based suction dredge would then be lowered into the footprint defined by the turbidity curtain. Divers might verify that the suction dredge hose is properly located before activation and that the targeted sediment is removed. Suction dredging commonly generates 10 times the volume of the in-situ sediment because water is also entrained; thus, this method would likely yield an estimated dredged volume (sediment plus water) of 1,430 cubic yards.

The contractor might elect to pump the dredged material into a series of staged tanks (i.e., Baker tanks) to separate silt and water before transporting dredged sediment to the disposal site. If decanting occurs before transportation, an estimated 0.8 acre-feet of water filtered through cloth using Baker tanks would be returned to Bethany Reservoir. After a sufficient amount of water is removed, the sediment would be pumped via hoses and small tanks, or transported on trucks via Christensen Road or the abutment road along the Bethany Forebay Dam crest (Exhibit 2-3), to the proposed spoil area approximately 2 miles away. The contractor might elect to discharge water back into Bethany Reservoir if the water is sufficiently clean of sediment pursuant to applicable National Pollutant Discharge Elimination System (NPDES) and waste discharge requirements from the Central Valley Regional Water Quality Control Board, or other applicable permits as obtained. Materials such as pumps, hoses, and holding tanks would be stored in the equipment and material storage areas.

The spoil area that would be used for the storage and drying of the dredged material would be configured in advance of dredging operations. The 1-acre spoils disposal area was previously used for the disposal of dredge spoils when the South Bay Pumping Plant intake was dredged in 2009. Excavators and front end loaders would prepare the disposal site by creating a closed depression measuring approximately 100 feet long by 25 feet wide and 3 feet deep. The closed depression would have 1:1 side slopes. The material excavated to create the depression would be used to create compacted berms surrounding the closed depression. The compacted berms would serve as a containment barrier for the dredged sediments. Additional containment measures (e.g., silt fencing, sand bags) for the placement and containment of dredged materials may also be used. The configuration would be planned to minimize exposure of silt that was previously disposed of at the spoil area and to maximize storage and evaporation. Decanted water at the reservoir staging areas or the disposal site might also be used for dust control or lost by simply spraying it over the disposal area via sprinklers.

After sediment removal and placement is completed and the sediment has sufficiently dried, the soils that were excavated to create the spoil site would be used to cover the sediment. The site would be graded so as to restore preproject contours. Appropriate hydroseeding and/or erosion control measures would be implemented.

After removal of silt at the intake structure, DWR proposes to exercise both the 24-inch gate valve and 48-inch butterfly valve that comprise the dam's outlet works. The 48-inch butterfly outlet works valve is located within a valve vault beneath the right abutment of the dam, while the 24-inch gate valve is located farther downstream in a valve vault near the toe of the dam. The maximum discharge capacity of the outlet works is 121 cfs and is controlled by the 24-inch gate valve. The butterfly valve is currently in the closed position (albeit it reportedly leaks slightly), while the 24-inch gate valve is cracked open (1-2 inches) to allow the minor leakage from the butterfly valve to exit the pipe and not build-up and exit through the existing air release valve. The valve exercise would be staged so as to minimize and control the quantity of water released while still allowing for some flushing of the outlet works to minimize the potential for silt to foul the valves upon closing.

The total duration of the water release from Bethany Reservoir during the outlet works valve exercise is about 90 seconds. The outlet works valve exercise would result in a maximum 20 cfs discharge throughout the duration of valve testing. The testing of the outlet works would yield approximately 1,800 cubic feet of water (or 0.041 acre-feet of water) released from Bethany Reservoir. The discharged water may contain up to 3.8 cubic yards of silt and organics that has been trapped in the outlet works pipes that would be flushed into the receiving earth-lined ditch.

The dimensions of the receiving earth-lined ditch located below the outlet works and Christensen Road is approximately 1,000 feet long by 10 feet wide and 1 foot deep. At top-of-bank, the capacity of the channel is approximately 10,000 cubic feet of water, or 0.23 acre feet. The calculation of channel capacity presented is a conservative estimate because it does not take into account meanders and deeper pools which exist within the channel. The exercise of the outlet valve is anticipated to release enough water to fill the channel to 17% of its capacity. The exercise will take place in late summer or fall when there is little to no flow in the receiving earth-lined ditch. As a result, the exercise is not anticipated to exceed the capacity of the channel. After construction of the proposed project, there would be occasional maintenance activities. During these maintenance activities, workers would drive to the project site to inspect and maintain the intake and outlet structures with hand tools. The frequency of these activities would not exceed that of the existing maintenance activities. Regular exercising of the 48-inch butterfly valve on the outlet structure would resume on an annual basis for 5 years.

## 2.3 REGULATORY REQUIREMENTS, PERMITS, AND APPROVALS

As the lead agency, DWR has the principal responsibility for approving and carrying out the proposed project and for ensuring that the requirements of CEQA and all other applicable regulations are met. The following permitting agencies also may have permitting approval or review authority over portions of the project:

- ▶ **U.S. Army Corps of Engineers (USACE)**—authorization to modify navigable waters under Section 10 of the Rivers and Harbors Act of 1899; authorization for fill of waters of the United States under Section 404 of the Clean Water Act (CWA);
- ▶ **U.S. Fish and Wildlife Service (USFWS)**—consultation through the USACE under Section 7 of the federal Endangered Species Act;
- ▶ **California Department of Fish and Wildlife (CDFW)**—streambed alteration agreement under Section 1602 of the California Fish and Game Code and consultation under the California Endangered Species Act;
- ▶ **California Department of Water Resources, Division of Safety of Dams**—dam alteration permit to modify the Bethany Reservoir embankment;
- ▶ **California State Lands Commission**—notification under the Memorandum of Understanding dated October 19, 1979 of use of state lands held in the public trust;
- ▶ **Central Valley Regional Water Quality Control Board**—water quality certification under Section 401 of the CWA, National Pollutant Discharge Elimination System permit (for construction) under Section 402 of the CWA; and
- ▶ **Bay Area Air Quality Management District (BAAQMD)**—authority-to-construct permits, if needed, depending on the location of sources of construction materials.

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### 3 ENVIRONMENTAL CHECKLIST

#### 3.1 AESTHETICS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. Aesthetics. Would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### 3.1.1 ENVIRONMENTAL SETTING

The proposed project is located in the Bethany Reservoir SRA in the northeastern area of unincorporated Alameda County. Open, rolling hills covered with grasslands and wind turbines dominate the landscape around the SRA. Power generation and water management facilities are also located north and northeast of the SRA. I-580, located approximately 2.25 miles south of the southernmost tip of Bethany Reservoir, is an Officially Designated Scenic Highway (Caltrans 2013).

#### 3.1.2 DISCUSSION

##### a) Have a substantial adverse effect on a scenic vista?

*Less-than-Significant Impact.* For purposes of this evaluation, a scenic vista is defined as a distant public view along or through an opening or corridor that is recognized and valued for its scenic quality. The *East County Area Plan* (ECAP) identifies sensitive viewsheds in the plan area (Alameda County 2002:32). The Bethany Reservoir SRA is not located within the protected viewsheds identified by the ECAP. The Bethany Reservoir SRA management and development plan states that the SRA has vista points from which visitors can view the Sacramento–San Joaquin Delta and the northern San Joaquin Valley (State Parks 1973:8). The project site is located in the Bethany Reservoir SRA, and the proposed project involves removing sediment from the submerged intake structure and approach apron using hydraulic dredging and placing the sediment at the SBPP disposal site. Project activities, including equipment staging, sediment removal, and preparing and restoring the SBPP disposal site, would be completed within approximately 5 days.

Impacts of the proposed project on vista points would result from the presence of equipment in the project area. All equipment would be removed following completion of project activities. Because project activities would be completed within approximately 5 days and the landscape would look substantially similar to preproject

conditions, impacts on the vistas would be temporary and would not be significant. Therefore, this impact would be less than significant.

**b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?**

*No Impact.* I-580, located approximately 2.25 miles south of the southernmost tip of Bethany Reservoir, is an Officially Designated Scenic Highway (Caltrans 2013). The project site is not visible from I-580. In addition, no trees or outcroppings would be removed during project activities. Therefore, no impacts would occur on scenic resources as a result of implementing the proposed project.

**c) Substantially degrade the existing visual character or quality of the site and its surroundings?**

*Less-than-Significant Impact.* The proposed project would involve removing sediment from the submerged intake structure and approach apron using hydraulic dredging and placing the sediment at the SBPP disposal site. During project activities, the presence of heavy equipment would degrade the visual character of the site. However, these impacts would be temporary and would not be significant. Project construction activities would be completed within approximately 5 days. Following completion of project activities, the visual character and quality of the site and its surroundings would be essentially the same as they were before project activities. Therefore, this impact would be less than significant.

**d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?**

*No Impact.* The proposed project involves removing sediment from the submerged intake structure and approach apron using hydraulic dredging and placing the sediment at the SBPP disposal site. It would not include any lighting features or physical changes that could produce substantial light or glare. Therefore, implementing the proposed project would have no impact related to light or glare.

## 3.2 AGRICULTURAL AND FOREST RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<p>II. Agricultural and Forest Resources.</p> <p>In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997, as updated) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.</p> <p>Would the project:</p>				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 3.2.1 ENVIRONMENTAL SETTING

The project site is located in the Bethany Reservoir SRA. The SRA is used for recreational activities; no active agricultural land uses exist in the recreation area or adjacent areas. Additional information about land uses adjacent to the Bethany Reservoir is provided in Section 3.10, "Land Use and Planning."

The California Department of Conservation's (DOC's) Important Farmland classifications—Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance—recognize the land's suitability for agricultural production by considering physical and chemical characteristics of the soil, such as soil temperature range, depth to the groundwater table, flooding potential, rock fragment content, and rooting depth. The classifications also consider location, growing season, and moisture available to sustain high-yield crops. DOC defines Grazing Land as land with existing vegetation that is suitable for grazing (DOC 2011). Together, Important Farmland and Grazing Land are defined by DOC as "Agricultural Land" (Public Resources Code Sections 21060.1 and 21095).

Appendix G of the State CEQA Guidelines states that conversion of Prime Farmland, Farmland of Statewide Importance, or Unique Farmland to nonagricultural use establishes a significant environmental impact. According to the Alameda County Important Farmland map, published by DOC's Division of Land Resource Protection, the lands adjacent to the Bethany Reservoir are designated as Grazing Land. The guidelines do not consider conversion of Grazing Land to be a significant impact.

Under the California Land Conservation Act of 1965, also known as the Williamson Act, local governments can enter into contracts with private property owners to protect land (in agricultural preserves) for agricultural and open space purposes. No portion of the lands adjacent to the Bethany Reservoir is held under a Williamson Act contract. Property under active Williamson Act contracts border the Bethany Reservoir SRA on the northwest, west, and south (DOC 2012).

Grazing does occur immediately adjacent to the project site; however, no DOC recognized agricultural land under the Williamson Act exists within 2 miles.

### **3.2.2 DISCUSSION**

#### **a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?**

*No Impact.* Implementing the proposed project would not convert Important Farmland to nonagricultural uses. The project site is located in the Bethany Reservoir SRA, which has no agricultural uses. As discussed previously, lands adjacent to the Bethany Reservoir are designated as Grazing Land, and DOC does not consider Grazing Land to be Important Farmland. The proposed project involves removing sediment from the submerged intake structure and approach apron using hydraulic dredging and placing it at the SBPP disposal site. After completion of the proposed project, the SBPP disposal site would be restored to preproject contours and appropriate hydroseeding and/or erosion control measures would be implemented. Therefore, implementing the proposed project would not directly or indirectly convert Important Farmland to nonagricultural uses. No impact would occur.

#### **b) Conflict with existing zoning for agricultural use or a Williamson Act contract?**

*No Impact.* Lands adjacent to the Bethany Reservoir are not held under Williamson Act contracts (DOC 2012). The Bethany Reservoir SRA is zoned by the county as Parkland. Therefore, implementing the proposed project would not conflict with existing zoning for agricultural uses or conflict with a Williamson Act contract. No impact would occur.

**c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?**

*No Impact.* The project site is not zoned as forestland, timberland, or a Timberland Production Zone. Therefore, implementing the proposed project would not conflict with existing zoning for or cause rezoning of forestry resources. No impact would occur.

**d) Result in the loss of forest land or conversion of forest land to non-forest use?**

*No Impact.* Section 12220(g) of the California Public Resources Code defines “forestland” as land that can support 10 percent native tree cover and woodland vegetation of any species (including hardwoods) under natural conditions and that allows for management of one or more forest resources (timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation) and other public benefits. The project site does not contain forestland as defined by Section 12220(g). Therefore, implementing the proposed project would not result in the loss of forestland or conversion of forestland to nonforest uses. No impact would occur.

**e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?**

*No Impact.* See responses to items (a) and (d) above. Implementing the proposed project would not result in other changes in the physical environment that could directly or indirectly result in the conversion of agricultural land, including Important Farmland, to nonagricultural uses or result in the conversion of forestland to nonforest uses. No impact would occur.

### 3.3 AIR QUALITY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<p>III. Air Quality.</p> <p>Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the following determinations.</p> <p>Would the project:</p>				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### 3.3.1 ENVIRONMENTAL SETTING

The project site is located in Alameda County, which is within the San Francisco Bay Area Air Basin (SFBAAB). The SFBAAB comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties; the southern portion of Sonoma County; and the southwestern portion of Solano County.

The SFBAAB is characterized by complex terrain consisting of coastal mountain ranges, inland valleys, and bays that distort normal wind flow patterns. The Coast Ranges, which trend northwest along the western side of the SFBAAB, have two major open areas, at the Golden Gate Bridge and the Carquinez Strait, that allow air to flow into and out of the SFBAAB and the Central Valley. During summer, temperature inversions can cause pollutant concentrations to build to unhealthy levels because of the lack of dispersion. During summer, winds flowing from the northwest are drawn inland through the Bay at the Golden Gate Bridge and over the lower portions of the San Francisco Peninsula. In winter, the Pacific high-pressure cell weakens and shifts southward, resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms. Weak inversions coupled with moderate winds result in a low air pollution potential. The Pacific high-pressure cell periodically becomes dominant, bringing strong inversions, light winds, and high pollution potential (BAAQMD 2012).

The federal Clean Air Act and the California Clean Air Act required the U.S. Environmental Protection Agency (EPA) and California Air Resources Board (ARB) to establish health-based air quality standards at the federal and

state levels. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) were established for the following criteria pollutants: carbon monoxide (CO), ozone, sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), particulate matter less than 10 microns in diameter (PM<sub>10</sub>), particulate matter less than 2.5 microns in diameter (PM<sub>2.5</sub>), and lead. These standards have been established with a margin of safety to protect the public's health. Both EPA and ARB designate areas of the state as attainment, nonattainment, maintenance, or unclassified for the various pollutant standards according to the federal Clean Air Act and the California Clean Air Act, respectively.

An "attainment" designation for an area signifies that pollutant concentrations did not violate the NAAQS or CAAQS for that pollutant in that area. A "nonattainment" designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as identified in the criteria. A "maintenance" designation indicates that the area was previously nonattainment and is currently attainment for the applicable pollutant; the area must demonstrate continued attainment for a specified number of years before it can be redesignated as an attainment area. An "unclassified" designation signifies that data do not support either an attainment or a nonattainment status.

The SFBAAB is designated as a nonattainment area for the state and federal 8-hour ozone standards, the state PM<sub>10</sub> standard, and the state and national PM<sub>2.5</sub> standards. It is considered an attainment area or unclassified for the other criteria pollutants.

The BAAQMD is the agency responsible for protecting public health and welfare through the administration of federal and state air quality laws and policies in the SFBAAB. In June 2010, BAAQMD adopted its updated CEQA Air Quality Guidelines, which included new thresholds of significance for construction-related and operational emissions of criteria air pollutants and precursors. On March 5, 2012, the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds of significance contained in the air quality guidelines. The court issued a writ of mandate that ordered the BAAQMD to set aside the thresholds and cease dissemination of them until the BAAQMD had complied with CEQA (BAAQMD 2012).

In August 2013, the appellate court reversed the superior court decision. Because the appellate court's decision is being appealed to the California Supreme Court, the BAAQMD recommends that lead agencies determine appropriate thresholds of significance. Lead agencies may continue to rely on the thresholds of significance in the BAAQMD's 1999 CEQA Guidelines. The BAAQMD issued new guidelines in May 2012 that include assistance in calculating air pollution emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures, but they do not include thresholds of significance.

### **3.3.2 DISCUSSION**

#### **a) Conflict with or obstruct implementation of the applicable air quality plan?**

*Less-than-Significant Impact.* Air quality plans describe air pollution control strategies to be implemented by an air district, city, county, or region. The primary purpose of an air quality plan is to maintain and/or achieve attainment of a CAAQS or NAAQS.

BAAQMD prepares plans to attain ambient air quality standards in the SFBAAB, including ozone attainment plans for the national ozone standard and clean air plans for the California standard, in coordination with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments. On September 15, 2010, the BAAQMD Board of Directors adopted the final Bay Area 2010 Clean Air Plan, an update to the 2005 Bay Area Ozone Strategy. The 2010 plan describes current conditions, reviews the SFBAAB's progress in reducing ozone levels to attain the state 1-hour and 8-hour ozone standards, describes how the SFBAAB's proposed control strategy fulfills the California Clean Air Act's planning requirements for the state 1-hour ozone standard, and describes its mitigation requirements for transport of ozone and ozone precursors to neighboring air basins. The control strategies include stationary-source control measures to be implemented through BAAQMD rules and regulations; mobile-source control measures to be implemented through incentive programs and other activities; and transportation control measures to be implemented through programs operated in cooperation with the MTC, local governments, and transit agencies.

Two criteria are used to determine whether implementing the proposed project would conflict with or obstruct implementation of the air quality plan. The first criterion is whether the project would exceed the estimated air basin emissions used as the basis of the air quality plans. The emission estimates are based, in part, on population and vehicle miles traveled (VMT) projections developed by the MTC. The second criterion is whether implementing the project would increase the frequency or severity of existing air quality violations, contribute to new violations, or delay the attainment of air quality standards.

The proposed project involves primarily construction activities. Thus, as discussed in more detail in item (b), construction activities would not violate any air quality standard or contribute substantially to an existing or projected air quality violation. After construction of the proposed project, long-term operational emissions would be generated from occasional maintenance activities. During these maintenance activities, workers would drive to the project site to inspect and maintain the intake and outlet structures. The frequency of these activities would not exceed that of the existing maintenance activities. Therefore, implementing the proposed project would not result in trips or activities for operations and maintenance beyond existing conditions.

Because implementing the project would not substantially increase VMT and would not exceed the thresholds of significance, it would not conflict with or obstruct the implementation of the applicable air quality plan. Therefore, the impact would be less than significant.

**b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?**

**Construction Emissions**

*Less than Significant with Mitigation Incorporated.* Construction emissions are described as emissions that are short term or temporary in duration but that have the potential to represent a significant impact with respect to air quality. Construction of the proposed project would result in the temporary generation of reactive organic gases (ROG), oxides of nitrogen (NO<sub>x</sub>), PM<sub>10</sub>, and PM<sub>2.5</sub> emissions from construction work associated with dredging and hauling of dredged material. Construction-related emissions of the ozone precursors ROG and NO<sub>x</sub> are associated primarily with mobile vehicle and equipment exhaust. Fugitive dust emissions (PM<sub>10</sub> and PM<sub>2.5</sub>) are associated primarily with site preparation and vary as a function of such parameters as soil silt content, soil moisture, wind speed, acreage of disturbance area, and VMT by construction vehicles on- and off-site.

Construction of the proposed project is expected to begin in fall 2014 and extend approximately 5 days. Construction-related emissions for the proposed project were estimated using emission factors from ARB's off-road and on-road emissions inventory models, OFFROAD (ARB 2012a) and EMFAC 2011 (ARB 2012b), respectively. Modeling of emissions related to construction worker commutes, haul truck trips, and the use of off-road equipment were based on project-specific data provided by DWR. The proposed project's construction emissions were modeled based on a worst-case scenario representing an intensive day of construction to conservatively estimate the maximum daily emissions.

The estimated construction workforce is 14 workers per day, resulting in a total of 28 one-way commute trips per day. Off-road equipment, including dredges and pumps, would operate up to 4 hours per day. In addition to off-road equipment, on-road heavy-duty vehicles would be required to haul materials to the project site. Disposal of the dredged material at the spoil site would require approximately 116 total truck trips. The total distance for the haul route is approximately 2 miles. Table 3.3-1 presents the construction emissions associated with off-road equipment and on-road motor vehicle use for the proposed project (see also Appendix A).

Construction Activity	Estimated Emissions (pounds per day)				
	ROG	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Mobilization/demobilization	0.37	8.58	2.91	0.31	0.22
Dredging	2.36	21.05	10.99	0.97	0.85
Maximum daily emissions	2.36	21.05	10.99	0.97	0.85
BAAQMD proposed thresholds of significance <sup>1</sup>	54	54	—	82	54

Notes: BAAQMD = Bay Area Air Quality Management District; CO = carbon monoxide; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter less than 10 microns in diameter; PM<sub>10</sub> = particulate matter less than 2.5 microns in diameter; ROG = reactive organic gases.

<sup>1</sup> BAAQMD's proposed thresholds of significance are shown only for informational purposes. BAAQMD proposed thresholds of significance are presented in units of average pounds per day, whereas the proposed project's emissions are shown as maximum daily emissions. The proposed project's emissions are conservatively estimated to compare with the BAAQMD proposed thresholds of significance. It is not the intent of this analysis to use the proposed numeric thresholds to evaluate the proposed project's construction emissions.

Source: Modeled by AECOM in 2013

As mentioned earlier, BAAQMD does not have established numeric thresholds for criteria air pollutants. According to the 1999 BAAQMD CEQA Guidelines, the determination of impact significance with respect to construction emissions should be based on a consideration of the control measures to be implemented. If feasible control measures are implemented, then air pollutant emissions from impacts related to construction activities would be less than significant. If all the appropriate measures are not implemented, then construction impacts would be significant (unless the lead agency provides a detailed explanation as to why a specific measure is unnecessary or infeasible). Because BAAQMD-recommended control measures have not been included in the proposed project, construction-related emissions for the proposed project would be significant. To reduce construction-related emissions to a less-than-significant level, DWR shall implement the following mitigation measure:

**Mitigation Measure AQ-1: Reduce Construction-Related Emissions from Off-Road Equipment and Heavy-Duty Vehicles.**

*The following measures recommended by the BAAQMD shall be implemented to reduce construction-related emissions associated with off-road equipment and heavy-duty vehicles (BAAQMD 2012):*

- ▶ *All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day, as necessary to control fugitive dust.*
- ▶ *All haul trucks transporting soil, sand, or other loose material off-site shall be covered.*
- ▶ *All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.*
- ▶ *All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.*
- ▶ *All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.*
- ▶ *All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.*
- ▶ *A publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints shall be posted at the construction site. The person identified as the contact shall respond and take corrective action within 48 hours. The air district's phone number shall also be visible to ensure compliance with applicable regulations.*
- ▶ *Idling time of diesel-powered construction equipment shall be no more than 5 minutes.*
- ▶ *All contractors shall be required to use equipment that meets ARB's most recent certification standard for off-road heavy-duty diesel engines.*

**Timing:** *Before and during construction as appropriate*

**Responsibility:** *DWR*

According to the BAAQMD, implementation of these control measures is sufficient to reduce construction-related emissions to a less-than-significant level. In addition, for informational purposes, Table 3.3-1 also includes the BAAQMD proposed construction-related thresholds of significance. Although these thresholds are not applicable at the time of this analysis, they are shown for informational purposes and in case BAAQMD's new CEQA Guidelines are upheld before the proposed project is completed. As shown in Table 3.3-1, the proposed project's construction-related emissions would not exceed any of the proposed BAAQMD thresholds of significance. With the implementation of BAAQMD-recommended measures, the proposed project's construction activities would not violate any air quality standard or contribute substantially to an existing or projected air quality violation; therefore, this impact would be reduced to less than significant.

## Operation-Related Emissions

*Less-than-Significant Impact.* Maintenance-related traffic associated with DWR vehicles is not expected to change from existing conditions with implementation of the proposed project. Therefore, the proposed project is not anticipated to generate a net increase in vehicle trips and would not generate any additional activities related to maintenance or operations that would exceed existing levels. This impact would be less than significant.

**c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?**

*Less-than-Significant Impact.* The analysis of cumulative effects focuses on whether implementing a specific project would result in cumulatively considerable emissions. By its very nature, air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development within the SFBAAB, and this regional impact is cumulative rather than attributable to any one source. A project's emissions may be individually limited but cumulatively considerable when taken in combination with past, present, and probable future projects. The thresholds of significance are relevant to determining whether the contribution of a project's individual emissions would result in a considerable incremental contribution to the existing cumulative air quality conditions. If a project's emissions would be less than these threshold levels, implementing the project would not be expected to result in a considerable incremental contribution to the significant cumulative impact.

As discussed earlier, construction-generated and long-term operational emissions would result in minor impacts, primarily because of the short construction period and minimal maintenance activities. Therefore, emissions associated with the proposed project would not result in a cumulatively considerable incremental contribution to a significant cumulative impact. This impact would be less than significant.

**d) Expose sensitive receptors to substantial pollutant concentrations?**

*Less-than-Significant Impact.* Some people are especially sensitive to air pollutant emissions and should be given special consideration when evaluating air quality impacts from projects. These people include children, older adults, persons with preexisting respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise. Sensitive receptors include residences, schools, playgrounds, child care centers, athletic facilities, long-term health-care facilities, rehabilitation centers, convalescent centers, and retirement homes.

The nearest sensitive receptor is a single-family residential property located approximately 1,500 feet north of the project site. Pollutants that could be generated by the proposed project and that could result in adverse health effects on sensitive receptors include diesel exhaust particulate matter (i.e., PM<sub>10</sub> and PM<sub>2.5</sub>), which is classified as a toxic air contaminant (TAC).

The greatest potential for TAC emissions would be related to diesel particulate matter (diesel PM) emissions associated with heavy-duty construction equipment activity and on-road tanker trucks hauling material to the spoil area. Health effects from carcinogenic TACs are usually described in terms of individual cancer risk, which is based on a 70-year lifetime exposure to TACs.

Haul trucks and off-road equipment would not operate in the immediate proximity of any sensitive receptor for an extended period. The possible sensitive receptor exposure period from the proposed project's construction activities is short (i.e., approximately 5 days) and would be approximately 0.02% of the minimum exposure period for a health risk assessment. Thus, because the use of off-road, heavy-duty equipment would occur for a relatively small period and would not be in the immediate proximity of sensitive receptors, construction-related activities would not be anticipated to expose sensitive receptors to substantial concentrations of TACs.

All construction emissions would cease following completion of the proposed project. As mentioned earlier, operation of the proposed project would involve only minimal and infrequent maintenance activities. Implementing the proposed project would not expose sensitive receptors to substantial operational TAC concentrations. Therefore, this impact would be less than significant.

**e) Create objectionable odors affecting a substantial number of people?**

*Less-than-Significant Impact.* Human response to odors is subjective, and sensitivity to odors varies greatly. Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, headaches).

A potential source of odor during construction activities is equipment exhaust. However, equipment exhaust would be localized and generally confined to the immediate area surrounding the project site. Typical construction techniques would be used for the proposed project, and the odors would be temporary and typical of most construction sites. Dredging could also result in temporary odors associated with a high level of organic debris. However, although an odor may be noted, it would be typical of any odor currently associated with natural changes in water levels and would not be anticipated to affect a substantial number of people. Project operations and maintenance would not have any substantial odor sources. Implementing the project would not create objectionable odors that would affect a substantial number of people; therefore, the impact would be less than significant.

### 3.4 BIOLOGICAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. Biological Resources. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, or the National Marine Fisheries Service	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### 3.4.1 ENVIRONMENTAL SETTING

##### INTRODUCTION AND METHODS

AECOM biologists conducted a reconnaissance-level field survey of the project site on April 18 and September 18, 2013, to identify habitat that may be suitable for special-status plant and wildlife species. The survey was conducted by traversing the entire site and searching for special-status plants and wildlife and for habitat with the potential to support special-status wildlife. Swift Ultra Light 8x42 binoculars were used during the survey to search for nesting bird activity and nests in the ornamental trees located in the vicinity of the Bethany Reservoir SRA boat launch and the eucalyptus trees located north of the forebay dam face. In addition, binoculars were used to search the edge of the reservoir for special-status reptiles and amphibians. Plant

communities and land cover features were mapped on aerial photographs and photographed with a digital camera. This documentation later served as reference material for determining impacts and identifying mitigation. The following descriptions of listed plant, fish, and wildlife resources with potential to occur in the project footprint were developed after reviewing existing literature and research programs; consulting the California Natural Diversity Database (CNDDDB 2013), the USFWS Endangered Species database (USFWS 2011a), and the California Native Plant Society's Inventory of Rare and Endangered Plants (CNPS 2013); contacting local experts; and conducting the reconnaissance-level site visits on April 18 and September 18, 2013. The database searches included the following nine U.S. Geological Survey 7.5-minute quadrangles: Clifton Court Forebay, Brentwood, Woodward Island, Holt, Union Island, Tracy, Midway, Altamont, and Byron Hot Springs.

## TERRESTRIAL PLANT COMMUNITIES

Terrestrial plant communities on the project site include nonnative annual grassland and introduced woodland. The Bethany Forebay Dam was constructed with engineered fill and aggregate base. The dam crest was mapped as developed because of the presence of an existing access road that is highly compacted, topped with aggregate base, and the absence of vegetation. Developed areas within the project site are associated with existing gravel access roads and the paved boat launch parking area.

Nonnative annual grassland is present on the face of the Bethany Forebay Dam, in open areas adjacent to access roads, and on the proposed spoils disposal location located northwest of the reservoir. The dominant grasses in this habitat are slender oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), wild barley (*Hordeum murinum* ssp. *leporinum*), and Italian ryegrass (*Festuca perennis*). Common forbs in this habitat and within the 250-foot survey area buffer around the site include black mustard (*Brassica nigra*), bull thistle (*Cirsium vulgare*), redstem filaree (*Erodium cicutarium*), dissected geranium (*Geranium dissectum*), English plantain (*Plantago lanceolata*), and tumble mustard (*Sisymbrium officinale*). Less abundant forbs include sweet fennel (*Foeniculum vulgare*), Great Valley gumweed (*Grindelia camporum*), Mediterranean linseed (*Bellardia trixago*), and Ithuriel's spear (*Triteleia laxa*).

The proposed spoils disposal site is an approximately 1 acre flat-top mound located along the northwestern edge of Bethany Reservoir, north of the SBPP. This area was used for the disposal of dredged material in 2009 when sediment was removed in the vicinity of the SBPP. The area where dredged sediment would be disposed of, is dominated by a generally dense mat of nonnative species that is typical of disturbed areas, including rumbleweed (*Salsola tragus*), starthistle (*Centaurea solstitialis*), horehound (*Marrubium vulgare*), and prickly lettuce (*Lactuca serriola*). Native forbs, including Great Valley gumweed and doveweed (*Croton setigerus*), are also present but make up a small percentage of overall vegetative cover. Compacted soils dominate the disposal area. Additionally a large area (approximately 60 feet in diameter) at the southern end of the disposal site is barren with compacted soils and gravels at the soil surface. Three piles of rock, approximately 6 feet tall, are present near the center of the proposed spoils disposal area, north of the barren area described above. The side slopes adjacent to the proposed spoils disposal location are dominated by nonnative annual grasses, including ripgut brome, soft chess, foxtail brome (*B. rubens*), Italian ryegrass, and wild oat (*Avena fatua*), and also consist of compacted soils.

Annual grasslands generally support a variety of small mammals, such as California ground squirrel (*Spermophilus beecheyi*), black-tailed jackrabbit (*Lepus californicus*), Audubon's cottontail (*Sylvilagus audubonii*), Botta's pocket gopher (*Thomomys bottae*), California vole (*Microtus californicus*), and mice species. Small rodent burrows are present within annual grassland habitat present on the face of Bethany Forebay Dam

and on the sides slopes of the spoils disposal location. Ground squirrel burrows, in particular, are prevalent on the side slopes of the proposed spoils disposal location. Red fox (*Vulpes vulpes*) was observed outside of the study area on September 18, 2013, in the vicinity of the wind farm, and coyote (*Canis latrans*) scat was observed near the spoils disposal area. Other species that typically depend on annual grassland habitat for some habitat component include amphibians, such as frogs, toads, and salamanders; reptiles, such as snakes, lizards, and turtles; and numerous seed-eating and insect-eating birds, such as mourning dove (*Zenaida macroura*), finches, sparrows, and western scrub-jay (*Aphelocoma californica*). This habitat is also important foraging grounds for bats and birds of prey, including owls and hawks, which feed on small mammals. Swainson's hawk (*Buteo swainsoni*) was observed foraging.

The project site contains approximately 1.30 acres of introduced woodland habitat, located primarily around the parking areas and Bethany Forebay Dam and located adjacent to the earth-lined ditch. Dominant trees in this habitat include white ironbark (*Eucalyptus leucoxylon*), Casuarina (*Casuarina* sp.), and Bishop pine (*Pinus muricata*). Patches of coyote brush (*Baccharis pilularis*) also occur in openings within this habitat along the edge of the reservoir. The understory is composed primarily of nonnative grasses, including slender oat, soft chess, and wild barley.

Located approximately 560 feet northeast of the Bethany Forebay Dam, outside the project footprint, is a dense cluster of mature white ironbark. Raptors, including red-tailed hawk (*Buteo jamaicensis*) and osprey (*Pandion haliaetus*), were observed perched in the white ironbark. Passerines, including black phoebe (*Sayornis nigricans*), Bullock's oriole (*Icterus bullockii*), and yellow warbler (*Setophaga petechia*), were also observed during field surveys.

## **AQUATIC HABITATS**

Open-water habitat is present in Bethany Reservoir and supports primarily nonnative fish, such as bluegill (*Lepomis macrochirus*), striped bass (*Morone saxatilis*), largemouth bass (*Micropterus salmoides*), and catfish (*Ictalurus* spp.). Dense beds of submerged aquatic vegetation occupy the shallower littoral zone along Bethany Forebay Dam and the adjacent shoreline at each end of the dam. The submerged nonnative vegetation provides rearing habitat for juvenile life stages of these nonnative fish species. The waterside edge of Bethany Reservoir in the vicinity of the forebay dam is lined with riprap to provide protection against wake created by recreational boat use. The reservoir also provides foraging habitat for the western pond turtle (*Emys marmorata*). One turtle was observed in the reservoir during biological survey on April 18, 2013.

No sustained populations of special-status fish species are expected to occur in Bethany Reservoir because the John E. Skinner Delta Fish Protective Facility, on the downstream end of Clifton Court Forebay, diverts most fish species away from the pumps that lift water into the California Aqueduct and Bethany Reservoir. It is possible that small fish, larvae, and eggs of special-status species, including steelhead, salmon, green sturgeon, and delta smelt, could slip through the screening facility and make their way into Bethany Reservoir (DWR 2011). Although it is possible that special-status fish species enter Bethany Reservoir, the reservoir environment is not conducive to their survival.

Bethany Reservoir qualifies as a traditionally navigable water of the United States and is subject to USACE jurisdiction under Section 404 of the CWA. Bethany Reservoir is operated by DWR and is the first reservoir below Clifton Court Forebay in the SWP system.

An earth-lined ditch is located downstream of the Forebay Outlet. The earth-lined ditch supports a variety of aquatic plant species including Carter's buttercup (*Ranunculus bonariensis*), narrowleaf cattail (*Typha angustifolia*), and floating duckweed (*Lemna minor*). Italian rye grass (*Festuca perennis*) and rabbitsfoot grass (*Polypogon monspeliensis*) are prevalent along the channel banks. The earth-lined ditch meanders in a northerly direction toward Christensen Road. After flowing under Christensen Road via culvert and out of the project site, the earthen ditch is intercepted by a series of in-stream stock ponds located west of Bruns Road within nonnative annual grasslands currently used for cattle grazing. California red-legged frog (*Rana draytonii*) has been documented within the earth-lined ditch and was observed at the time of the April 18, 2013 field survey (CNDDDB 2013).

## **SPECIAL-STATUS PLANTS**

In total, 11 special-status plants are documented in the nine quadrangle vicinity of the proposed project: Six special-status plant species have CNDDDB occurrences within a 2-mile radius of the project site: heartscale (*Atriplex cordulata* var. *cordulata*), San Joaquin spearscale (*A. joaquinana*), round-leaved filaree (*California macrophylla*), recurved larkspur (*Delphinium recurvatum*), diamond-petaled California poppy (*Eschscholzia rhombipetala*), and caper-fruited tropidocarpum (*Tropidocarpum capparideum*). Five special-status plant species are documented as occurring on the surrounding quadrangles, greater than 2 miles distance from the project site: large-flowered fiddleneck (*Amsinckia grandiflora*), bent-flowered fiddleneck (*Amsinckia lunaris*), big-scale balsamroot (*Balsamorhiza macrolepis*), big tarplant (*Blepharizonia plumosa*), and showy golden madia (*Madia radiata*).

No special-status plants were observed during the field surveys conducted on April 18 and September 18, 2013. Special-status plant species are not expected to occur within the project site because the area has been previously disturbed, it contains marginally suitable habitat, is subject to regular disturbance as part of the SRA, and the species were not detected during the blooming period in April.

## **SPECIAL-STATUS WILDLIFE**

Table 3.4-1 provides a list of eight special-status wildlife species with reasonable potential to occur within the project vicinity. This list was developed based on the aforementioned sources, on habitat requirements of each species, and on known nearby occurrences of special-status species.

### **Amphibians**

#### **California Tiger Salamander**

California tiger salamander (*Ambystoma californiense*) is state and federally listed as threatened in the Central Valley. It requires vernal pools, ponds (natural or human-made), or semipermanent (where ponded water is present for a minimum of 3–4 months) calm waters for breeding and larval maturation. This species also requires adjacent upland areas that contain small-mammal burrows or other suitable refugia for aestivation (summer dormancy). California tiger salamander occurs in greatest abundance in and near the southwest Delta in the vicinity of Byron Airport. This species has also been recorded in the western Delta in Solano County and in the eastern Delta in southern San Joaquin County.

**Table 3.4-1  
Special-Status Wildlife Species with Potential to Occur on and within 2 Miles of the Project Site**

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
<b>Amphibians</b>				
California tiger salamander	<i>Ambystoma californiense</i>	FT, ST	In winter, breeds in vernal pools and seasonal wetlands with a minimum 10-week inundation period; in summer, aestivates in grassland habitat, primarily in rodent burrows.	Could occur. Although breeding is unlikely in Bethany Reservoir because predatory fish species are present, migrating or aestivating individuals could be found within the staging areas or the proposed spoils disposal area.
California red-legged frog	<i>Rana draytonii</i>	FT, X, SSC	Breeds in ponds and slow-moving streams with dense shrubby or emergent riparian vegetation, minimum 11–20 weeks of water for larval development, and upland refugia for aestivation.	Known to occur. Breeding is unlikely in Bethany Reservoir because predatory fish species are present, but foraging could occur along the margins of the reservoir, and individuals could be found migrating or aestivating in staging areas and the proposed spoils area. Species observed within the earth-lined ditch downstream of the outlet works.
<b>Reptiles</b>				
Western pond turtle	<i>Emys marmorata</i>	SSC	Forages in ponds, marshes, slow-moving streams, sloughs, and irrigation/drainage ditches; nests in nearby uplands with low, sparse vegetation.	Known to occur. Species observed in Bethany Reservoir during biological survey on April 18, 2013.
<b>Birds</b>				
Western burrowing owl	<i>Athene cunicularia</i>	SSC	Nests and forages in grasslands, agricultural fields, and low scrub habitats, especially where ground squirrel burrows are present; occasionally inhabits artificial structures and small patches of disturbed habitat.	Could occur. Foraging individuals could occur within staging areas or the proposed spoils disposal area. Breeding could occur in the surrounding area but is unlikely within 250 feet of the project site because no nesting burrows were observed during biological surveys on April 18 and September 18, 2013.
Swainson's hawk	<i>Buteo swainsoni</i>	ST	Nests in isolated trees, open woodlands, and woodland margins; forages in grasslands and agricultural fields.	Could occur. Potential nesting trees are located immediately adjacent to the project site and approximately 600 feet north of the Bethany Forebay Dam access road. Species was observed soaring overhead during biological survey on April 18, 2013.
White-tailed kite	<i>Elanus leucurus</i>	FP	Forages in ponds, marshes, slow-moving streams, sloughs, and irrigation/drainage ditches; nests in nearby uplands with low, sparse vegetation.	Could occur. Potential nesting trees are located immediately adjacent to the project site and approximately 600 feet north of the Bethany Forebay Dam access road.

**Table 3.4-1  
Special-Status Wildlife Species with Potential to Occur on and within 2 Miles of the Project Site**

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
<b>Mammals</b>				
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	FE, ST	Grasslands and oak savannas with friable soils; home range sizes of 600–1,300 acres.	Could occur. Suitable annual grassland habitat for foraging occurs adjacent to the project site; however, no suitable den locations were found during biological surveys on April 18 and September 18, 2013, and none are expected within 250 feet of the project site.
American badger	<i>Taxidea taxus</i>	SSC	Drier open shrub, forest, and herbaceous habitats with friable soils.	Could occur. Suitable annual grassland habitat for foraging occurs adjacent to the project site; however, no suitable den locations were found during biological surveys on April 18 and September 18, 2013, and none are expected within 250 feet of the project site.

Notes: CESA = California Endangered Species Act; ESA = federal Endangered Species Act.

**Legal Status Definitions:**

Federal Listing Categories:

FE = listed as endangered under the ESA.

FT = listed as threatened under the ESA.

X = Critical habitat under the ESA.

Sources: CNDDDB 2013; USFWS 2011a

State Listing Categories:

ST = listed as threatened under CESA.

FP = fully protected under the California Fish and Game Code.

SSC = California species of special concern.

California tiger salamander is known to occur at multiple locations within the 2-mile radius around the project site. Most of the occurrences are documented in vernal pools or ponds, but others are documented in small rodent burrows and loose riprap and under rocks. California tiger salamander was not observed during the biological surveys conducted on April 18 and September 18, 2013. The project site and the 250-foot survey area buffer around the site, which includes open-water habitat within Bethany Forebay, are not expected to provide breeding habitat for this species; however, migrating or aestivating individuals could potentially occur within the materials and staging areas or in the vicinity of the proposed spoils disposal area.

**California Red-Legged Frog**

California red-legged frog (*Rana draytonii*) is federally listed as threatened and is a California species of special concern. It uses ponds, stream courses, permanent pools, and intermittent streams. The most significant threats to the California red-legged frog are habitat loss and alteration, introduced predators, water management, mismanagement of grazing livestock, chemical contamination from urban and industrial runoff, and extended drought conditions. California red-legged frogs have been recorded in creeks, canals, and seasonal ponds.

California red-legged frog is known to occur within the earth-lined ditch, the receiving water body located downstream of the Bethany Forebay Dam Outlet Structure. The earthen ditch conveys perennial water to the north and the channel contains emergent vegetation including narrowleaf cattail. The ordinary high-water mark in the ditch is variable and ranges from approximately 7 to 10 feet wide, and the water depth is generally 12 inches.

Numerous records of California red-legged frog occur within 2-miles of the project site, and one occurrence is documented along the southwestern shoreline of Bethany Reservoir, approximately 0.8 mile southeast of the project site in a dense patch of emergent vegetation. The open-water habitat within Bethany Reservoir is not expected to provide breeding habitat because predatory fish species are present, but migrating or aestivating individuals could occur within the materials and staging areas.

California red-legged frog could occur within the spoils disposal site because the species is documented in the vicinity. However, the potential for the species to occur is low at the spoils disposal location because the disposal site is composed of compacted soils with no suitable burrows available. Further, the spoils disposal location is not located between breeding ponds, and nonsuitable habitat (i.e., Bethany Reservoir) occurs along three sides of the spoils disposal location.

## **Reptiles**

### **Western Pond Turtle**

Western pond turtle (*Emys marmorata*), a state species of special concern, is uncommon to common in aquatic habitats throughout California. This species is normally associated with permanent ponds, lakes, streams, irrigation ditches, and permanent pools on ephemeral streams. This species requires basking sites, such as submerged logs, rocks, or muddy banks, and quickly retreats underwater when humans or predators approach. During spring, females move overland up to 325 feet to find suitable sites for laying eggs.

Western pond turtle is known to occur in the project vicinity and was observed approximately 20 feet from the northern shoreline of Bethany Reservoir in the vicinity of the Forebay Dam, where it was swimming and foraging within submerged aquatic vegetation. Two documented occurrences are located within 2-miles of the project site (CNDDDB 2013).

## **Birds**

### **Western Burrowing Owl**

Western burrowing owl (*Athene cunicularia*) (BUOW) is a state species of special concern. In California, most BUOW individuals are yearlong residents in dry grasslands and desert regions throughout the state up to an elevation of approximately 5,200 feet. Most BUOWs in California occur in the Central and Imperial Valleys. BUOWs nest in ground cavities, typically in ground squirrel burrows. Primary prey consists of insects, but they also consume small mammals, reptiles, birds, and carrion. Breeding occurs from March through August, peaking in April and May.

BUOW is known to occur at multiple locations within a 2-mile radius of the project site. The habitat on and around the project site is suitable for BUOW, but no suitable burrows measuring at least 4 inches in diameter were detected within the 250-foot survey area. However, foraging individuals could occur on the project site and new burrows and breeding could occur adjacent to the materials and storage areas and in the areas surrounding the proposed spoils disposal area.

## Swainson's Hawk

Swainson's hawk (*Buteo swainsoni*) is state listed as threatened. In the Central Valley, Swainson's hawks arrive each year to breed as early as March and typically depart by October. Swainson's hawks usually nest in large native trees, such as valley oak, cottonwood, walnut, and willow; they nest less frequently in nonnative trees, such as eucalyptus or pine. Nests occur in riparian woodlands, roadside trees, trees along field borders, isolated trees, and small groves and on the edges of remnant oak woodlands. Today, narrow bands of remnant riparian forest along drainages contain most of the known nests in the Central Valley. Swainson's hawks are essentially plains or open-country hunters, requiring large areas of open landscape for foraging. With substantial conversion of grasslands to farming operations, Swainson's hawks have shifted their nesting and foraging into those agricultural lands that provide low, open vegetation and high rodent prey populations, such as alfalfa fields.

The nearest Swainson's hawk documented occurrence is located along the Delta-Mendota Canal, approximately 1.5 miles to the northeast in a row of planted pine trees. Potential nest trees are located approximately 600 feet north of the Bethany Forebay Dam access road. A pair of Swainson's hawks was observed flying overhead of the eucalyptus grove located adjacent to the earth-lined ditch during the biological survey on April 18, 2013.

## White-Tailed kite

White-tailed kite (*Elanus leucurus*) is a state fully protected species. It nests in trees and shrubs in grasslands, oak woodlands, savannas, and riparian woodlands. Preferred foraging habitats include wetlands and grasslands, particularly herbaceous lowlands with minimal shrub and tree growth.

A nesting pair of white-tailed kites was documented along Mountain House Road, approximately 1.5 miles east of the project site in 1993. Potential nesting trees are located approximately 600 feet north of the Bethany Forebay Dam access road. This species was not observed during the biological surveys on April 18 and September 18, 2013.

## Mammals

### San Joaquin Kit Fox

The San Joaquin kit fox (*Vulpes macrotis mutica*) (SJKF) inhabits a highly fragmented landscape of scattered remnants of native habitat and altered lands within and on the fringe of development. The largest extant populations are in western Kern County on and around the Elk Hills and Buena Vista Valley and in the Carrizo Plain Natural Area in San Luis Obispo County. The most northerly current distribution records include the Antioch area of Contra Costa County (EPA 2010). Because the SJKF requires dens for shelter, protection, and reproduction, a habitat's soil type is important. Loose-textured soils are preferable, but modification of the burrows of other animals facilitates denning in other soil types.

Within the 2-mile radius around the project site, SJKF was documented at multiple locations from 1975 through 2000. Several of the older records are from locations adjacent to Bethany Reservoir, and the occurrence dated 2000 is approximately 2 miles east of the project site. This occurrence did not identify any SJKF individuals but did detect a series of dens. Suitable annual grassland habitat for foraging occurs adjacent to the project site. SJKF typically den in flat terrain or gently sloping hills, in washes, drainages, and roadside berms. Dens can be dug by SJKF, or SJKF may enlarge ground squirrel burrows in clay-heavy soils (USFWS 2010). Alternatively, SJKF can

use human-made structure including culverts, abandoned pipes, or bank sumps in road beds (USFWS 2010). SJKF dens tend to be clustered with several openings; the main opening is keyhole shaped while other entrances are variable and may be wider than tall. The typical entrance opening is 8 to 10 inches tall in non-natal dens (CSU Stanislaus 2006). No dens large enough to support SJKF were identified within the project site or the 250-foot survey area buffer. In addition, red fox (*Vulpes vulpes*) was observed on September 18, 2013, immediately south of the California Aqueduct, approximately 550 feet northwest of the proposed spoils disposal location. Red fox are known to directly compete with SJKF for resources including dens and prey and have a negative impact on SJKF populations (CSU Stanislaus 2006).

American badger (*Taxidea taxus*) is a state species of special concern that typically inhabits drier open shrub, forest, and herbaceous habitats with friable soils. The year-round range of American badger spans all of California except the Humboldt and Del Norte County coast. Most of the Delta is too modified to provide suitable habitat for this species, but it is known from a number of locations around Clifton Court Forebay.

Within the 2-mile radius around the project site, one American badger was documented in a den in 1987 west of Bethany Reservoir, and a carcass was found along a road in 2007. Suitable annual grassland habitat for foraging occurs adjacent to the project site. American badgers dig dens that are 8 to 12 inches wider than tall with elliptical entrances (CDFG 1995). No suitable dens were present within the project site or the 250-foot survey area buffer at the time of the biological surveys conducted on April 18 and September 18, 2013.

### 3.4.2 DISCUSSION

- a) **Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, or the National Marine Fisheries Service?**

*Less than Significant with Mitigation Incorporated.* The proposed project could have potential adverse effects on special-status species. However, with implementation of the mitigation measures identified below, these potential impacts would be reduced to a less-than-significant level.

#### Amphibians

##### **California Tiger Salamander**

Several California tiger salamander observations have been documented within 2 miles of the project site. The nearest occurrence was documented in 2008 approximately 0.25 mile west of the proposed spoil disposal location. Bethany Reservoir is a deep-water habitat that does not provide suitable aquatic breeding habitat for California tiger salamander. The earth-lined channel is also not suitable aquatic breeding habitat for the species because this species breed exclusively in vernal pools and other temporary rainwater ponds.

California tiger salamander has a low potential to occur within the project site or the immediate vicinity within rodent holes on the side-slopes of the spoils disposal area. Environmental protection measures to minimize, avoid, or mitigate potential impacts on this species have been included in the proposed project. Implementing Mitigation Measure BIO-1 would reduce impacts on California tiger salamander to a less-than-significant level because a preconstruction survey would be conducted within 24 hours of construction, construction workers would be

trained by a biologist in identification of California tiger salamander, and if the species were encountered, construction would cease until the species has been relocated out of the construction area.

### **California Red-Legged Frog**

California red-legged frog has been documented within the earth-lined channel downstream of the Forebay Outlet Structure. Bethany Reservoir is a deep-water habitat that does not provide suitable aquatic breeding habitat or migration corridors for California red-legged frog. However, the species has been observed in the earthen channel, located north of the Bethany Forebay Dam. The earth-lined channel provides suitable aquatic breeding habitat and migration corridor for the species because of the dense cover of emergent vegetation and slow-moving perennial flow. In addition, the earthen dam face contains rodent burrows that could provide suitable upland refugia habitat for the species.

The earth-lined ditch may experience a temporary degradation of water quality because up to 3.8 cubic yards of sediments may be released during the initial valve exercise test. However, the valve exercise test would be conducted during late summer or fall when egg masses and larvae are unlikely to be present within the channel. The valve exercise would only occur after a USFWS-approved biologist has surveyed the channel from the outlet structure to Christensen Road for California red-legged frog including eggs and larvae. Valve testing will occur for a period of up to 5 years, as required by DSOD. However, the volume of sediment is anticipated to decrease after the first initial test of the valves. The mitigation measures specific to the valve test below would be required each year during the annual valve test to protect California red-legged frog. The proposed project includes suction dredging, spoils disposal, and valve testing of the Forebay Dam Outlet Structure. These actions have the potential to affect special-status amphibians. However, implementing Mitigation Measure BIO-1 would avoid and minimize impacts California red-legged frog and would reduce impacts to a less-than-significant level because a preconstruction survey would be conducted within 24 hours of construction, construction workers would be trained by a biologist in identification of California red-legged frog, and if the species were encountered, construction would cease until the species has been relocated out of the construction area.

#### **Mitigation Measure BIO-1: Avoid Impacts on Special-Status Amphibians.**

*The following measures shall be implemented to avoid, minimize, and mitigate potential impacts on California tiger salamander and California red-legged frog at the project site:*

- ▶ *No project-related activities that would affect California tiger salamander and/or California red-legged frog shall be allowed outside of the project site boundary. Construction fencing shall be placed along the site boundary to clearly mark the limits of project-related activities in areas that are not developed (i.e. parking lots do not require fencing).*
- ▶ *All project-related traffic shall be restricted to designated access roads, routes, and construction areas within the site boundary. No vehicular or pedestrian traffic shall be allowed outside of the designated site boundary unless it uses the existing designated access roads and routes.*
- ▶ *Before any project-related activities within the site boundary are initiated, preconstruction surveys shall be conducted by a USFWS- and CDFW-approved biologist(s) for California tiger salamander and California red-legged frog. Preconstruction clearance surveys shall be completed no more than 24 hours before ground disturbance is initiated. Any California tiger salamanders or California red-legged frogs found on the project site*

shall be removed by an approved biologist(s) and translocated under the direction and authorization of USFWS and CDFW.

- ▶ *Before any site preparation/construction activities are initiated, a USFWS- and CDFW-approved biologist shall conduct an education and training session for essential construction personnel. The training program shall instruct the essential construction personnel on how to identify California tiger salamanders and California red-legged frogs, what to do if a California tiger salamander or California red-legged frog is encountered during construction activities, and the legal context regarding these species. The essential construction personnel are then responsible for training and informing their staff on the avoidance and minimization procedures and legal context regarding these species.*
- ▶ *If a California tiger salamander or California red-legged frog is observed within the project site by a worker, the USFWS-approved biologist will be informed immediately. All work shall be halted and machinery shall be turned off within 100 feet of the animal until a USFWS-approved biologist can capture and remove the animal from the work area. DWR will notify USFWS and CDFW within 2 business days of the siting.*
- ▶ *The proposed project shall use materials for erosion control, such as filter fabrics and fiber rolls, with spaces between weaving or netting small enough to prevent potential entrapment of California tiger salamanders or California red-legged frogs (less than one-quarter square inch) or shall use alternative materials that do not have weaving or netting.*

*Within 4 hours prior to the valve exercise, preconstruction surveys for California red-legged frog shall be conducted within the receiving earth-lined ditch by a USFWS- and CDFW-approved biologist(s). An approved biologist shall be present on-site at the time of the valve test and shall monitor the earth-lined ditch for the presence of California red-legged frogs immediately before and after the valve test. Any California red-legged frogs found within the earth-lined ditch shall be collected and temporarily held by a USFWS approved biologist holding a valid 10(a)1(A) permit for handling California red-legged frog. Frogs would be retained in an appropriate container for the duration of the valve exercise test and returned to the earth-lined ditch after the valve exercise test. Prior to the valve exercise test, DWR shall prepare a California red-legged frog collection and relocation plan and submit for review and approval by USFWS.*

**Timing:** *Before and during construction and valve exercise*

**Responsibility:** *DWR*

## **Reptiles**

### **Western Pond Turtle**

Western pond turtle habitat was observed along the forebay dam face during the April 18, 2013, field survey. Dredging could result in temporarily degraded water quality and has the potential to affect this species. Implementing Mitigation Measure BIO-2 would reduce the impact on western pond turtle to a less-than-significant level because construction workers would be trained by a biologist in identification of western pond turtle, and if western pond turtles were encountered, construction would cease until the turtle has moved or been relocated.

## **Mitigation Measure BIO-2: Avoid Impacts on Western Pond Turtle.**

*The following measures shall be implemented to avoid, minimize, and mitigate potential impacts on western pond turtle at the project site:*

- ▶ *Before any site preparation/construction activities are initiated, a qualified biologist shall conduct an education and training session for essential construction personnel. The training program shall instruct the essential construction personnel on how to identify western pond turtle, what to do if a western pond turtle is encountered during construction activities, and the legal context regarding this species.*
- ▶ *If a turtle is encountered during dredging, workers shall temporarily stop work until the turtle has moved away from the construction site on its own or a qualified biologist has moved the turtle to a safe location.*

**Timing:** *Before and during construction*

**Responsibility:** *DWR*

## **Birds**

Migratory birds, excluding BUOW and Swainson's hawk, are known to occur on or adjacent to the project site. Numerous species forage in the nonnative annual grassland habitat within and adjacent to the project site. Ground disturbances from project construction would be limited to existing access roads and the previously disturbed spoils disposal location. Disturbance from these construction activities has the potential to indirectly affect migratory bird nesting habitat. Implementation of Mitigation Measure BIO-3 defined below would reduce impacts on migratory birds to a less-than-significant level.

### ***Western Burrowing Owl***

The value of the BUOW habitat within the project site and the 250-foot buffer around the project site is considered low because of the presence of tall nonnative grasses and forbs, regular movements of maintenance vehicles along the roads, and the regular presence of anglers along the edge of the reservoir. Nevertheless, a number of ground squirrel burrows were observed around the base of the spoils disposal location.

Therefore, because of the potential for BUOW to occur within the staging areas, on or near the forebay dam and along the ingress and egress routes, and on the spoils disposal area, environmental protection measures to minimize, avoid, or mitigate potential impacts on this species have been included in the proposed project. Implementing Mitigation Measure BIO-3 would reduce impacts on BUOW to a less-than-significant level because surveys would be conducted in advance of construction and adequate buffers would be implemented.

### ***Swainson's Hawk and Nesting Raptors***

One Swainson's hawk nest has been documented approximately 1.5 miles northeast of the project site along the Delta-Mendota Canal in a row of planted pine trees (CNDDDB 2013). One Swainson's hawk was observed soaring over the nonnative tree grove located approximately 600 feet north of the Forebay Dam face during the April 18, 2013 field survey. The grove of nonnative trees located approximately 600 feet north of the Forebay Dam face do provide potential suitable nesting habitat for Swainson's hawk. No suitable nesting trees are present within a 0.25-mile radius of the proposed spoils disposal site. However, Swainson's hawk could use the spoils disposal area for

foraging. Implementing the proposed project would not result in the permanent conversion of nonnative annual grassland to a habitat that is not suitable for foraging.

Because of the potential for Swainson's hawk to nest in the eucalyptus trees north of the Forebay Dam face, environmental protection measures to avoid, minimize, or mitigate potential impacts on this species have been incorporated into the proposed project. Implementing Mitigation Measure BIO-3 would reduce impacts on Swainson's hawk to a less-than-significant level because nesting surveys would be conducted in advance of construction if the project is implemented in the nesting season and a ¼-mile buffer would be implemented.

**Mitigation Measure BIO-3: Avoid Impacts on Special-Status Birds.**

*The following measures shall be implemented to avoid, minimize, and mitigate potential impacts on special-status birds at or near the project site:*

- ▶ *If the proposed project is constructed during the Swainson's hawk nesting season (March 1 through September 15), then focused surveys for nests of Swainson's hawk shall be conducted within 0.25 mile of proposed construction. To the extent feasible, guidelines provided in Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in the Central Valley (Swainson's Hawk Technical Advisory Committee 2000) shall be followed for Swainson's hawk nest surveys. If active nests of Swainson's hawks are detected during surveys, impacts on nesting Swainson's hawks shall be avoided by establishing appropriate buffers around active nest sites. No project activity shall commence within the buffer areas until a qualified biologist has determined in coordination with CDFW that the young have fledged, the nest is no longer active, or that reducing the buffer would not result in disturbance to nesting activities. CDFW guidelines recommend implementation of 0.25- or 0.5-mile-wide buffers, but the size of the buffer may be adjusted if a qualified biologist, in consultation with CDFW, determines that such an adjustment would not be likely to adversely affect nesting activities. Monitoring of the nest by a qualified biologist during construction activities may be required if the activity has potential to adversely affect the nest.*
- ▶ *Nesting surveys shall also be conducted by a qualified wildlife biologist for white-tailed kite, other raptors, and other migratory birds if construction activities will occur from February 1 through August 31. Surveys shall be conducted by a qualified wildlife biologist within 500 feet of proposed construction no more than 10 days before the start of construction activities. If white-tailed kite, other raptor, or migratory bird nests are detected within 500 feet of construction activities, appropriate protective buffers specific to the biology and sensitivity of the species and sufficiently large to avoid construction-related disturbance to nesting activities shall be established, as determined by a qualified biologist. Monitoring of any active nest by a qualified biologist during construction activities may be required if the activity has potential to adversely affect the nest.*
- ▶ *Take avoidance surveys for BUOW shall be conducted by a qualified biologist no less than 14 days before the start of construction activities to ensure that BUOW would not be affected by project activities. These surveys shall be consistent with guidance provided by the 2012 CDFW burrowing owl staff report (DFG 2012). If an active burrow is found, clear, visible markers shall be placed in the area to demarcate the burrow location so that workers and vehicles traveling in or out of the area will avoid disturbing the area. Appropriate buffer zones, visual screens, or other site-specific measures will be implemented to minimize disturbance impacts on active burrows, consistent with agency guidance (DFG 2012), while project-related activities are occurring.*

- ▶ *If active nests of protected birds are found, DWR will consult with CDFW and other experts for assistance in developing site-specific solutions, as needed, and to determine if monitoring is needed. If monitoring is needed, monitoring will be conducted by a qualified biologist throughout project implementation to determine the effectiveness of buffers, visual screens, or other measures, and to determine whether the vehicle traffic is jeopardizing an active nest.*

**Timing:** *Before and during construction*

**Responsibility:** *DWR*

## **Mammals**

### ***San Joaquin Kit Fox***

SJKF is known from multiple locations within 2 miles of the project site, although the most recent CNDDDB occurrence is 2000 (CNDDDB 2013). A number of ground squirrel burrows were observed surrounding the base of the spoils disposal location, and one burrow, located east of the spoils disposal area near Bethany Reservoir, appeared large enough (more than 4 inches in diameter) to support a canid, such as coyote, red fox, or SJKF. Coyote scat was documented at the entrance to the burrow, excluding the use of the burrow by SJKF. There is no evidence that SJKF occupies the project site and a low probability that SJKF would be in the vicinity of the project site because evidence of coyote and red fox was observed at the time of the September 18, 2013 field survey, and both are known predators of SJKF (USFWS 2010).

SJKF is not likely to use the spoils disposal area for denning because the soil on top of the spoils disposal location is composed of dried sediment dredged from the SBPP project, completed in 2009. The top of the spoils disposal area is compacted and gravels are present. Because the top of the mound that would serve as the spoils disposal location is composed of ruderal nonnative vegetation and provides low-quality habitat for burrowing rodents, the project site is considered poor quality habitat for SJKF, and the species has low potential for occurrence due to other direct competition for food and shelter sites from other coyote and red fox documented within the project site and the immediate vicinity. Nevertheless, SJKF has a low potential to occur near Bethany Reservoir, on or near the spoils disposal location, and along existing roads.

There is a low potential for SJKF to occur within the project site. SJKF has the potential to use the nonnative annual grasslands located along the side-slopes of the spoils disposal location or along the ingress and egress routes. Environmental protection measures to minimize, avoid, or mitigate potential impacts on this species have been included in the proposed project. Implementing Mitigation Measure BIO-4 would reduce impacts on SJKF to a less-than-significant level because surveys would be conducted in advance of construction to identify any dens within the project area and adequate buffers would be implemented, if SJKF, or evidence of the animal is observed. In addition, construction activities would be restricted to daylight hours, when these species are much less active; and traffic would be confined to designated roads.

### ***American Badger***

American badger is known from two locations within 2 miles of the project site. The most recent record of American badger is from a road mortality located along Kelso Road approximately 0.5 mile northeast from the project site. No burrows large enough to support badgers were identified within the project site during field

surveys. However, the project site contains suitable grassland habitat, and west of the spoils disposal area, the grasslands support an abundant ground squirrel population, a favorite prey item of the badger.

There is a low potential for American badger to occur within the project site because the burrows identified within the project site are too small and not characteristic of the species. American badger has the potential to use the nonnative annual grasslands located along the side-slopes of the spoils disposal location or along the ingress and egress routes. Environmental protection measures to minimize, avoid, or mitigate potential impacts on this species have been included in the proposed project. Implementing Mitigation Measure BIO-4 would reduce impacts on American badger to a less-than-significant level because construction activities would be restricted to daylight hours, when these species are much less active; and traffic would be confined to designated roads.

#### **Mitigation Measure BIO-4: Avoid Impacts on Special-Status Mammals.**

*The following measures shall be implemented to avoid, minimize, and mitigate potential impacts on special-status mammals at or near the project site:*

- ▶ *All site access and staging shall limit disturbance to the specified project footprints and avoid sensitive habitats.*
- ▶ *Project activities shall not take place at night, when SJKF is most active. Off-road travel outside of designated project areas shall be prohibited.*
- ▶ *Preconstruction surveys for SJKF shall be conducted by a USFWS-approved biologist no less than 14 days and no more than 30 days before the beginning of ground disturbance and/or project activities, in accordance with the Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or during Ground Disturbance (USFWS 2011b). If suitable dens are found, the status of all dens shall be determined and mapped. Written results of preconstruction surveys shall be sent to USFWS within 5 days after survey completion and before the start of ground disturbance and/or construction activities. If a natal/pupping den is discovered on the project site or within 200 feet of the project boundary, USFWS shall be notified immediately, and under no circumstances shall the den be disturbed or destroyed without prior authorization. If the preconstruction survey reveals an active natal pupping or new information, DWR shall contact USFWS and CDFW immediately to obtain the necessary take authorization/permit.*
- ▶ *Exclusion zones from SJKF dens, measured outward from the entrance or cluster of entrances, shall be 50 feet for potential or atypical dens, which can be marked with flagging, and 100 feet for known dens, which shall be demarked by a fence around the den. Fencing material is subject to USFWS approval.*
- ▶ *A biological monitor shall be on-site to assist the construction crew with environmental issues as necessary. If SJKF or American badger individuals are encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the individuals will not be harmed.*
- ▶ *DWR shall notify USFWS and CDFW immediately if any SJKF or American badger individuals are found on-site and shall submit a report to include date(s), location(s), habitat description, and any collective measures taken to protect the species. If an SJKF is inadvertently injured or killed, DWR shall notify USFWS and CDFW immediately. All land-based construction activities shall cease if an SJKF is encountered, and all land-based construction shall remain stopped until it moves out of the work area unassisted. The biological monitor shall be required to report any take to USFWS immediately by telephone and, within 1 day of the incident, by electronic*

mail or written letter. Capture and relocation of trapped or injured listed species may be attempted only by USFWS-approved personnel.

- ▶ All construction pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for SJKF before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a SJKF is discovered inside a pipe, that section of pipe shall not be moved until the SJKF has moved away on its own or the USFWS and CDFW have been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the SJKF has escaped.
- ▶ No firearms shall be allowed on the project site.
- ▶ Noise shall be minimized to the extent feasible at the project site to avoid disturbing SJKF.
- ▶ No pets shall be permitted on the project site.

**Timing:** Before and during construction

**Responsibility:** DWR

**b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?**

*No Impact.* The project site consists of nonnative annual grassland, introduced woodland, and previously developed and disturbed land that includes the forebay dam and an area previously used for disposal of dredge spoils. The waterside of the forebay dam and the area surrounding the proposed dredge location are characterized by having surfaces covered by riprap. Riparian vegetation is not present on the project site.

The project site is located within the USFWS CCS-2B designated critical habitat for California red-legged frog. Unit CCS-2 is composed of two subunits (A and B) and contains a total of approximately 48,697 acres of critical habitat (75 FR 12816). CCS-2B was known to be occupied at the time of listing and at the time of the revised critical habitat designation in 2010; this subunit contains some of the highest concentrations of California red-legged frog and frog habitat and could serve as a source for potential reintroduction efforts. Implementing the proposed project would not result in adverse modification to critical habitat for California red-legged frog because all project activities would be located within previously developed or disturbed areas. No impact would occur because no habitat would be adversely modified, or significantly degraded in a permanent way.

**c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

*Less than Significant with Mitigation Incorporated.* Suction dredging would be used to remove sediments accumulated at the submerged intake structure and approach apron on the outlet works of Bethany Forebay Dam. This activity would disturb the sediment and, therefore, would have the potential to temporarily adversely affect water quality in Bethany Reservoir.

Bethany Reservoir is considered waters of the United States and waters of the state, subject to Section 404 and 401 of the CWA. Dredging does not constitute fill or the discharge of fill and therefore is not an activity regulated by USACE. However, temporary placement of structures required for the installation of the turbidity curtain would require a permit under Section 404 of the CWA and water quality certification under Section 401 of the CWA from the Central Valley Regional Water Quality Control Board. This impact would be potentially significant. Implementing Mitigation Measure BIO-5 would reduce the impact on jurisdictional waters by ensuring that all staging, parking, and equipment are located in uplands; that refueling occurs in areas away from jurisdictional waters; and that all permit conditions are implemented.

**Mitigation Measure BIO-5: Minimize Fill of Jurisdictional Waters of the United States and Waters of the State during Construction, and Compensate for Impacts.**

*The following measures shall be implemented to minimize impacts on jurisdictional waters of the United States:*

- ▶ *Locate all staging areas, parking areas, equipment, and storage areas for fuel, lubricants, and solvents in areas away from waters of the United States and waters of the state.*
- ▶ *Implement any additional measures determined necessary during the CWA Section 404 and 401 and the Lake and Streambed Alteration Agreement Section 1602 permitting processes before and/or during project construction. Additional measures might include, but not be limited to, implementing additional construction best management practices (BMPs) to avoid potential impacts on water quality from sedimentation and erosion.*

**Timing:** *Before and during construction*

**Responsibility:** *DWR*

**d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

*No Impact.* Land-based construction activities that would occur at the project site include use of previously developed areas for staging, use of existing roads, and the use of a previously disturbed area for spoils disposal. In-water construction activities would be demarked by a 200-foot-long turbidity curtain along the Bethany Forebay Dam. Installation of the underwater turbidity curtain would not prohibit the movement of aquatic life underwater because the activity is located along the edge of the reservoir. No impact would occur.

**e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

*No Impact.* The project site is located within the ECAP area. The overall conservation goal of the ECAP is to preserve a variety of plant communities and wildlife habitats. Overall conservation policies for biological resources include securing open space lands through acquisition of easements to fee title specifically for the preservation and protection of indigenous vegetation and wildlife, encouraging no net loss of riparian and seasonal wetland habitats, and requiring that roadways be designed to minimize impacts on wildlife corridors and regional trails.

Mitigation measures are presented above for the special-status wildlife addressed in this document. No trees, wetland or riparian habitat, or agricultural land would be removed or otherwise affected. Only temporary impacts on water resources would occur (see Section 3.9, “Hydrology and Water Quality”). Biological resources addressed in the “Vegetation and Wildlife” section of the ECAP would not be adversely affected by implementing the proposed project because all staging and spoils disposal would occur in previously disturbed or developed lands, and there would be no conflicts with the ECAP or other Alameda County ordinances. No impact would occur.

**f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?**

*No Impact.* The proposed project is located within Zone 6 of the East Alameda County Conservation Strategy (Alameda County 2010). Zone 6 covers 14,475 acres of land largely dominated by annual grassland (12,888 acres) and also includes the approximately 177-acre Bethany Reservoir and project site. The East Alameda County Conservation Strategy identifies the conservation priorities for including protection and restoration of seasonal wetland habitat and ponds to provide dispersal corridors between ponds and increase habitat for California red-legged frog and California tiger salamander, protection of annual grassland habitat surrounding aquatic breeding sites for special-status amphibians and movement and foraging habitat for SJKF, and nesting and foraging habitat for BUOW.

The project site is not located within an area covered by an adopted habitat conservation plan/natural community conservation plan (HCP/NCCP). The East Bay Regional Park District HCP/NCCP is in development and is intended to provide regional conservation and development guidelines to protect natural resources for regional preserves (i.e., Black Diamond Mines, Morgan Territory, Round Valley, Vasco Caves, Contra Loma Reservoir, Morgan Territory, Brushy Peak, Castle Rock and Diablo Foothills, Sycamore Valley, and Clayton Ranch) in the region while improving and streamlining the permit process for endangered species and wetland regulations (EBRPD 2009). The project site is located within the zone of analysis of the draft HCP/NCCP, but Bethany Reservoir SRA is not included in the list of parklands covered by the HCP/NCCP. The proposed project would not conflict with provisions in an HCP/NCCP; therefore, no impact would occur.

### 3.5 CULTURAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V. Cultural Resources. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### 3.5.1 ENVIRONMENTAL SETTING

##### CULTURAL RESOURCES

##### Prehistoric Context

The project site is situated between two distinct regions, each having unique environmental and cultural contexts. Both the San Francisco Bay and the Central Valley have similar chronologies, despite the differences in cultural traditions and environment. The cultural changes for each of the regions are briefly discussed below.

##### *San Francisco Bay Chronology*

This discussion of the regional prehistoric background of the San Francisco Bay Area is adapted from Milliken et al. (2007). Little is known of the Paleo-Indian period in the San Francisco Bay Area. No evidence of occupation before 10,000 Before Present (B.P.) has been discovered in the region; however, it is presumed that large-game hunters lived in the area. The Lower Archaic Period (10,000–7,500 B.P.) is marked by generalized mobile foraging patterns. Large-stemmed, leaf-shaped projectile points, milling slabs, and handstones are characteristic of this period. The earliest date for a San Francisco Bay Area site was obtained from the C14 dating of charcoal found in association with a millstone. The site was dated at 9,920 B.P. with an economy focused on acorns.

During the Middle Archaic Period (7,500-2,500 B.P.) evidence of sedentism and an increase in regional trade is exhibited. Large shell mounds and house floors with postholes dating to 3,500 B.P. were documented at site CA-CCO-309. The mortar and pestle technology arrive in the area after 6,000 B.P., as well as an increase in mortuary offerings, such as including beads and ochre with burials. The first cut Olivella shell beads are documented at the San Bruno Mound, dating to 5,400–4,500 years ago.

The Upper Archaic Period is marked by the disappearance of the ubiquitous rectangular shell bead types found in Early Period components. They were replaced by split beveled and saucer Olivella that may have been used for

religious purposes. A new bone tool kit containing barbless fish spears and basketry awls appears, along with net sinkers. The mortar and pestle continue to be the primary food-processing ground stone tools. The first evidence of well-developed middens can be dated to this period.

The Lower Emergent Period is marked by social changes, particularly in the form of social stratification. Items signifying wealth and status, such as finely made shell beads and ornaments, began to appear. Arrow-sized projectile points appeared approximately 700 years ago. The structure of the obsidian trade network changed from tool production at the Napa Valley Glass Mountain obsidian quarries to the removal of raw material for tool production elsewhere. Mortuary practices include cremations and wealthy grave offerings.

Terminal Late Period artifacts consist of innovative tools, such as the toggle harpoon, hopper mortar, plain corner-notched arrow-sized projectile points, and wealth indicators, such as the clamshell disk beads and magnesite tube beads. The sequin and cup beads which had been evident in earlier periods abruptly disappear from use.

### ***Central Valley Chronology***

This discussion of the regional prehistoric background of the Central Valley is adapted from Rosenthal et al. (2007). The earliest well-documented entry and spread of humans into California occurred at the beginning of the Paleo-Indian Period (12,000–10,500 B.P.). Characteristic artifacts recovered from archaeological sites of this period have included fluted projectile points (often compared to Clovis points), cobble cores, and biface rough-outs. Social units are thought to have been small and highly mobile.

The beginning of the Lower Archaic Period (10,500–7,500 B.P.) coincides with that of the Middle Holocene climatic change that resulted in widespread floodplain deposition. This episode resulted in the burial of most of the early archaeological deposits. Most tools from this period were manufactured of local materials, and distinctive artifact types include large dart points and the milling slab and handstone.

The Middle Archaic Period (7,500–2,500 B.P.) is characterized by warm, dry conditions that brought about the drying up of pluvial lakes. Economies were more diversified and may have included the introduction of acorn-processing technology, although hunting remained an important source of food. Artifacts characteristic of this period include milling stones and pestles and a continued use of a variety of implements interpreted as large dart points.

The Upper Archaic Period (2,500–850 B.P.) corresponds with a sudden turn to a cooler, wetter, and more stable climate. The development of status distinctions based upon wealth is well documented in the archaeological record. Specialized tools, such as bone implements and stone plummets, as well as manufactured goods (e.g., Olivella saucer and saddle beads, Haliotis ornaments), were developed during this time. The regional variance of economies was largely attributable to the seasonality of resources that were harvested and processed in large quantities.

Several technological and social changes distinguish the Emergent Period (850 B.P. to Historic) from earlier cultural manifestations. The bow and arrow were introduced, ultimately replacing the large dart points, and territorial boundaries between groups became well established. In the latter portion of this period (1500 A.D. to the 1800s), exchange relations became highly regularized and sophisticated. The clam disk bead developed as a monetary unit of exchange, and increasing quantities of goods were moved greater distances. It was at the end of

this period that contact with Euro-Americans became commonplace, eventually leading to intense pressures on Native American populations.

## **Ethnographic Context**

The project area is situated within the area occupied by the Northern Valley Yokuts and the Costanoan/Ohlone. It was the work of ethnographers who identified regional variations of linguistic differences and similarities that facilitated in mapping the traditional tribal territories. Often, there is an overlap of cultures. The following text is a brief overview of each of the tribes.

The traditional Northern Valley Yokut territory extended from the San Joaquin River and the Delta to south of Mendota. The Diablo Range most likely marked the Yokuts' western boundary (Wallace 1978), and the Sierra foothills marked the eastern edge. Yokuts' occupation of the northern parts of the range may be relatively recent because linguistic evidence points toward an earlier Miwok occupation. The Yokuts gradually expanded their range northward and clearly occupied the area during the Spanish colonial period, as evidenced by mixed historic and prehistoric artifact assemblages. The late prehistoric Yokuts may have been the largest ethnic group in precontact California.

The Northern Valley Yokuts traded clam shells, asphaltum, buckskins, and obsidian with the Chumash tribe to the south. In return, the Chumash would trade abalone shell pendants and other shell ornaments (Pohorecky 1976:14). The Northern Valley Yokut settlement locations depended primarily on proximity to water and other resources. Dwellings constructed of tule stalks were built along the natural levees and the shores of rivers and sloughs. The Yokuts' primary subsistence consisted of acorns, salmon, and waterfowl, along with wild plants, seeds, and roots (Wallace 1978:464).

Euro-American contact with the Northern Valley Yokuts began in the late 1700s to early 1800s and continued through the Gold Rush era. The resulting disease and violent relations with the settlers led to significant reductions in the native populations. Although there was no gold within the Yokuts territory, miners passing through on their way to the diggings caused a certain amount of upheaval. Former miners who had seen the richness of the San Joaquin Valley on their way east later returned to settle and farm the area (Wallace 1978:469), further displacing the remaining native populations.

The name "Costanoan" was derived from Spanish settlers who called the inhabitants of the area "*Costenos*" (people of the coast). The word "*costenos*" was later mispronounced, and the current name has remained to identify the many groups that inhabited the region. The Costanoans are also referred to as the Ohlone. The origin of the word "Ohlone" is disputed, but it may have come from the name of a village along the San Mateo coast (Galvan 1968). The Costanoan linguistic family consists of eight languages, as opposed to dialects, with the closest form from the Utian family within the Penutian Stock (Levy 1978:485–486). The Costanoans had approximately 50 distinct and autonomous tribelets, each with a population ranging from 50 to 500 persons.

The dwellings were domed structures with a tule and grass roof tied down with willow. Dance houses and sweat lodges were both circular in shape. Winter settlements were located near shorelines, lagoons, or sloughs where reliable supplies of freshwater existed along with a wide variety of flora and fauna. Subsistence involved the taking of game (such as deer) year-round, with salmon and sturgeon available during spring and fall. Migratory birds such as geese were an important seasonal resource and were caught using decoys with nets. Other mammals,

such as dog, wild cat, skunk, raccoon, and other small mammals, were eaten. Large mammals eaten included the black-tailed deer, grizzly bear, mountain lions, and, for villages closer to the ocean, sea lions and whales (Levy 1978:491).

By 1797, seven Spanish missions had been established within the Costanoan territory, and with them came the introduction of diseases. In a 60-year period, the native population fell from 10,000 to less than 2,000 individuals. By 1973, the estimated count of persons of Costanoan descent was 200 (Levy 1978:487).

## **Historic Context**

The SWP is a water storage and delivery system of reservoirs, aqueducts, powerplants, and pumping plants. Its main purpose is to store water and distribute it to 29 urban and agricultural water suppliers in Northern California, the San Francisco Bay Area, the San Joaquin Valley, the Central Coast, and Southern California.

### ***State Water Project***

The idea of a statewide water project was first discussed in 1919, when Lt. Robert B. Marshall, chief hydrographer of the U.S. Geological Survey, proposed to California's governor a redistribution of water from the Sacramento River to the San Joaquin Valley and then over the Tehachapi Mountains to southern California. Marshall's plan was met with resistance, but it served as the basis for what eventually became the SWP (Cooper 1968:50–52; DWR 2011).

Planning for the SWP began in earnest after World War II, during a period when California experienced a population surge. Local governments and water officials quickly realized that their water supplies could not meet the growing demand of their communities. Farmers were also draining regional groundwater basins to irrigate their land (DWR 2011). State engineer Arthur D. Edmonston published a proposal that suggested building a multipurpose dam, reservoir, and power plant on the Feather River, northeast of the small town of Oroville in the northern Sacramento Valley; an aqueduct to transport water from the Delta to Santa Clara and Alameda Counties; and a second aqueduct to serve the San Joaquin Valley and southern California (DWR 2011).

The storage of water would reduce flooding hazards, and the stored water could be released into the Sacramento River at planned intervals and then deposited into the Delta. Here it would be able to check the flow of salt water from the San Francisco Bay, which during droughts had seeped as far inland as Sacramento. The project would be paid for in part by the electricity generated at the dam's power plant. Edmonston also proposed constructing a giant aqueduct fed by massive, custom-designed pumps that would force the water from the Delta southward, where it could be used to water the dry southern valley and the cities of southern California after pumps lifted it over the Tehachapi Mountains at the southern end of the San Joaquin Valley (DWR 1974a:7). Financing for the SWP was approved by the voters of California in 1960 as a result of the Burns-Porter Act (DWR 2010).

This act authorized the issuance of \$1.75 billion in general obligation bonds to assist with funding for building necessary water facilities for the SWP. Construction began shortly thereafter, and the first phase of the SWP was completed between 1961 and 1974 (DWR 1974a:8; Cooper 1968:201–204; JRP and Caltrans 2000:82).

## Bethany Reservoir and the California Aqueduct

The SWP has three aqueducts: the North Bay Aqueduct, South Bay Aqueduct, and the California Aqueduct. The South Bay Aqueduct begins at Bethany Reservoir, which is the forebay for the SBPP and is a balancing pool for the discharge from the Delta Pumping Plant, located north of the reservoir (DWR 1974a:46). The SBPP lifts water from the forebay into the South Bay Aqueduct. To create the reservoir, five dams were constructed. The first dam was the Bethany Forebay Dam, constructed between 1958 and 1961. This dam created Bethany Forebay, which was part of the original engineering plans for the South Bay Aqueduct (DWR 1974b:5, 220).

During the construction of the California Aqueduct, the decision was made to expand the forebay into a reservoir because it would provide a more economical conveyance facility for this section of the California Aqueduct than constructing a canal. Four additional dams were constructed, and the aqueduct was cut into two sections at the northern and southern ends of the reservoir. In addition to the four dams, strip drains of granular materials surrounding perforated drain pipes were designed. Before the reservoir was expanded and the California Aqueduct was operating, an interim canal system was constructed for the South Bay Aqueduct that drew water from the Delta-Mendota Canal, located approximately 2 miles east of the reservoir. A temporary pumping plant and outlet works was constructed at the right abutment of the Forebay Dam. Currently, that outlet works would be used in case of an emergency to empty the reservoir. Today, Bethany Reservoir functions as a 1.5-mile reach of the California Aqueduct; provides operational flexibility to the Delta Pumping Plant, located 2 miles north; and serves as a forebay for the Delta Pumping Plant (DWR 1974a:53; DWR 1974b:4–5, 219, 221, 228; DWR 2013).

The California Aqueduct was essential to the development of California. It conveys water to users in the San Joaquin Valley, where thousands of acres of land are cultivated, dramatically increasing California's agricultural efforts in the region and propelling the state to the top in nationwide agricultural production. In southern California, the aqueduct serves municipal users by supplying drinking water.

The SWP is the largest state-built water conveyance system in the United States, spanning more than 600 miles between northern and southern California. In 2001, the American Society of Civil Engineers recognized the SWP as one of the greatest American engineering achievements of the 20th century, listing it as one of only 10 internationally ranked "Monuments of the Millennium" for its remarkable engineering aspects and for the positive impact it had on regional economic trade and development. Today, the SWP provides drinking water for 25 million people; irrigates approximately 750,000 acres; and features 34 storage facilities, 20 pumping plants, four pumping-generating plants, five hydroelectric power plants, and 700 miles of open canals and pipelines (American Society of Civil Engineers 2011; DWR 2010).

### ***Post-World War II Bridge Construction***

The bridges designed in California vary in type, style, and materials. Common styles include stone arch, metal truss, and concrete bridges. In California, constructing reinforced-concrete bridges proved economically practical, and this type of bridge became one of the most prevalent types in the state (Caltrans 1990:71). The concrete bridges of the early 20th century typically fall into four categories: closed spandrel arch, open spandrel arch, concrete girder, and concrete slab. In highway construction, the concrete girder was the most popular, followed by the concrete slab bridge (Caltrans 1990:76).

Bridges constructed in the first half of the 20th century were often built using reinforced concrete. By the early 1950s, engineers began using the new technology of prestressed concrete. Prestressed concrete was first developed in Europe in the early 20th century, and its use began to grow, particularly after World War II, when there was a shortage of steel and a high demand to rebuild bridges lost during the war (Dallaire 1977:118). Prestressing makes the concrete stronger and reduces cracks except under excessive loads. Fewer materials are necessary when using prestressed concrete because precast girders manufactured off-site can be used, and it is not necessary to build temporary timber frames. Finally, unlike with most steel bridges, there is no need to paint bridges made of prestressed concrete (Barton 1951:3–5). Prestressed concrete proved to be highly reliable and was used extensively throughout the 1950s and 1960s. By 1977, 78% of the bridges constructed in California were made of prestressed concrete (Dallaire 1977:118). Prestressed concrete continues to be a popular, cost-effective, and durable method for bridge construction.

## **PALEONTOLOGICAL RESOURCES**

The Bethany Reservoir, Forebay Dam, SBPP, and intake structure are all located in the Upper Cretaceous-age Panoche Formation, which is composed of shale, sandstone, and siltstone of marine origin (Wagner et al. 1991). The SBPP disposal site was originally underlain by the Panoche Formation, but has been used in the past for disposal of spoils materials from other projects at the Bethany Reservoir, such as silt dredged from the bottom of the reservoir.

### **Paleontological Resource Assessment Criteria**

The potential paleontological importance of a project site can be assessed by identifying the paleontological importance of exposed rock units. A paleontologically important rock unit is one that has a high potential paleontological productivity rating and is known to have produced unique, scientifically important fossils. The potential paleontological productivity rating of a rock unit exposed at a project site refers to the abundance/densities of fossil specimens and/or previously recorded fossil sites in exposures of the unit in and near the project site. Exposures of a specific rock unit in a project site are most likely to yield fossil remains representing particular species in quantities or densities similar to those previously recorded from the unit in and near the project site.

An individual vertebrate fossil specimen may be considered unique or significant if it is identifiable and well preserved and it meets one of the following criteria:

- ▶ a type specimen (i.e., the individual from which a species or subspecies has been described);
- ▶ a member of a rare species;
- ▶ a species that is part of a diverse assemblage (i.e., a site where more than one fossil has been discovered) wherein other species are also identifiable, and important information regarding life history of individuals can be drawn;
- ▶ a skeletal element different from, or a specimen more complete than, those now available for its species; or
- ▶ a complete specimen (i.e., all or substantially all of the entire skeleton is present).

For example, identifiable vertebrate marine and terrestrial fossils are generally considered scientifically important because they are relatively rare. The value or importance of different fossil groups varies, depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions, such as part of a research project. Marine invertebrate fossil specimens are generally common, well developed, and well documented. They would generally not be considered a unique paleontological resource.

### **Paleontological Resource Inventory**

Published and unpublished geological and paleontological literature was reviewed to document the number and locations of previously recorded fossil sites from rock units exposed in and near the project site and vicinity, as well as the types of fossil remains each rock unit has produced. The literature review was supplemented by an archival search conducted at the University of California Museum of Paleontology (UCMP) in Berkeley, California. The records search results indicate that there are no previously recorded fossil localities within the project site boundaries.

#### ***Panoche Formation***

Only one vertebrate fossil locality has been reported from the Panoche Formation, and that locality (which yielded an unidentified reptile specimen) is in Contra Costa County. Although more than 100 invertebrate localities have been reported from several counties in central California, none have been reported in Alameda County (UCMP 2013). Furthermore, marine invertebrates are generally common and well documented and therefore would not be considered a “unique” paleontological resource. Thus, the Panoche Formation is considered to be of low paleontological sensitivity.

## **3.5.2 REGULATORY SETTING**

CEQA provides a broad definition of what constitutes a cultural or historical resource. Cultural resources can include traces of prehistoric habitation and activities, historic-era sites and materials, and places used for traditional Native American observances or places with special cultural significance. In general, it is required to treat any trace of human activity more than 50 years in age as a potential cultural resource.

CEQA states that if a project would have significant impacts on important cultural resources, then alternative plans or mitigation measures must be considered. However, only significant cultural resources (termed “historical resources”) need to be addressed. The State CEQA Guidelines define a historical resource as a resource listed or eligible for listing in the California Register of Historical Resources (CRHR) (Public Resources Code Section 5024.1). A resource may be eligible for inclusion in the CRHR if it:

1. is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;
2. is associated with the lives of persons important in our past;
3. embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

4. has yielded, or may be likely to yield, information important in prehistory or history.

The State CEQA Guidelines also require consideration of unique archaeological resources (Section 15064.5). As used in the Public Resources Code (Section 21083.2), the term “unique archaeological resource” means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. contains information needed to answer important scientific research questions, and there is a demonstrable public interest in that information;
2. has a special and particular quality, such as being the oldest of its type or the best available example of its type; or
3. is directly associated with a scientifically recognized important prehistoric or historic event or person.

In addition to meeting one or more of the above criteria, resources eligible for listing in the CRHR must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association (Office of Historic Preservation 1999:71).

### **3.5.3 METHODS**

Efforts to locate cultural resources in the project site consisted of records search review, Native American consultation, an architectural field survey of the project site, and research in AECOM’s cultural library and at the California State Library, Sacramento.

Technical studies conducted by AECOM for the proposed project began with a review of the existing documentation provided by DWR and a records search conducted by the Northwest Information Center of the California Historical Resources Information System.

The records search resulted in the identification of one previously recorded resource on the project site. Resource P-01-10947 is the Pittsburg-Tesla Transmission Line, constructed in 1959–1960. This resource crosses the project site on the southwestern portion near the SBPP. Resources P-01-177, -178, -10955, -10956, -10957, and -10958 are located within the 0.25 mile of the APE buffer. P-01-178 (CA-Ala-456) is the only prehistoric resources located within the 0.25-mile radius. This resource consists of a rock shelter with four bedrock mortars that was recorded in 1984. The remaining resources consist of a historic homestead (P-01-177/CA-Ala-455H); a historic-era corral (P-01-010955); a historic-era wood, metal, and barbed wire fence segment (P-01-01956); and the remnants of an abandoned corral (P-01-01957).

### **NATIVE AMERICAN COORDINATION**

As part of the CEQA and Section 106 analysis for the Bethany Dam Improvement Project, DWR consulted with the Native American Heritage Commission (NAHC) on December 3, 2012, requesting information from the Sacred Lands File and Native American Contacts List pertinent to the project site. A response from the NAHC noted that a search of the Sacred Lands File failed to indicate the presence of any known Native American cultural resources or traditional cultural places in or near the project site. The NAHC also provided contact

information of groups or individuals who may have knowledge of cultural resources in the area. Letters were sent to these groups or individuals on January 3, 2013, requesting information on any traditional cultural properties or values within or near the project site. No responses to the letters were received. Follow-up telephone calls were attempted, and messages were left for each of the contacts. No responses to the messages have been received.

## **FIELD SURVEYS**

### **Archaeology**

AECOM archaeologists conducted intensive pedestrian surveys of the project site on October 3 and October 15, 2013. The crew carried iPads loaded with Google Earth, as well as aerial and topographic maps of the project site. All portions of the project site were subject to intensive survey. Because of the layout of the project site, meandering transects were used instead of evenly spaced metered transects. Visibility on the road segments, parking lot, and other areas exhibiting traffic use was excellent. Ground visibility at all dam locations and staging areas was poor because thick, high grasses grew in these areas. No prehistoric cultural resources were identified on the project site.

### **Built Environment**

On October 3 and October 15, 2013, an AECOM architectural historian conducted field surveys of the project site. Resources more than 45 years old were inventoried and recorded. Recorded resources include the Bethany Reservoir (and associated dams, toe drains, and weir); an abandoned, interim canal of the South Bay Aqueduct; the SBPP; and the Christensen Road Bridge. No other cultural resources were identified as a result of the surveys.

## **3.5.4 DISCUSSION**

### **a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?**

*No Impact.*

The California Aqueduct is not listed on the National Register of Historic Places and DWR does not regard the California Aqueduct as a historic resource. The Bethany Reservoir, the SBPP, and the Christensen Road Bridge, which are associated with the SWP and the California Aqueduct, are also not listed on the National Register and DWR does not regard these features to be historic resources.

Under CEQA, a significant effect would occur if the proposed project results in a substantial adverse change in the significance of a historical resource. The significance of a historical resource is materially impaired when a proposed project demolishes or materially alters in an adverse manner those physical characteristics that convey its historical significance. DWR has located a Caltrans letter wherein Caltrans stated and, SHPO staff similarly stated in July 2012 that the California Aqueduct was eligible for listing in the National Register (P-19-004154). That document describes a significant water distribution system, its remarkable engineering aspects, and its role in California history. DWR does not agree with the analysis undertaken and presented in the Caltrans letter, and does not regard the California Aqueduct as a historic resource. However, this point is ultimately not critical. As the analysis below shows, the proposed project would not have any impact.

The Bethany Reservoir (and associated dams, toe drains, and weir) is a wide reach of the California Aqueduct that is significant for its role in water conveyance and redistribution as part of the SWP. The SBPP was constructed as

part of the South Bay Aqueduct, one of the three aqueducts constructed for the SWP. The Christensen Road Bridge was built as part of the California Aqueduct and was a planned and character-defining feature of the California Aqueduct and the SWP. The SWP and the California Aqueduct are significant as comprehensively planned and publicly sanctioned water conveyance public works projects that facilitated development throughout California and for the complex design necessary to redistribute water throughout California. The abandoned, interim canal of the South Bay Aqueduct was intended to be a temporary canal used only until the California Aqueduct was completed. Furthermore, it has lost integrity since its construction. Therefore, it is not eligible for listing in either the NRHP or the CRHR and is not considered a historical resource under CEQA.

The proposed project involves removing sediment from the base of the reservoir, staging in developed areas, and disposing of the sediment in a prescribed spoil area. Implementing the project would not alter the Bethany Reservoir (and associated features), the SBPP, or Christensen Road Bridge or diminish any character-defining features of the three resources, including the dams, toe drains, width of the reservoir, pumps of the pumping plant, and the prestressed concrete and width of the bridge. The resources would retain sufficient historic materials and integrity to reflect their significance. Therefore, there would be no impact.

**b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?**

*Less than Significant with Mitigation Incorporated.* Archival and field research revealed no archaeological resources within the project site, and it is extremely unlikely that buried archaeological resources are present. Nevertheless, it is possible that previously undiscovered or unknown cultural remains exist at the site and could be encountered or uncovered during project construction. Therefore, this impact would be potentially significant. However, with implementation of Mitigation Measure CUL-1 in the unlikely event that archaeological resources are discovered during project-related construction activities, this potentially significant impact would be reduced to a less-than-significant level.

**Mitigation Measure CUL-1: Halt Ground-Disturbing Construction Activities if Cultural Materials Are Discovered.**

*The following measures shall be implemented to avoid or minimize potential impacts on cultural materials:*

- ▶ *If cultural materials (e.g., unusual amounts of shell, animal bone, flaked stone, bottle glass, ceramics, structure/building remains) are discovered during project construction, ground disturbances in the immediate vicinity of the find shall be halted immediately, and a qualified professional archaeologist shall be notified regarding the discovery. The archaeologist shall determine whether the resource is potentially significant as per the CRHR and identify appropriate management steps needed to protect and secure identified resources.*

**Timing:** *During construction*

**Responsibility:** *DWR*

**c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

*Less-than-Significant Impact.* Only one vertebrate fossil in the UCMP (2013) database has been recovered from the Panoche Formation, and that locality is in Contra Costa County. Although marine invertebrates have been

recovered from the Panoche Formation, there are no recorded invertebrate localities in Alameda County (UCMP 2013). Because this formation is considered to be of low paleontological sensitivity, earth-moving activities associated with the proposed project would have a less-than-significant impact on unique paleontological resources.

**d) Disturb any human remains, including those interred outside of formal cemeteries?**

*Less than Significant with Mitigation Incorporated.* No evidence of human remains at the project site was found in documentary research, and it is extremely unlikely that buried human remains are present. Nevertheless, it is possible that presently unknown prehistoric burials could be uncovered during project construction. California law recognizes the need to protect interred human remains, particularly Native American burials and associated items of patrimony, from vandalism and inadvertent destruction. In light of the potential to uncover unknown or undocumented Native American burials, this impact would be potentially significant. Implementing Mitigation Measure CUL-2 would reduce this impact to a less-than-significant level.

**Mitigation Measure CUL-2: Halt Construction Activities if Any Human Remains Are Discovered.**

*The following measures shall be implemented to avoid or minimize potential impacts on human remains:*

- ▶ *The procedures for the treatment of discovered human remains are described in Sections 7050.5 and 7052 of the California Health and Safety Code and Section 5097 of the California Public Resources Code. In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, such activities that may affect the remains shall be halted, and DWR or its designated representative shall be notified. DWR shall immediately notify the county coroner and a qualified professional archaeologist. If the coroner determines that the remains are those of a Native American, the coroner must contact the NAHC by telephone within 24 hours of making that determination (California Health and Safety Code, Section 7050.5[c]).*
- ▶ *DWR's responsibilities for acting upon notification of a discovery of Native American human remains are identified in detail in Section 5097.9 of the California Public Resources Code. DWR or its appointed representative and the professional archaeologist shall consult with a Most Likely Descendant (MLD) determined by the NAHC regarding the removal or preservation and avoidance of the remains and shall determine whether additional burials could be present in the vicinity.*

*Assuming that an agreement can be reached between the MLD and DWR or its representative with the assistance of the archaeologist, these steps would minimize or eliminate adverse impacts on the uncovered human remains.*

**Timing:**                      *During construction*

**Responsibility:**         *DWR*

### 3.6 GEOLOGY AND SOILS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. Geology and Soils. Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### 3.6.1 ENVIRONMENTAL SETTING

The Greenville-Clayton-Marsh Creek Fault Zone is located approximately 4 miles west of Bethany Reservoir (CGS 1982). The fault zone extends from an area northwest of Livermore Valley along the Marsh Creek and Clayton Faults toward Clayton Valley. It has been suggested that slip from the Greenville Fault is transferred to the Concord Fault along the Mt. Diablo fold and thrust belt and that only minimal slip continues to the Clayton Fault. The fault zone extends southeastward into San Antonio Valley, where it offsets late Mesozoic rocks of the Franciscan Complex. Southeast of Livermore Valley, the fault zone is located within the uplifted Diablo Range. (Bryant and Cluett 2002) The slip rate is estimated to be 2.0 millimeters per year (Wills et al. 2007).

A series of two magnitude 5.8 earthquakes occurred along the Greenville section of the Greenville-Clayton-Marsh Creek Fault Zone in January 1980. The earthquakes injured 50 people, caused minor damage to approximately 50 houses, and resulted in an estimated \$10 million in property damage at the Lawrence Livermore National Laboratory in Livermore. Surface fault rupture occurred in several areas along the Greenville segment of this fault zone during the two 1980 earthquakes (USGS 1993a, 1993b). The Working Group on California Earthquake Probabilities (2007:74) estimates there is a 3% probability that an earthquake with a magnitude greater than 6.7 will occur on this fault zone within the next 30 years.

The area in the vicinity of the intake structure and the boat ramp is nearly level to gently sloping. A low hill is present further to the northwest where the SBPP disposal site is located. The terrain to the south and southwest is hilly with gradual slopes. Elevations range from approximately 240 to 300 feet above mean sea level.

Bethany Reservoir, its associated dams, and the SBPP disposal site are located in the Upper Cretaceous-age Panoche Formation. This formation is composed of shale, sandstone, and siltstone of marine origin (Wagner et al. 1991).

Several investigations have been undertaken to characterize the physical and geotechnical properties of the sediment in the vicinity of the intake structure (DWR 2013:34). Closest to the intake, soft sediments were measured to a depth of approximately 1 foot below the Bethany Forebay floor, followed by soft gravel to a depth of at least 18 inches. Farther from the intake structure, soft sediments were encountered to the maximum explored depth of approximately 4.5 feet. The floor of the forebay at the locations sampled was generally level. The composition of sediment samples was characterized as clayey gravel with sand, and elastic silt (DWR 2013:34–35). A high proportion of the sediments contain clay. Also, a substantial portion of the sediment is less than 5 microns in size.

### 3.6.2 DISCUSSION

- a) **Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:**
  - i) **Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.)**

*Less-than-Significant Impact.* Bethany Reservoir and its associated facilities are located approximately 4 miles east of the Greenville-Clayton-Marsh Creek Fault Zone. This fault zone displays evidence of surface fault rupture during Holocene time, the most recent of which occurred during the two January 1980 earthquakes near Livermore (USGS 1993a, 1993b). However, Bethany Reservoir is not located within an Alquist-Priolo Earthquake Fault Zone Map, and surface fault rupture generally involves an area that is only a few yards wide. Therefore, this impact would be less than significant.

- ii) **Strong seismic ground shaking?**

*Less-than-Significant Impact.* Two magnitude 5.8 earthquakes occurred along the Greenville segment of the Greenville-Clayton-Marsh Creek Fault Zone in 1980. The epicenters for the January 24 and January 27, 1980, earthquakes were located approximately 9 miles northwest and 7.5 miles southwest of the project site,

respectively (USGS 1993a, 1993b). The Working Group on California Earthquake Probabilities (2007:74) estimates there is a 3% probability that an earthquake with a magnitude greater than 6.7 will occur on this fault zone within the next 30 years. However, the proposed project would be completed during an approximately 5-day period and would not involve construction of any utility lines, buildings, or other structures that could pose a hazard if strong seismic ground shaking were to occur. Therefore, this impact would be less than significant.

**iii) Seismic-related ground failure, including liquefaction?**

*No Impact.* Soil liquefaction occurs when ground shaking from an earthquake causes a sediment layer saturated with groundwater to lose strength and take on the characteristics of a fluid, thus becoming similar to quicksand. Saturated, uncompacted fill material located close to an active fault has a higher potential to liquefy. Liquefaction poses a hazard to engineered structures. The loss of soil strength can result in bearing capacity insufficient to support foundation loads, increased lateral pressure on retaining walls, and slope instability.

As described by DWR (2013), previous experience with suction dredging indicates that a substantial amount of water is usually unintentionally dredged along with the targeted sediments. Suction dredging commonly generates 10 times the volume of the sediment because water is also entrained. Thus, the proposed removal of 143 cubic yards of sediment by suction dredging methods would likely yield an estimated dredged volume (sediment plus water) of 1,430 cubic yards. As described in Chapter 2, "Project Description," the sediments dredged from Bethany Reservoir would be transported via pumps and hoses to either a tanker truck for delivery to the disposal site or to a series of staged tanks for decanting before transportation to the disposal site. After sediment removal and placement have been completed and the sediment has dried sufficiently, the soils that were excavated to create the spoil site would be used as cover over the sediment. The spoils pile would not be used for construction of utilities, roads, buildings, or other structures; therefore, regardless of the volume of water introduced to the site along with the sediment, no liquefaction hazard to either people or structures would be created. Thus, there would be no impact.

**iv) Landslides?**

*No Impact.* The low hills present south and southeast of the project site are unlikely to represent a landslide hazard, and the proposed underwater dredging operations would have no effect on the potential for landslides to occur. Thus, there would be no impact.

**b) Result in substantial soil erosion or the loss of topsoil?**

*Less than Significant with Mitigation Incorporated.* As discussed in Chapter 2, "Project Description," the spoils pile would be seeded with native vegetation at the completion of grading activities; therefore, substantial soil erosion would not occur following completion of the project. However, project implementation would involve grading at the spoils pile to remove existing cover soils, deposition of dredged sediment, and then replacement of soil cover and regrading. Localized soil loss from wind and water erosion during grading could occur. Therefore, the impact associated with construction-related erosion would be potentially significant.

Implementing Mitigation Measure GEO-1 would reduce the impact associated with construction-related soil erosion to a less-than-significant level because a storm water pollution prevention plan (SWPPP) and associated BMPs that are specifically designed to reduce erosion would be prepared and implemented.

### **Mitigation Measure GEO-1: Prepare and Implement a Storm Water Pollution Prevention Plan.**

*DWR shall obtain coverage under the State Water Resources Control Board's National Pollutant Discharge Elimination System stormwater permit for general construction activity (Order 2009-0009-DWQ), including preparation and submittal of a project-specific SWPPP at the time the notice of intent to discharge is filed. The SWPPP shall identify and specify the following details:*

- ▶ *the use of an effective combination of robust erosion and sediment control BMPs for use on the project site at the time of construction that would reduce the potential for runoff and the release, mobilization, and exposure of pollutants from project-related construction sites (may include but would not be limited to temporary erosion control and soil stabilization measures, sedimentation ponds, check dams, and silt fences);*
- ▶ *the pollutants likely to be used during construction that could be present in stormwater runoff and those that could be present in the dredged sediments;*
- ▶ *spill prevention and contingency measures, including measures to prevent or clean up spills of hazardous waste and of hazardous materials used for equipment operation, and emergency procedures for responding to spills;*
- ▶ *the means of waste disposal;*
- ▶ *personnel training requirements and procedures that would be used to ensure that workers are aware of permit requirements and proper installation methods for BMPs specified in the SWPPP; and*
- ▶ *the appropriate personnel responsible for supervisory duties related to implementation of the SWPPP.*

*Where applicable, BMPs identified in the SWPPP shall be in place throughout all site work and construction activities. BMPs may include but would not be limited to the following measures:*

- ▶ *Implement temporary erosion and sediment control measures in disturbed areas to minimize discharge of sediment into nearby drainage conveyances, in compliance with state standards in effect at the time of construction. These measures may include silt fences, staked straw bales or wattles, sediment/silt basins and traps, geofabric, sandbag dikes, and temporary vegetation.*
- ▶ *Establish permanent vegetative cover to reduce erosion in areas disturbed by construction by slowing runoff velocities, trapping sediment, and enhancing filtration and transpiration.*
- ▶ *Use drainage swales, ditches, and earth dikes to control erosion and runoff by conveying surface runoff down sloping land, intercepting and diverting runoff to a watercourse or channel, preventing sheet flow over sloped surfaces, preventing runoff accumulation at the base of a grade, and avoiding flood damage along roadways used to transport sediment.*

*A copy of the approved SWPPP shall be available at all times on the construction site.*

- c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?**

*Less-than-Significant Impact.* After the sediments from Bethany Reservoir have been dredged, they would be placed on a spoils pile. As previously described, the top of the current SBPP disposal site would be removed, the sediments would be deposited, and the existing cover would be replaced. Then the spoils pile would be graded. DWR engineers would oversee the project to determine the appropriate soil moisture content and the appropriate grading contours to ensure that the spoils pile would be stable. Therefore, this impact would be less than significant.

- d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial risks to life or property?**

*No Impact.* The results of laboratory testing of the sediments to be removed (DWR 2013:34–35) indicate that a high clay content is present, which indicates that the sediments are expansive. However, the sediments would not be used for construction purposes; rather, they would be placed in a spoils pile at the SBPP disposal site. Thus, no risks to life or property would occur from construction in expansive soils, and there would be no impact.

- e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?**

*No Impact.* Recreational facilities in the Bethany Reservoir SRA include on-site restroom facilities that would be used by project construction workers. The proposed project itself (i.e., removal of sediment from Bethany Reservoir), does not involve wastewater treatment. Therefore, no impact would occur.

### 3.7 GREENHOUSE GAS EMISSIONS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. Greenhouse Gas Emissions. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### 3.7.1 ENVIRONMENTAL SETTING

Certain gases in the earth’s atmosphere, classified as greenhouse gases (GHGs), play a critical role in determining the earth’s surface temperature. A portion of the solar radiation that enters Earth’s atmosphere is absorbed by the earth’s surface, and a smaller portion of this radiation is reflected back toward space. Infrared radiation (i.e., thermal heat) is absorbed by GHGs; as a result, infrared radiation released from the earth that otherwise would have escaped back into space is instead “trapped,” resulting in a warming of the atmosphere. This phenomenon, known as the “greenhouse effect,” is responsible for maintaining a habitable climate on Earth.

Global warming is the name given to the increase in the average temperature of Earth’s near-surface air and oceans since the mid-20th century. Warming of the climate system is now considered to be unequivocal (IPCC 2007), with global surface temperature increasing approximately 1.33 degrees Fahrenheit (°F) over the last 100 years. Continued warming is projected to increase the global average temperature between 2°F and 11°F over the next 100 years.

The causes of this warming have been identified as both natural processes and the result of human actions. The Intergovernmental Panel on Climate Change concludes that variations in natural phenomena, such as solar radiation and volcanoes, produced most of the warming from preindustrial times to 1950 and had a small cooling effect afterward. However, after 1950, increasing GHG concentrations resulting from human activity, such as fossil fuel burning and deforestation, have been responsible for most of the observed temperature increase. These basic conclusions have been endorsed by more than 45 scientific societies and academies of science, including all of the national academies of science of the major industrialized countries. Since 2007, no scientific body of national or international standing has maintained a dissenting opinion (Doran and Zimmerman 2009).

Increases in GHG concentrations in Earth’s atmosphere are thought to be the main cause of human-induced climate change. GHGs naturally trap heat by impeding the exit of reflected solar radiation back into space. Some GHGs occur naturally and are necessary for keeping Earth’s surface habitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years have decreased the amount of solar radiation that is reflected back into space, intensifying the natural greenhouse effect and resulting in the increase of global average temperature.

The principal GHGs are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), sulfur hexafluoride (SF<sub>6</sub>), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs). Each of the principal GHGs has a long atmospheric lifetime (1 year to several thousand years). In addition, the potential heat-trapping ability of each of these gases varies significantly from the others. For example, CH<sub>4</sub> is 23 times as potent as CO<sub>2</sub>, whereas SF<sub>6</sub> is 22,200 times more potent than CO<sub>2</sub>. Conventionally, GHGs have been reported as CO<sub>2</sub> equivalents (CO<sub>2</sub>e). This approach takes into account the relative potency of non-CO<sub>2</sub> GHGs to convert their quantities to an equivalent amount of CO<sub>2</sub> so that all emissions can be reported as a single quantity.

The primary human-made processes that release these gases are the burning of fossil fuels for transportation, heating, and electricity generation; agricultural practices that release CH<sub>4</sub>, such as livestock grazing and crop residue decomposition; and industrial processes that release smaller amounts of high global warming potential gases, such as SF<sub>6</sub>, PFCs, and HFCs. Deforestation and land cover conversion have also been identified as contributing to global warming by reducing Earth's capacity to remove CO<sub>2</sub> from the air and altering Earth's albedo (or surface reflectance), allowing more solar radiation to be absorbed.

### **CRITERIA FOR DETERMINING SIGNIFICANCE OF EFFECTS**

It is unlikely that any single project could have a significant GHG impact. However, the cumulative effect of human activities has been clearly linked to quantifiable changes in the composition of the atmosphere, which in turn have been shown to be the main cause of global climate change (IPCC 2007). Therefore, the environmental effects of GHG emissions from this project will be addressed cumulatively.

In May 2012, DWR adopted the DWR *Climate Action Plan Phase 1: Greenhouse Gas Emissions Reduction Plan* (GGERP), which details DWR's efforts to reduce its GHG emissions consistent with Executive Order S-3-05 and the Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32). DWR also adopted the IS/negative declaration prepared for the GGERP in accordance with the State CEQA Guidelines review and public process. Both the GGERP and IS/negative declaration are incorporated herein by reference and are available at <http://www.water.ca.gov/climatechange/CAP.cfm>. The GGERP provides estimates of historical (back to 1990), current, and future GHG emissions related to operations, construction, maintenance, and business practices (e.g. building-related energy use). The GGERP specifies aggressive 2020 and 2050 emission reduction goals and identifies a list of GHG emissions reduction measures to achieve these goals.

DWR developed construction emission thresholds to distinguish between typical construction projects that are analyzed and addressed under the GGERP and Extraordinary Construction Projects, whose construction emissions are not analyzed or addressed under the GGERP. A construction project will be considered to be an Extraordinary Construction Project if either:

- ▶ the project emits more than 25,000 metric tons (MT) CO<sub>2</sub>e in total during the construction phase of the project or
- ▶ the project emits more than 12,500 MT CO<sub>2</sub>e in any single year of construction.

These thresholds represent a level of GHG emissions that by themselves could potentially adversely affect DWR's ability to achieve its GHG emissions reduction goals. However, a project exceeding either of these thresholds would represent construction activities exceeding the typical level of construction activity performed by DWR and, therefore, exceeding the level of cumulative effects analysis done for the GGERP. Construction emissions that exceed either of these thresholds are, therefore, not analyzed or addressed under the GGERP, and

projects that exceed these thresholds would not be eligible to rely on the analysis in the GGERP for project-specific cumulative impacts analyses under CEQA. For projects where construction emissions exceed this threshold, a project-specific impact analysis for construction GHG emissions following the State CEQA Guidelines and DWR policy may need to be conducted. Depending on the results of the impact analysis, mitigation might need to be implemented to address the project's potential impacts.

DWR states that including thresholds in the GGERP does not constitute a determination that these are generally applicable as thresholds of significance for CEQA purposes. Each project is evaluated on a case-by-case basis using the most up-to-date calculation and analysis methods. However, because the proposed project involves essentially only construction-related emissions (there is no change in operations-related emissions), it is appropriate to use the GGERP thresholds to evaluate whether the project's GHG emissions contribution to the global impact of climate change would reach the level of a considerable incremental contribution to a significant cumulative impact.

### 3.7.2 DISCUSSION

#### a) **Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

*Less-than-Significant Impact.* Construction-related GHG exhaust emissions would be generated by sources such as heavy-duty off-road equipment, trucks hauling materials to the project site, and worker commute vehicles. GHG emissions generated by construction activities would be primarily in the form of CO<sub>2</sub>. Although emissions of other GHGs, such as CH<sub>4</sub>, are important with respect to global climate change, emission levels of other GHGs are less dependent on the emissions-generating activities associated with the project than are levels of CO<sub>2</sub>. However, where appropriate emission factors were available, emissions of CH<sub>4</sub> and N<sub>2</sub>O were included in the analysis of the project.

Construction-related emissions for the proposed project were estimated using fuel consumption rates for off- and on-road vehicles and emission factors for diesel fuel. Estimated total GHG emissions from construction of the proposed project would be 6.9 MT CO<sub>2</sub>e (see Appendix A). As discussed in the "Air Quality" section, the proposed project is not anticipated to generate new vehicle trips and would not generate any additional activities related to maintenance or operations that would exceed existing levels. The proposed project would not significantly increase the generation or use of electricity, water, wastewater, and solid waste.

The total construction-related and operational CO<sub>2</sub>e emissions of 6.9 MT CO<sub>2</sub>e associated with implementing the proposed project would be substantially less than any of the GHG thresholds discussed earlier in this section. Therefore, the proposed project would not generate GHG emissions, either directly or indirectly, that might have a significant impact on the environment. This impact would be less than significant.

#### b) **Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?**

*Less-than-Significant Impact.* AB 32 directed ARB to develop a scoping plan and identify a list of early action GHG reduction measures. ARB's scoping plan identifies measures to meet California's goal of reducing emissions to 1990 levels by 2020 and reiterates the state's role in the long-term goal established in Executive Order S-3-05, which is to reduce GHG emissions to 80% below 1990 levels by 2050. According to ARB, the

2020 goal was established as an achievable, midterm target, and the 2050 GHG emissions reduction goal represents the level scientists believe is necessary to stabilize the climate (ARB 2008). However, the scoping plan does not recommend implementing additional measures for meeting specific GHG emissions limits beyond 2020. In general, the measures described in the scoping plan are designed to meet emissions goals in 2020 and do not become increasingly stringent after 2020.

ARB's current scoping plan identifies measures that would indirectly address GHG emissions levels associated with construction activity, including the phasing in of cleaner technology for diesel engine fleets (including construction equipment) and the development of a Low Carbon Fuel Standard. Policies formulated under the mandate of AB 32 that are applicable to construction-related activity, either directly or indirectly, are assumed to be implemented during construction of the proposed project if those policies and laws are developed before construction begins. Therefore, it is assumed that project construction would not conflict with the scoping plan.

The scoping plan recognizes the long-term goal of Executive Order S-3-05; however, it also states that measures needed to achieve the 2050 goal are "too far in the future to define in detail." ARB is required to update the scoping plan at least once every 5 years to evaluate progress and develop future inventories that may guide this process. ARB is updating the scoping plan, and a revision is expected to be adopted in 2014. Because ARB has not completed the update to the plan, it is unknown at this time what impact any additional measures might have on the proposed project.

DWR has developed the GGERP to guide its efforts in reducing GHG emissions (DWR 2012). The GHG emissions reduction measures proposed in the plan were developed for the purpose of reducing emissions of GHGs in California as directed by Executive Order S-3-05 and AB 32. DWR has established the following GHG emissions reduction goals:

- ▶ Reduce GHG emissions from DWR activities by 50% below 1990 levels by 2020.
- ▶ Reduce GHG emissions from DWR activities by 80% below 1990 levels by 2050.

DWR specifically prepared its GGERP as a "Plan for the Reduction of Greenhouse Gas Emissions" for purposes of addressing State CEQA Guidelines Section 15183.5. That section provides that such a document, which must meet certain specified requirements, "may be used in the cumulative impacts analysis of later projects." Because global climate change, by its nature, is a global cumulative impact, an individual project's compliance with a qualifying GHG reduction plan may suffice to mitigate the project's incremental contribution to that cumulative impact to a level that is not "cumulatively considerable." (See State CEQA Guidelines, Section 15064, Subdivision [h][3].)

More specifically, "[l]ater project-specific environmental documents may tier from and/or incorporate by reference" the "programmatic review" conducted for the GHG emissions reduction plan. "An environmental document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must identify those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project" (State CEQA Guidelines Section 15183.5, Subdivision [b][2]).

Section 12 of the GGERP outlines the steps that each DWR project will take to demonstrate consistency with the GGERP:

- ▶ analysis of GHG emissions from construction of the proposed project,
- ▶ determination that the construction emissions from the project do not exceed the levels of construction emissions analyzed in the GGERP,
- ▶ incorporation into the design of the project DWR's project-level GHG emissions reduction strategies,
- ▶ determination that the project does not conflict with DWR's ability to implement any of the "specific action" GHG emissions reduction measures identified in the GGERP, and
- ▶ determination that the project would not add electricity demands to the SWP system that could alter DWR's emissions reduction trajectory in such a way as to impede its ability to meet its emissions reduction goals.

Consistent with these requirements, a GGERP Consistency Determination Checklist has been completed documenting that the project has met each of the required elements (Appendix A).

Preconstruction and final design BMPs are designed to ensure that individual projects are evaluated and their unique characteristics taken into consideration when determination is made regarding whether specific equipment, procedures, or material requirements are feasible and efficacious for reducing GHG emissions from the project. The proposed project would implement the following preconstruction and final design BMPs:

- ▶ BMP 1 Evaluate project characteristics, including location, project work flow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high efficiency technologies are appropriate and feasible for the project or specific elements of the project.
- ▶ BMP 2. Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines.
- ▶ BMP 3. Ensure that all feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, use alternative fuels, such as propane or solar, to power generators to the maximum extent feasible.
- ▶ According to the GGERP, all DWR projects are expected to implement all construction BMPs unless a variance is granted and approved by the DWR CEQA Climate Change Committee (DWR 2012b). Therefore, the following applicable BMPs are incorporated into the design of the proposed project:
- ▶ BMP 7. Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by the State airborne toxics control measure [Title 13, Section 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.

- ▶ BMP 8. Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an Air Quality Control Plan prior to commencement of construction.
- ▶ BMP 9. Implement tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every 2 weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an Air Quality Management Plan prior to commencement of construction.
- ▶ BMP 10. Develop a project specific ride share program to encourage carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.
- ▶ BMP 15. Evaluate the feasibility of restricting all material hauling on public roadways to off-peak traffic congestion hours. During construction scheduling and execution minimize, to the extent possible, uses of public roadways that would increase traffic congestion.

The proposed project would not conflict with the AB 32 Scoping Plan, GGERP, or any other plans, policies, or regulations prepared or established to reduce GHG emissions. Based on the analysis provided in the GGERP and the demonstration that the proposed project is consistent with the GGERP (as shown in Appendix A), DWR as the lead agency has determined that the proposed project's incremental contribution to the cumulative impact of increasing atmospheric levels of GHGs is less than cumulatively considerable; therefore, the impact would be less than significant.

### 3.8 HAZARDS AND HAZARDOUS MATERIALS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. Hazards and Hazardous Materials. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### 3.8.1 ENVIRONMENTAL SETTING

DWR operates the dams and pumping facilities at Bethany Reservoir. Minor amounts of hazardous materials are required for maintenance and operation of the facilities at Bethany Reservoir. Typically, DWR does not store, transport, or use significant amounts of hazardous materials to maintain such facilities.

### 3.8.2 DISCUSSION

**a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

*Less-than-Significant Impact.* Project activities would not require extensive or ongoing use of acutely hazardous materials or substances. Project activities would be completed within approximately 5 days and would likely occur during summer/fall 2014. Project activities would likely involve the limited transport, storage, use, or disposal of hazardous materials. Some examples of hazardous materials handling include fueling and servicing construction equipment on-site and transporting fuels, lubricating fluids, and solvents. These types of materials, however, are not acutely hazardous, and all storage, handling, and disposal of these materials is regulated by the California Department of Toxic Substances Control (DTSC), EPA, the Occupational Safety and Health Administration. Following the conclusion of project activities, the type and amount of hazardous materials used during normal operations of the Bethany Reservoir would be the same as before project activities. Because implementing the proposed project would involve using only a limited amount of hazardous materials and postproject use would be identical to preproject use, the proposed project would have a less-than-significant impact related to the routine transport, use, or disposal of hazardous materials.

**b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?**

*Less-than-Significant Impact.* As noted in item (a) above, the use of hazardous materials before and after the proposed activities would not change. Also, project activities would require only minor amounts of hazardous materials, which would not increase the risk of the release of hazardous materials into the environment; therefore, this impact would be less than significant.

**c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?**

*No Impact.* The school in the project vicinity nearest to the project site is Mountain House Elementary School, located in Mountain House, more than 2 miles east of the project site. There is no potential for hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. Therefore, no impact would occur.

**d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?**

*No Impact.* The Hazardous Waste and Substances Sites List (Cortese List) is compiled by the DTSC in accordance with California Government Code Section 65962.5. A search of the Cortese List and search for sites with reported hazardous material spills, leaks, ongoing investigations, and/or remediation near the project site was performed using the DTSC online EnviroStor database (DTSC 2013). The search did not identify any potential hazardous contamination sites in the vicinity of the project site. No impact would occur.

- e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?**

*No Impact.* The project site is not located within 2 miles of a public airport. The nearest airport, the Contra Costa County Byron Airport, is located approximately 2.75 miles north of the project site. The Contra Costa County Airport Land Use Compatibility Plan (Contra Costa County Airport Land Use Commission 2000) describes all Byron Airport compatibility policies to ensure that safety hazards are addressed within the plan area. Because all project activities would be located outside of the Byron Airport Land Use Compatibility Plan area and the project would not involve any aircraft uses for construction or operations, there would be no impact.

- f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?**

*No Impact.* As noted in item (e) above, the airport closest to the project site is the Byron Airport, which is a public airport. No private airstrips are in the vicinity of the project site. Thus, no impacts on private airstrips or people residing near an airstrip would occur.

- g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**

*No Impact.* During project activities, emergency response routes and plans would not be affected by activities at the project site or by the transport of sediment by trucks to the SBPP disposal site. Implementing the proposed project would not require any road or lane closures during construction. It would not impair or interfere with emergency access to Bethany Reservoir, the SBPP, or local roads. Emergency response and evacuation routes would remain open. No impact would occur.

- h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?**

*Less-than-Significant Impact.* The California Department of Forestry and Fire Protection (CAL FIRE) classifies areas over which it has responsibility as moderate, high, or very high fire hazard severity zones. CAL FIRE has designated the project site as a moderate fire hazard severity zone (CAL FIRE 2007). None of the communities near the project site are shown on the map of communities at risk from wildfire (CAL FIRE 2001). Although the project site is an area of moderate fire risk, the proposed project would not add structures to the area that could be exposed to fire risk. In the event of a fire on the project site, access roads could be used to accommodate fire-fighting crews and equipment. No features of the proposed project would add to the existing moderate fire danger in the project. Therefore, this impact would be less than significant.

### 3.9 HYDROLOGY AND WATER QUALITY

ENVIRONMENTAL ISSUES		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IX.	Hydrology and Water Quality. Would the project:				
a)	Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f)	Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h)	Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i)	Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j)	Result in inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### 3.9.1 ENVIRONMENTAL SETTING

##### RESERVOIR HYDROLOGY

Bethany Reservoir serves as a forebay for the SBPP, an afterbay for the Banks Pumping Plant, and a conveyance section of the California Aqueduct. The reservoir is composed of two bodies of water joined by a large excavated connecting channel. Water flows into the reservoir through the California Aqueduct from Clifton Court Forebay

(located to the northeast). Water flows out from the reservoir into either the South Bay Aqueduct to the west or the California Aqueduct to the southeast and is delivered to downstream water users.

The reservoir is impounded by five earthfill dams. The description below was excerpted from DWR (2013). The outlet works, which are the subject of this project, were constructed on the right abutment of Bethany Forebay Dam. The approach apron (platform at the entrance to the dam) is located approximately 53.5 feet below the reservoir's maximum operating surface elevation of 243 feet. The invert of the approach apron was constructed at an elevation of 189.5 feet. Flows are conveyed from the intake via a 60-inch-diameter conduit to a valve vault and 48-inch-diameter valve that provides control for dewatering of the downstream facilities. Maintenance and inspection access to the valve vault can be achieved through a 96-inch concrete access tunnel. Beyond the butterfly valve, flows pass through a 48-inch-diameter steel conduit supported on concrete saddles within the horseshoe access tunnel. A 24-inch-diameter outlet bypass line conveys flows from the manifold to the bypass valve well where control is provided by a 24-inch valve. The 24-inch-diameter outlet bypass line continues beyond the valve to an energy dissipater structure near the toe of the dam. Beyond this structure, flows enter an earthen-lined drainage ditch.

The approach channel has a base width of approximately 31 feet, tapering down to about 19 feet near the intake structure. The intake structure has a trash rack and a stop log guide.

On September 28, 2011, a dive was performed for the purposes of locating the intake, assessing the sediment thickness, and collecting sediment samples. The intake structure was located in approximately 50 feet of water. The intake was difficult to locate because it was nearly buried by sediment. The intake approach channel was also covered by silt. The depth of silt was estimated to range from 4.5 to 5 feet.

Sediment was previously removed from Bethany Reservoir and deposited as a spoils pile just northeast of the SBPP. Preparation of that site to receive reservoir sediment included excavating an oval-shaped depression with two tiers for drying and storage of sediment. The material excavated to create the depression was used to construct a 6- to 10-foot-high berm. This configuration prevented the uncontrolled placement or loss of the fluid-like sediment. After the sediment was deposited and dried, the berms were removed and placed as cover over the sediment. The footprint of the spoils pile is approximately 40,000 square feet.

## **WATER QUALITY**

In preparation for dredging of the SBPP intake channel, six sediment cores were collected in 2005 and tested for chemical and physical constituents of concern that could limit spoil disposal and/or dredging methods. Although several heavy metals were detected above the relevant environmental screening criteria, it was determined that sediment dredged from Bethany Forebay could be removed and placed in a spoils pile without adverse effects on the environment (DWR 2013:30–31).

Sampling and characterization of sediment at the Bethany Forebay Dam outlet works for the proposed project was conducted in two phases (DWR 2013:32–36). The first sampling event took place in September 2011, and a second event was conducted in February 2012. In 2011, a total of five samples were collected by a diver at approximately 5-foot intervals, starting at the head of the intake. Six sediment samples were collected in 2012; the sample locations began approximately 60 feet from the staff gauge near the dam, and samples were collected approximately every 21 feet in a westerly direction.

The September 2011 samples were analyzed for the following constituents:

- ▶ 22 total heavy metals listed in 22 California Code of Regulations 66261.24 Table II;
- ▶ total petroleum hydrocarbons as gasoline, diesel, and motor oil;
- ▶ volatile organic compounds;
- ▶ semivolatile organic compounds;
- ▶ organochlorine pesticides; and
- ▶ organophosphate pesticides.

The results of the 2011 sampling indicated that organochlorine pesticides, organophosphate pesticides, and semivolatile organic compounds were not detected above the laboratory reporting limits. The only volatile organic compound detected was acetone (11 micrograms per kilogram), which is a common laboratory contaminant. Total petroleum hydrocarbons (TPH) as gasoline and motor oil were not detected above the laboratory reporting limits, and TPH as diesel was reported at 11 milligrams/kilogram. A total of 10 Title 22 metals were detected above laboratory reporting limits in the September 2011 composite sediment sample. The metals detected were arsenic, barium, cobalt, chromium (total), copper, lead, mercury, nickel, vanadium, and zinc. Of those 10 metals, five (arsenic, barium, cobalt, mercury, and vanadium) exceeded regional screening levels for soil contaminants that could migrate to groundwater, and two (arsenic and vanadium) exceeded regional screening levels for residential soil concentrations. In addition, nickel exceeded National Oceanic and Atmospheric Administration screening thresholds.

Because the results of testing for most of the constituents of concern were negative in 2011, samples collected in 2012 were analyzed for only Title 22 total metals and TPH as gasoline, diesel, and motor oil. The results for Title 22 total metals were substantially similar to the results of the 2011 sampling event. TPH as gasoline, diesel, and motor oil were not detected above the laboratory reporting limits. Therefore, it was determined that the TPH as diesel that was detected in the September 2011 sample was likely a laboratory contaminant or otherwise artificially introduced contaminant.

Most of the 2011 and 2012 sediment results for metals were about the same as, or lower than, the sample results obtained from the soils in the proposed spoils area taken in 2005; the only exceptions were mercury and nickel (September 2011 sample only). However, both the mercury and nickel concentrations are within background levels for the region and/or the Delta.

## **FLOODPLAIN MAPPING**

The most recent Federal Emergency Management Agency (FEMA) Flood Insurance Study Flood Insurance Rate Map identifies Bethany Reservoir, the SBPP, and the surrounding area as being located in the unshaded Zone X classification. Unshaded Zone X is an area of minimal flood hazard, located outside the 500-year floodplain and protected by levees from the 100-year flood.

### **3.9.2 DISCUSSION**

#### **a) Violate any water quality standards or waste discharge requirements?**

*Less-than-Significant Impact.* Dredging of the sediment from Bethany Reservoir would disturb the sediments during the suction process, primarily because the sediment commonly requires mobilization via a tilling tool or

water jet in proximity to the dredge hose. Results of underwater inspections conducted by DWR in 2011 indicated that the silt is generally in a loose state and creates substantial turbidity when disturbed. The depth of silt was estimated to range from 4.5 to 5 feet, and approximately 143 cubic yards of sediment would be removed. However, as described in Chapter 2, “Project Description,” an underwater turbidity curtain would be installed to minimize the mixing of reservoir water contained inside the curtain with that outside of the dredging footprint. The curtain would be anchored to prevent displacement by wind and wave action. Hydraulic or “suction” dredging would be used for sediment removal because this method minimizes turbidity effects on the reservoir’s water quality. Because DWR is planning to use methods as part of the project that would reduce turbidly effects to the maximum extent practicable (i.e., turbidity curtain and diver-directed suction hoses as needed), this impact would be less than significant.

Contaminants of concern were encountered in sediment samples obtained from Bethany Reservoir (DWR 2013), including arsenic, barium, cobalt, mercury, vanadium, and nickel, which were above nonenforceable regulatory guidelines or thresholds. However, the levels of all metals detected from the reservoir sediments were similar to the levels of samples taken from the proposed SBPP disposal site. In the few instances where the reservoir samples exceeded the levels from samples obtained in the proposed spoils area, the concentrations were still within background levels. Because the concentrations of metals in the reservoir sediment are generally the same as those of the disposal site soils, and because the disposal site is upland of the reservoir, disposal of the Bethany Reservoir sediment is suitable at the proposed SBPP disposal site, and this impact would be less than significant.

**b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?**

*No Impact.* Groundwater would not be used during project activities (e.g., for dust control, vehicle washing). Water for dust control and vehicle washing would come from water that is decanted after the sediments are dredged or from water trucks. Furthermore, the proposed project does not involve the construction of new impervious surfaces. Therefore, no impact would occur.

**c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation?**

*Less than Significant with Mitigation Incorporated.* As described in Chapter 2, “Project Description,” DWR plans to exercise the 24-inch gate valve and 48-inch butterfly valve at the dam’s outlet works. The valve exercise would be staged so as to minimize and control the quantity of water released while still allowing for some flushing of the outlet works to minimize the potential for silt to foul the valves upon closing. The total duration of the water release from Bethany Reservoir during the outlet works valve exercise would be about 90 seconds. The outlet works valve exercise would result in a maximum 20 cfs discharge throughout the duration of valve testing. The testing of the outlet works would yield approximately 1,800 cubic feet of water released from Bethany Reservoir. The discharged water may contain up to 3.8 cubic yards of silt and organics that has been trapped in the outlet works pipes that would be flushed into the receiving earth-lined ditch. This ditch was constructed for the purpose

of receiving overflow water and silt when the valves are exercised. The ditch is approximately 1,000 feet long by 10 feet wide and 1 foot deep. At top-of-bank, the capacity of the channel is approximately 10,000 cubic feet of water, or 0.23 acre feet. The exercise of the outlet valve is anticipated to release enough water to fill the channel to 17% of its capacity. The exercise would take place in late summer or fall when there is little to no flow in the earth-lined ditch. As a result, the exercise is not anticipated to exceed the capacity of the channel. Furthermore, the ditch is not connected to any downstream waterbodies or the nearby stock pond, and it was constructed for the specific purpose of receiving overflow water and silt from exercising of the valves. Therefore, the valve exercise would not substantially alter the existing drainage pattern of the site or area, and would result in sediment deposition in a location specifically intended for that purpose. This impact would be less than significant.

However, after reservoir dredging activities have been completed, a layer of soil from the SBPP disposal site would be removed, the dried sediment extracted from the reservoir would be placed on the site, the cover soil would be replaced, and then the spoils pile would be appropriately graded and seeded with native vegetation. Grading of the spoils pile would result in substantial soil disturbance, which could result in erosion or siltation. Depending on the method of soil drying that is selected, water leaching out of dredged soils could drain back into the reservoir while still carrying a substantial sediment load and could result in soil erosion from movement of water. Soil would also be disturbed at the equipment and materials storage and staging areas. Therefore, this impact would be potentially significant.

**Mitigation Measure: Implement Mitigation Measure GEO-1 (Prepare and Implement a Storm Water Pollution Prevention Plan).**

*Implementation of Mitigation Measure GEO-1 would reduce the impact associated with construction-related soil erosion to a less-than-significant level because a SWPPP and associated BMPs that are specifically designed to reduce erosion would be prepared and implemented.*

**d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding?**

*Less-than-Significant Impact.* Dried sediment removed from the reservoir would be placed on the existing SBPP disposal site, which would be appropriately graded and seeded with native vegetation at project completion. The existing SBPP spoils pile has not resulted in a flood hazard, and placing the additional sediment from the proposed project on the existing spoils pile would not substantially alter existing drainage patterns such that new flooding would occur. Therefore, this impact would be less than significant.

**e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?**

*Less-than-Significant Impact.* Implementing the proposed project would not create or contribute runoff that would exceed the capacity of stormwater drainage systems, because no such systems are present in the project vicinity. As discussed in item a) above, contaminants of concern (i.e., metals) at levels above nonenforceable regulatory guidelines or thresholds were encountered in sediment samples obtained from Bethany Forebay (DWR 2013). However, all metals were present at levels similar to those of samples taken from the proposed SBPP disposal site. In the few instances where the levels of Bethany Reservoir samples exceeded those of the samples obtained

from the proposed disposal area, the concentrations were still within background levels. Because the concentration of metals in the reservoir sediment is generally the same as that in the disposal site soils, and because the disposal site is upland of the reservoir, disposal of the sediment at SBPP would not result in net adverse effects on surface water or groundwater. Therefore, disposal of the Bethany Forebay sediment at the proposed SBPP disposal site would have a less-than-significant impact.

**f) Otherwise substantially degrade water quality?**

*No Impact.* Water quality impacts associated with the proposed project are addressed in items (a), (c), and (e) above. No other water quality impacts would occur.

**g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?**

*No Impact.* The proposed project does not involve the construction of housing; therefore, no impact would occur.

**h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?**

*No Impact.* Bethany Reservoir, the SBPP, and the surrounding area are not located within a FEMA 100-year flood hazard area (FEMA 2013). Thus, no impact would occur.

**i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?**

*No Impact.* The proposed project involves dredging sediments from Bethany Reservoir and placing the dried sediments in the SBPP disposal site. The valve exercise would entail the release of 1,800 cubic of water into an earth-lined ditch specifically constructed for that purpose. As discussed in c) above, this water would only fill the earth-lined ditch to 17% of its capacity. These activities would not expose people or structures to risk of loss or death related to flooding and would have no effect on the continued stability of the existing dams. Therefore, no impact would occur.

**j) Result in inundation by seiche, tsunami, or mudflow?**

*Less-than-Significant (Beneficial) Impact.* Bethany Reservoir is located approximately 4 miles east of the active Greenville-Marsh Creek-Clayton Fault Zone. Removal of sediments from Bethany Reservoir would provide more space for movement of water within the reservoir if a seismic seiche were to occur, which is a beneficial impact. The reservoir is approximately 50 miles east of the Pacific Ocean; thus, there is no risk from inundation by tsunami. With regard to mudflow, after the sediments from Bethany Reservoir have been dredged, they would be placed on the SBPP disposal site. As previously described, the top of the current SBPP disposal site would be removed, the dried sediments would be deposited, and the cover would be replaced. Thereafter, the disposal site would be graded. DWR engineers would oversee the project to determine the appropriate soil moisture content and the appropriate grading contours such that the disposal site would be stable. Furthermore, the site would be seeded with native vegetation upon completion of the project. Therefore, the risk of mudflow from the disposal site would be a less-than-significant impact.

### 3.10 LAND USE AND PLANNING

ENVIRONMENTAL ISSUES		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
X.	Land Use and Planning. Would the project:				
a)	Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c)	Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### 3.10.1 ENVIRONMENTAL SETTING

The project site is located within the Bethany Reservoir SRA, which encompasses approximately 608 acres and includes 6 miles of shoreline surrounding 160 surface acres of water. It can be accessed via the park’s entrance off Christensen Road (State Parks 2013). The Bethany Reservoir SRA is managed by the California Department of Parks and Recreation (State Parks) and is widely used for nonmotorized boating, fishing, windsurfing, bicycling, and picnicking. Shaded picnic areas, a parking lot, and public restrooms are located at the park’s northern entrance, and a boat launch facility, shaded picnic areas, a parking lot, and public restrooms are located at the park’s southern entrance. The California Aqueduct Bikeway runs from north to south along the eastern edge of the reservoir.

The SBPP disposal site is located along the northwestern edge of Bethany Reservoir, north of the SBPP. This area was previously used for the disposal of dredge material in 2009 when sediment removal occurred in the vicinity of the SBPP. The disposal site is a flat-top mound covered with nonnative vegetation. After completion of the proposed project, the SBPP disposal site would be restored to preproject contours and appropriate hydroseeding and/or erosion control measures would be implemented.

Lands surrounding the Bethany Reservoir are generally used for open space, grazing, and wind farms. Power generation facilities, including the Pacific Gas and Electric Company Kelso substation, the Byron cogeneration plant, and the Mariposa Energy Project electrical generation plant, are also located northeast of Bethany Reservoir. The nearest established community is the Mountain House community, approximately 3 miles east of Bethany Reservoir.

The *Alameda County General Plan* includes various area plans covering the unincorporated county. The ECAP covers 418 square miles in the eastern portion of Alameda County, including the area surrounding the Bethany Reservoir. It was adopted in 1994 and last amended in 2002. It identifies the need for public facilities and services in the eastern portions of Alameda County and provides the basis for county zoning and approvals, as well as other regulatory actions (Alameda County 2002). In November 2000, Measure D was passed by Alameda County

voters, amending the ECAP to specify the location and definition of land uses in east Alameda County. No goals or policies identified in the ECAP are applicable to the proposed project.

The area surrounding Bethany Reservoir is designated by the ECAP and zoned by the county as Parklands. This designation provides for existing and planned public parks, open space, and recreational uses, including community, subregional, and regional facilities.

### 3.10.2 DISCUSSION

#### a) **Physically divide an established community?**

*No Impact.* The proposed project involves removing sediment from the submerged intake structure and approach apron using hydraulic dredging and placing it at the SBPP disposal site. The project site is located within the Bethany Reservoir SRA, and there are no communities in the vicinity of the Bethany Reservoir that would be affected by the proposed project. Therefore, implementing the proposed project would not physically divide an established community. No impact would occur.

#### b) **Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?**

*No Impact.* As discussed above, the area surrounding the Bethany Reservoir is designated by the ECAP and zoned by the county as Parkland. No goals or policies identified in the ECAP are applicable to the proposed project.

The project site is located within the Bethany Reservoir SRA, and project activities would use areas at both the northern and southern park entrances for maintenance equipment staging, material storage, and boat access to the submerged intake structure and approach apron. Sediment removal and disposal would require temporary closure of the boat ramp and picnic areas for up to approximately 5 days, and these facilities would be reopened after project activities are completed. Implementing the proposed project would not alter recreational use of the Bethany Reservoir SRA and would not involve other changes in the existing environment that could result in inconsistencies with the Parkland land use designation and zoning. Therefore, implementing the proposed project would not conflict with an applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. No impact would occur.

#### c) **Conflict with any applicable habitat conservation plan or natural community conservation plan?**

*No Impact.* The East Bay Regional Park District HCP/NCCP is in development and is intended to provide regional conservation and development guidelines to protect natural resources for regional preserves (i.e., Black Diamond Mines, Morgan Territory, Round Valley, Vasco Caves, Contra Loma Reservoir, Morgan Territory, Brushy Peak, Castle Rock and Diablo Foothills, Sycamore Valley, and Clayton Ranch). The Bethany Reservoir SRA is located within the zone of analysis of this draft HCP/NCCP; however, the Bethany Reservoir SRA is not included in the list of parklands covered by the HCP/NCCP (EBRPD 2009). (See Section 3.4, “Biological Resources,” for further discussion.) Therefore, no adopted or approved HCP/NCCP is in effect that would apply to the proposed project. No impact would occur.

### 3.11 MINERAL RESOURCES

ENVIRONMENTAL ISSUES		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI.	Mineral Resources. Would the project:				
a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b)	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### 3.11.1 ENVIRONMENTAL SETTING

Under the Surface Mining and Reclamation Act, the State Mining and Geology Board may designate certain mineral deposits as being regionally significant to satisfy future needs. The board’s decision to designate an area is based on a classification report prepared by the California Geological Survey (CGS) (formerly the California Division of Mines and Geology) and on input from agencies and the public. The project site lies within the boundaries of the designated South San Francisco Bay Production-Consumption Region for aggregate materials, which includes all designated lands within the marketing area of the active aggregate operations supplying the south San Francisco Bay urban area.

In compliance with the Surface Mining and Reclamation Act, CGS has established a classification system to denote both the location and significance of key extractive resources. However, Bethany Reservoir and the surrounding area have not been classified (Stinson et al. 1987).

No aggregate mining operations are located in the vicinity of Bethany Reservoir (Larose et al. 1999). Bethany Reservoir is outside of the Alameda County urban growth boundary. ECAP Policy 155 states that no new quarry or other open-pit mine may be approved by the county outside of the urban growth boundary, unless approved by county voters (Alameda County 2002).

#### 3.11.2 DISCUSSION

**a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?**

*No Impact.* Bethany Reservoir and the surrounding area have not been classified by CGS for mineral resources. No aggregate mining operations are located in the project vicinity, and there are no known deposits of mineral resources at the project site. Therefore, no impact would occur.

**b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?**

*No Impact.* Bethany Reservoir and the surrounding area are not designated as a locally important mineral resource recovery site in the *Alameda County General Plan*. Thus, availability of locally important minerals would not be lost under the proposed project. No impact would occur.

### 3.12 NOISE

ENVIRONMENTAL ISSUES		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII.	Noise. Would the project result in:				
a)	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b)	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c)	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d)	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f)	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### 3.12.1 ENVIRONMENTAL SETTING

This section evaluates potential noise impacts resulting from implementing the project—specifically, the potential for the project to cause a substantial temporary or permanent increase in ambient noise levels within or around the project site or to expose people to excessive noise levels.

Noise is defined as sound that is loud, unpleasant, unexpected, or undesired and that therefore may cause general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment.

Decibels (dB) are the standard unit of measurement of the sound pressure generated by noise sources and are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale for earthquake magnitudes. A doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; a halving of the noise energy would result in a 3-dB decrease.

The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-weighted scale, which approximates the frequency response of the average ear when listening

to most ordinary everyday sounds, was devised. Noise levels using A-weighted measurements are presented in dBA or dB. It is assumed that all noise levels presented below are A-weighted.

It is widely accepted that the average healthy ear can barely perceive changes of 3 dB (increase or decrease) and that a change of 5 dB is readily perceptible (Caltrans 2009). An increase of 10 dB is perceived as twice as loud, and a decrease of 10 dB is perceived as half as loud.

Although dBA may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of frequencies from distant sources that create a relatively steady background noise in which no particular source is identifiable. Average noise levels over a period of minutes or hours are usually expressed as dB  $L_{eq}$ , which typically assumes a 1-hour average noise level. That approach is used in this discussion. The maximum noise level ( $L_{max}$ ) is the highest sound level occurring during a specific period. The community noise equivalent level (CNEL) is the 24-hour  $L_{eq}$  with a 5-dB “penalty” for the evening noise-sensitive hours from 7 p.m. to 10 p.m. and a 10-dB “penalty” applied during nighttime noise-sensitive hours from 10 p.m. to 7 a.m. The day-night average noise level ( $L_{dn}$ ) is similar to the CNEL but with no adjustment (penalty) during evening hours; that is, daytime is defined as 7 a.m. to 10 p.m.

## EXISTING NOISE CONDITIONS

Existing noise sources in the project area include distant traffic, agricultural operations, wildlife vocalizations, wind, and moving water within the SRA. Although no noise measurements were collected, it is assumed that ambient noise levels in the project area range from 40 to 55 dB  $L_{eq}$  during daytime hours (7 a.m. to 10 p.m.) and are near 30 dB ( $L_{eq}$ ) or lower at nighttime (10 p.m. to 7 a.m.). Assuming an average daytime ambient noise level of 50 dB ( $L_{eq}$ ), and an average nighttime noise level of 30 dB ( $L_{eq}$ ), the ambient  $L_{dn}$  would be approximately 48 dB.

### 3.12.2 DISCUSSION

**a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?**

*Less-than-Significant Impact.* Construction noise levels would fluctuate depending on the particular types of equipment being used, the number of pieces of equipment being used, and the duration of use. The effects of construction noise largely depend on the type of construction activities occurring on any given day, noise levels generated by those activities, distances to noise-sensitive receptors, and the existing ambient noise environment near the receptor. Equipment to be used during hydraulic dredging activities would include barges, pumps, and trucks. Table 3.12-1 depicts the noise levels generated by the various types of equipment that could be used during project activities.

As indicated in Table 3.12-1, noise levels for construction activities would range from 74 dB to 87 dB at a distance of 50 feet.<sup>2</sup>

<b>Table 3.12-1 Noise Emission Levels from Construction Equipment</b>	
Equipment Type	Typical Noise Level (dB) at 50 Feet
Hydraulic dredger	75
Barge (tug powered)	87
Pump	77
Dozer	85
Truck	74–81
Notes: dB = A-weighted decibels Noise levels are for equipment fitted with properly maintained and operational noise control devices, per manufacturer specifications. Source: Bolt Beranek and Newman Inc. 1981; FTA 2006:12-6; SDUPA 2003:4.5-7; Thalheimer 2000; data compiled by AECOM in 2012 and 2013	

Noise from localized point sources (such as construction sites) typically decreases by 6 to 7.5 dB with each doubling of distance from source to receptor. A reduction of 6 dB is typically associated with sound traveling across a hard surface, such as asphalt, whereas a 7.5-dB reduction is associated with softer, pervious ground, such as the open fields that exist between the proposed project and the nearest residential receptor (located north of Christensen Road, approximately one-third of a mile north of the equipment materials and storage areas). Taking this into account, project activities are not expected to exceed a day-night average noise level of 43 dB (L<sub>dn</sub>).

Based on the anticipated equipment and the project schedule, it was estimated that a worst-case day of project activities would involve delivery of sediment material to the SBPP disposal site using heavy haul truck trips along Christensen Road. These trips would be expected to produce a noise level of approximately 43 dB L<sub>dn</sub> at the closest noise-sensitive receptor setback (100 feet from the roadway centerline). As discussed previously, the residence nearest to the project site is the residence located along Christensen Road.

Combined noise exposure from on-site and off-site activities would be approximately 46 dB L<sub>dn</sub> at the closest noise-sensitive uses (i.e., 43 dB L<sub>dn</sub> from on-site activities, 43 dB L<sub>dn</sub> from haul truck traffic). This combined noise exposure is below the county’s 60-dB L<sub>dn</sub> limit (nighttime limit for residential land uses). Therefore, this impact would be less than significant.

**b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?**

*Less-than-Significant Impact.* Transit Noise and Vibration Impact Assessment (FTA 2006) and the Transportation- and Construction-Induced Vibration Guidance Manual (Caltrans 2004) are two of the seminal works related to the analysis of groundborne noise and vibration relating to transportation- and construction-

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2 The standard distance of measurement for determining construction noise levels is typically 50 feet. Noise levels can then be adjusted to identify noise levels at a specific receptor, taking into account attenuation over distance and other factors.

induced vibration. The proposed project is not subject to Federal Transit Administration (FTA) or California Department of Transportation (Caltrans) regulations; however, these documents serve as useful tools for evaluating vibration impacts. For this reason, they are used to assess the vibration impacts of the proposed project. Caltrans guidelines recommend that a standard of 0.2 inch per second peak particle velocity not be exceeded for the protection of normal residential buildings (Caltrans 2004). With respect to human response within residential uses (i.e., annoyance, sleep disruption), FTA recommends a maximum acceptable vibration standard of 80 vibration decibels (FTA 2006).

Project activities may result in varying degrees of temporary ground vibration, depending on the specific equipment used and operations involved. Groundborne vibration levels caused by various types of equipment are summarized in Table 3.12-2.

Table 3.12-2 Typical Construction Equipment Vibration Levels		
Equipment	PPV at 25 feet (in/sec)	Approximate L <sub>v</sub> at 25 feet
Haul trucks	0.076	86
Large bulldozer	0.089	87
Notes: in/sec = inches per second; L <sub>v</sub> = velocity level in decibels (VdB) referenced to 1 microinch per second and based on the root mean square velocity amplitude; PPV = peak particle velocity. Source: FTA 2006		

Project activities would not include activities that commonly produce excessive groundborne vibration, such as pile driving or blasting. The use of equipment such as a bulldozer would occur primarily at the SBPP disposal site, located more than one-half mile from the nearest residence on Christensen Road. The main source of vibration that could affect the residence would be trucks traveling on Christensen Road. Because it is a public road and is likely already subject to heavy truck traffic, the addition of trucks for project activities over an approximate 5-day period would result in a less-than-significant change from existing conditions. Therefore, the proposed project would have a less-than significant impact from groundborne vibration and noise.

**c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?**

*No Impact.* Project noise would cease at the end of project activities and would not result in a permanent increase in ambient noise levels in the project area. Therefore, implementing the proposed project would have no impact on permanent ambient noise levels in the project vicinity.

**d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?**

*Less-than-Significant Impact.* Temporary increases in noise levels attributable to the project are associated with project activities. As discussed in item (c) above, the proposed project would not result in any permanent noise increase. The proposed project would involve removing sediment from the submerged intake structure and approach apron using hydraulic dredging and placing it at the SBPP disposal site. Project activities would generate short-term, temporary, and intermittent noise at or near individual noise-sensitive locations in the project

area. The nearest noise-sensitive land use is a residence located north of Christensen Road, approximately one-third of a mile north of the equipment materials and storage areas.

Noise levels generated during project activities would fluctuate depending on the physical location of activities within the project site and on the types of equipment being used, the number of pieces of equipment being used, and the duration of operation. Noise sources associated with construction activities are considered point sources. As stated in item (a) above, noise from a point source drops off at a rate of 7.5 dB with doubling of distance over acoustically soft ground, such as the open fields located in the vicinity of the project site. The loudest stages of project activities are typically associated with earthmoving because these stages typically involve the largest equipment and the greatest number of pieces of equipment. Because the project activities are expected to last only approximately 5 days, noise impacts would be temporary.

Based on the distance between project activities and the nearest residence, the ambient noise level in the project area is not expected to increase substantially. Project equipment would generate new noise in the project area, but the distance to the nearest residence, the short duration of project activities, and the type of equipment that would be used are such that the proposed project would not be expected to adversely affect noise-sensitive receptors in the project vicinity. Therefore, this impact would be less than significant.

**e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?**

*No Impact.* The project site is not located within 2 miles of a public airport. The nearest airport, the Contra Costa County Byron Airport, is located approximately 2.75 miles north of the project site. The Contra Costa County Airport Land Use Compatibility Plan (Contra Costa County Airport Land Use Commission 2000) describes all Byron Airport compatibility polices to ensure that safety hazards are addressed within the plan area. Because all project activities would be located outside of the Byron Airport Land Use Compatibility Plan area and the project would not involve any aircraft uses for construction or operations, the proposed project would not affect any airport operations and would not expose people on- or off-site to excessive noise levels. Therefore, there would be no impact related to airport noise.

**f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?**

*No Impact.* As noted in item (e) above, the airport closest to the project site is the Byron Airport, which is a public airport. No private airstrips are in the vicinity of the project site, and the project would not affect any airstrip operations. Therefore, implementing the proposed project would not expose people on- or off-site to excessive noise levels, and would have no impact on private airstrip noise.

### 3.13 POPULATION AND HOUSING

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. Population and Housing. Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### 3.13.1 ENVIRONMENTAL SETTING

The Bethany Reservoir is located in the northeastern area of unincorporated Alameda County. As of January 1, 2013, the California Department of Finance estimates that Alameda County’s total population was 1,548,681 persons, with the most population growth occurring within the incorporated cities (DOF 2013a). The population in Alameda County is expected to increase to 1,675,011 by 2060. This represents an increase of 8% over the 2013 estimated population (DOF 2013b).

The project site is located within the Bethany Reservoir SRA, which is used for recreational activities. There are no residences within the recreation area. Lands surrounding the Bethany Reservoir are generally used for open space, grazing, and wind farms. Other power generation and water management facilities are located north and northeast of the reservoir. The closest residence is located north of Christensen Road, approximately one-third of a mile north of the project site.

#### 3.13.2 DISCUSSION

- a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

*No Impact.* The proposed project would not involve constructing new homes or businesses or extending roadways or other infrastructure that could increase the population in the project vicinity. The project site is located within the Bethany Reservoir SRA and involves removing sediment from the submerged intake structure and approach apron and placing it at the SBPP disposal site. Project activities would be completed within approximately 5 days, including equipment staging, sediment removal, and preparation and restoration of the SBPP disposal site. The estimated construction workforce is 14 workers per day and the labor force would likely come from the existing local labor pool in Alameda and Contra Costa Counties. No additional DWR staff members would be required for

further operations and maintenance of the intake structure. Therefore, implementing the proposed project would not directly or indirectly induce substantial population growth. No impact would occur.

**b) Displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere?**

*No Impact.* Sediment removal and disposal would occur within the Bethany Reservoir SRA. No residences are located in the Bethany Reservoir SRA, so none would be affected by implementing the proposed project. Therefore, implementing the proposed project would not displace existing housing or necessitate the construction of replacement housing elsewhere. No impact would occur.

**c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?**

*No Impact.* Sediment removal and disposal would occur within the Bethany Reservoir SRA. No residences are located in the Bethany Reservoir SRA, so none would be affected by implementing the proposed project. Therefore, implementing the proposed project would not displace a substantial number of people or necessitate the construction of replacement housing elsewhere. No impact would occur.

### 3.14 PUBLIC SERVICES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. Public Services. Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### 3.14.1 ENVIRONMENTAL SETTING

CAL FIRE classifies areas over which it has responsibility as moderate, high, or very high fire hazard severity zones. CAL FIRE has designated the project site as a moderate fire hazard severity zone within a State Responsibility Area (CAL FIRE 2007). The CAL FIRE station closest to the project site is Castle Rock Station 26, located approximately 12 miles southeast of the project site at 16502 Schulte Road in the city of Tracy (CAL FIRE 2012).

The Alameda County Sheriff’s Office (ACSO) provides law enforcement services in the unincorporated portions of Alameda County, including the areas surrounding the Bethany Reservoir. The ACSO includes patrol services, criminal and coroner investigations, narcotics enforcement, and coroner services and operates the county jail, provides security at the county courthouse, operates a marine patrol unit, and dispatches public safety personnel (ACSO 2013). The ACSO station closest to the project site is located at 100 Civic Plaza in Dublin, approximately 18 miles southwest of Bethany Reservoir.

The project site is located within the Bethany Reservoir SRA. The Bethany Reservoir SRA is managed by State Parks and is widely used for nonmotorized boating, fishing, windsurfing, bicycling, and picnicking. Shaded picnic areas, a parking lot, and public restrooms are located at the park’s northern entrance, and a boat launch facility, shaded picnic areas, a parking lot, and public restrooms are located at the park’s southern entrance (State Parks 2013). The California Aqueduct Bikeway runs from north to south along the eastern edge of the reservoir.

No schools or other public services are located in the vicinity of the Bethany Reservoir SRA.

### 3.14.2 DISCUSSION

- a) **Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:**

#### **Fire protection?**

*No Impact.* CAL FIRE has designated the project site as a moderate fire hazard severity zone within a State Responsibility Area; therefore, CAL FIRE holds primary responsibility for preventing and suppressing fires within the project site. Project activities would involve removing sediment from the submerged intake structure and approach apron and placing it at the SBPP disposal site. Access to the project site would be maintained during project activities, and in the event of a fire on the project site, access roads could be used to accommodate fire-fighting crews and equipment. The proposed project would not include any new housing, businesses, or other development that would increase demand for fire protection services and facilities. No impact would occur.

#### **Police protection?**

*No Impact.* The ACSO provides uniformed law enforcement services in the unincorporated areas of Alameda County, including the areas around the Bethany Reservoir. The proposed project would not include any new housing, businesses, or other development that would increase demand for police protection services and facilities. No impact would occur.

#### **Schools?**

*No Impact.* Implementation of the proposed project would not provide any new housing, so new students would not be generated and the demand for school services and facilities would not increase. No impact would occur.

#### **Parks?**

*Less-than-Significant Impact.* The project site is located within the Bethany Reservoir SRA, which is widely used for nonmotorized boating, fishing, windsurfing, bicycling, and picnicking. Removal of sediment and silt from the submerged intake structure would require closure of the boat ramp and picnic areas for up to approximately 5 days. These facilities would be reopened after project activities are completed, and implementing the proposed project would not alter recreational use of the SRA. In addition, implementing the proposed project would not generate new residents who would require new or expanded park facilities. This impact would be less than significant.

#### **Other public facilities?**

*No Impact.* No other public facilities exist in the project area that would be affected by implementing the proposed project. No impact would occur.

### 3.15 RECREATION

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. Recreation. Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### 3.15.1 ENVIRONMENTAL SETTING

The project site is located within the Bethany Reservoir SRA, which encompasses approximately 608 acres and includes 6 miles of shoreline surrounding 160 surface acres of water. It can be accessed via the park’s entrance off Christensen Road (State Parks 2013). The Bethany Reservoir SRA is managed by State Parks and is widely used for nonmotorized boating, fishing, windsurfing, bicycling, and picnicking. Shaded picnic areas, a parking lot, and public restrooms are located at the park’s northern entrance, and a boat launch facility, shaded picnic areas, a parking lot, and public restrooms are located at the park’s southern entrance. The California Aqueduct Bikeway runs from north to south along the eastern edge of the reservoir. In 2009, approximately 37,800 visitors used the Bethany Reservoir SRA day-use facilities (State Parks 2011).

#### 3.15.2 DISCUSSION

- a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

*No Impact.* Implementing the proposed project would not affect existing recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. The project site is located within the Bethany Reservoir SRA, and areas at both the northern and southern park entrances would be used for maintenance equipment staging, material storage, and boat access to the submerged intake structure and approach apron. Sediment removal and disposal would require closure of the boat ramp and picnic areas for approximately 5 days, and these facilities would be reopened after project activities are completed. Implementing the proposed project would not alter recreational use of the Bethany Reservoir SRA. In addition, implementing the project would not increase the population in the project vicinity by introducing new housing or employment opportunities, so it would not increase use of existing regional parks or other recreational facilities, causing their deterioration. No impact would occur.

**b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?**

*No Impact.* The proposed project involves removing sediment and silt from the submerged intake structure and approach apron and placing it at the SBPP disposal site. The proposed project does not include recreational facilities, and implementing the project would not increase the population in the project vicinity by introducing new housing or employment opportunities, requiring construction or expansion of recreational facilities. Therefore, no impact would occur.

### 3.16 TRANSPORTATION AND TRAFFIC

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. Transportation and Traffic. Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### 3.16.1 ENVIRONMENTAL SETTING

The project site is located in a rural region of Alameda County; consequently, few public roads are located in the immediate vicinity. Regional access to the project site is provided by I-580. I-580 is a predominantly four-lane, east-west freeway that extends from I-5 in San Joaquin County (north of the Stanislaus County border) to Alameda County, where it connects with I-205 west of the San Joaquin County border.

The project site is located within the Bethany Reservoir SRA, which can be accessed via the park’s entrance off Christensen Road. Christensen Road is a two-lane, east-west local roadway, and traffic on this roadway generally consists of visitors to the Bethany Reservoir SRA. Existing paved and gravel roads provide vehicular access to the parking areas, dam crest, and the SBPP disposal area.

Additional local public roadways in the area surrounding the Bethany Reservoir SRA include Kelso Road, Burns Road, and Mountain House Road. Kelso Road is a two-lane, east-west local roadway, and both Burns Road and Mountain House Road are two-lane, north-south local roadways. These roadways are currently free flowing.

According to the ECAP Policy 193, the traffic level of service (LOS) standard for major intercity arterials is LOS D. Local roadways in the vicinity of Bethany Reservoir, including Christensen Road, Kelso Road, Burns Road, and Mountain House Road, are shown as nonarterial roadways in the ECAP; therefore, LOS standards identified in Policy 193 are not applicable to these roadways (Alameda County 2002).

The Metropolitan Transportation Commission Regional Transportation Plan details system efficiency improvements throughout the nine-county San Francisco Bay Area from 2005 through 2030. The Alameda Countywide Transportation Plan is a long-range policy document that guides the development of the county's transportation system. In the vicinity of the proposed project, these plans address improvements to I-580 and I-205 (Alameda County Congestion Management Agency 2008; Metropolitan Transportation Commission 2005). Therefore, no improvements or policies are applicable to roadways, including Christensen Road, Kelso Road, Burns Road, and Mountain House Road, in the vicinity of the project site.

The California Aqueduct Bikeway runs from north to south along the eastern edge of the reservoir. There are no bikeway plans applicable to the California Aqueduct Bikeway.

### 3.16.2 DISCUSSION

- a) **Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?**

*Less-than-Significant Impact.* The project site is located entirely within the Bethany Reservoir SRA. As described in Chapter 2, "Project Description," the sediment may be transported on trucks via the portion of Christensen Road in the immediate vicinity of the reservoir or the abutment road along the Bethany Forebay Dam crest (see Exhibit 2-3 in Chapter 2, "Project Description"). Thus, truck trips off-site would likely be limited to those needed for initial construction staging and demobilization. Construction worker vehicles would use the local transportation network, including Christensen Road, but the project would require a maximum of only 14 construction workers over approximately 5 days. Implementing the proposed project would not alter recreational use of the Bethany Reservoir SRA and would not generate any traffic beyond that presently associated with the recreation area. In addition, the proposed project would not conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness of the performance of the circulation system. This impact would be less than significant.

- b) **Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?**

*Less-than-Significant Impact.* There are no applicable congestion management plans. Furthermore, the increased traffic resulting from project construction would be short term and temporary. Truck trips off-site would be

limited to those needed at the start and conclusion of project activities, and other trips would be limited to commute trips by up to 14 construction workers over approximately 5 days. Implementing the proposed project would not alter recreational use of the Bethany Reservoir SRA and would not generate any traffic beyond that presently associated with the recreation area. Therefore, implementing the proposed project would not add sufficient trips to degrade levels of service and would not conflict with an applicable congestion management program. This impact would be less than significant.

**c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?**

*No Impact.* The Contra Costa County Byron Airport is located approximately 2.75 miles north of the project site. Project activities would involve removing sediment from the submerged intake structure and approach apron and placing it at the SBPP disposal site. The proposed project would not include any new development that would interfere with air traffic patterns. No impact would occur.

**d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?**

*No impact.* Project activities involve removing sediment from the submerged intake structure and approach apron and placing it at the SBPP disposal site. The proposed project would not include any change to roadway design in the project vicinity or introduce incompatible uses. No impact would occur.

**e) Result in inadequate emergency access?**

*No Impact.* Construction work for the proposed project would occur entirely within the Bethany Reservoir SRA. As described in item (a) above, truck trips off-site would likely be limited to those needed for initial construction staging and demobilization. Transportation of sediment would be along the portion of Christensen Road in the immediate vicinity of the reservoir or the abutment road along the Bethany Forebay Dam crest. Construction worker vehicles would use the local transportation network, including Christensen Road, but the project would require a maximum of only 14 construction workers over approximately 5 days. Therefore, the proposed project would not result in traffic delays that could substantially increase emergency response times or reduce emergency vehicle access. The proposed project would not include any road or lane closures during project activities. No impact would occur.

**f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?**

*No Impact.* No public transit facilities are provided in the project area. The California Aqueduct Bikeway runs from north to south along the eastern edge of the Reservoir. No bikeway plans are applicable to the California Aqueduct Bikeway, and no other plans are applicable to pedestrian facilities. Therefore, implementing the project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, nor would it otherwise decrease the performance of such facilities. No impact would occur.

### 3.17 UTILITIES AND SERVICE SYSTEMS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. Utilities and Service Systems. Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### 3.17.1 ENVIRONMENTAL SETTING

Recreational facilities in the Bethany Reservoir SRA contain on-site restroom facilities with toilets that are periodically emptied. The restroom facilities do not have running water. No other water uses are available at the SRA.

Solid waste in northeastern Alameda County is disposed of at the Altamont Landfill, located in the city of Livermore. The facility is permitted to accept municipal solid waste, construction and demolition debris, green waste and food waste, and contaminated soils. According to the California Department of Resources Recycling and Recovery (CalRecycle), the Altamont Landfill has a maximum permitted throughput of 11,500 tons per day, a total maximum permitted capacity of 62.0 million cubic yards, a remaining capacity of approximately 45.7 million cubic yards, and an anticipated closure date of January 1, 2025 (CalRecycle 2013).

### 3.17.2 DISCUSSION

**a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?**

*No Impact.* Recreational facilities in the Bethany Reservoir SRA contain on-site restroom facilities that would be used by project construction workers. The proposed project itself does not involve wastewater treatment. In addition, the proposed project would not include any new development that would require wastewater treatment. Therefore, implementing the proposed project would not result in wastewater discharges that exceed the Central Valley Regional Water Quality Control Board's requirements. No impact would occur.

**b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?**

*No Impact.* The proposed project would not include any new development, so no water treatment would be required. As discussed in item (a) above, implementing the proposed project would not require wastewater service. Therefore, expansion of existing or construction of new water or wastewater facilities would not be required, and no impact would occur.

**c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?**

*No Impact.* The proposed project would not create or contribute runoff that would exceed the capacity of stormwater drainage systems, because no such systems are present in the project vicinity. Furthermore, the proposed project does not involve the construction of new impervious surfaces or other development that would require new stormwater drainage facilities or expansion of existing facilities. No impact would occur.

**d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?**

*No Impact.* Project activities would require water for dust control and vehicle washing that would come from water that is decanted after the sediments are dredged or from water trucks. In addition, the proposed project would not include any new development, so no public water supplies would be required. Therefore, no new or expanded water supply entitlements would be needed. No impact would occur.

**e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments?**

*No Impact.* As discussed in items (a) and (b) above, implementing the proposed project would not generate wastewater. Therefore, it would not exceed a wastewater treatment provider's capacity, and no impact would occur.

**f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?**

*Less-than-Significant Impact.* Project activities would not include any demolition or other activities that would generate solid waste. As discussed in Chapter 2, "Project Description," the dredged material would be transported via the pumps and hoses either to a tanker truck for delivery to the SBPP disposal site or to a series of staged tanks for decanting before transportation to the SBPP disposal site. Thus, construction would not generate solid waste or dredged material that would require disposal. Any solid waste generated during project activities would be incidental and would be disposed of in the Altamont Landfill. Because this facility has a permitted throughput of 11,500 tons per day and an expected closure date of 2025, it could accommodate the small amount of solid waste that could be generated during project activities. This impact would be less than significant.

**g) Comply with federal, state, and local statutes and regulations related to solid waste?**

*No Impact.* As discussed in item (f) above, any solid waste generated during project activities would be incidental and disposed of in the Altamont Landfill. Transportation and disposal would be in accordance with all applicable federal, state, and local statutes and regulations. No impact would occur.

### 3.18 MANDATORY FINDINGS OF SIGNIFICANCE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. Mandatory Findings of Significance.				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Authority: Public Resources Code Sections 21083, 21083.5.

Reference: Government Code Sections 65088.4.

Public Resources Code Sections 21080, 21083.5, 21095; *Eureka Citizens for Responsible Govt. v. City of Eureka* (2007) 147 Cal.App.4th 357; *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th at 1109; *San Franciscans Upholding the Downtown Plan v. City and County of San Francisco* (2002) 102 Cal.App.4th 656.

#### 3.18.1 DISCUSSION

- a) **Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?**

*Less than Significant with Mitigation Incorporated.* The analysis conducted in this IS concludes that implementing the proposed project would not have a significant impact on the environment. As evaluated in Section 3.4, “Biological Resources,” impacts on biological resources would be less than significant with the incorporation of mitigation. As a result, implementing the proposed project would not substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or reduce the number or restrict the range of an endangered, rare, or threatened species.

As discussed in Section 3.5, “Cultural Resources,” implementing the proposed project would not eliminate important examples of the major periods of California history or prehistory, and impacts on cultural resources would be less than significant with incorporation of the mitigation measures presented in Section 3.5.

**b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)**

*Less-than-Significant Impact.* Project activities would almost exclusively result in temporary impacts over an approximately 5-day period that would mainly be limited to the project site. Although impacts related to resource areas such as air quality and traffic would contribute to more regional impacts, these impacts when combined with other past, present, and reasonably foreseeable future projects in the project vicinity would not be cumulatively considerable because of the relative size and short duration of the proposed project. Also, as noted in Section 3.3, item (c), project emissions would not exceed applicable thresholds established by BAAQMD; thus, implementing the project would not be expected to result in a cumulatively considerable incremental contribution to the significant cumulative impact associated with air pollutant emissions.

As discussed in this IS, implementing the proposed project would result in less-than-significant impacts or no impacts on aesthetics, agriculture resources, GHG emissions, hazards and hazardous materials, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation and traffic, and utilities and service systems, and the proposed project would not make a cumulatively considerable incremental contribution to any significant cumulative adverse impacts on these resource areas.

The proposed project’s impacts on air quality, biological resources, cultural resources, geology and soils, and hydrology and water quality would be mitigated to less than significant. For this reason, implementing the proposed project also would not make a cumulatively considerable incremental contribution to any significant cumulative adverse impact on these areas.

In conclusion, the analysis in this IS has determined that implementing the proposed project would not have any impacts that are cumulatively considerable when viewed in connection with the effects of past, present, and reasonably foreseeable future projects.

**c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?**

*Less-than-Significant Impact.* As discussed above, the project activities would result in minimal impacts and would not cause substantial adverse effects on human beings, either directly or indirectly. Mitigation measures are provided to reduce the project’s potential effects on air quality, biological resources, cultural resources, geology and soils, and hydrology and water quality to less than significant. Thus, implementation of the proposed project would result in less-than-significant impacts and would not cause substantial adverse effects on human beings, either directly or indirectly. Moreover, the proposed project would not have the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals; the project would occur primarily over approximately 5 days and would not adversely affect any long-term environmental goals.

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## **APPENDIX A**

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### Air Quality and Greenhouse Gas Emission Calculations



**Emissions Summary**

	Pollutants (Pounds/Day)					Pollutants (MT/Year)			Total GHG Emissions (MT CO2e/year)
	ROG	NO <sub>x</sub>	CO	PM10	PM25	CO2	CH4	NO2	
Mobilization/Demobilization	0.37	8.58	2.91	0.31	0.22	1.50	0.00	0.00	1.51
Dredging	2.36	21.05	10.99	0.97	0.85	5.37	0.00	0.00	5.40
Total	2.36	21.05	10.99	0.97	0.85	6.87	0.00	0.00	6.91

Mobilization/Demobilization

On Road Construction Emissions

Total Daily Emissions (lbs)						Annual GHG Emissions (MT)						
Trips Per Day	Distance	Average Daily Mileage	Total Mileage	ROG	NO <sub>x</sub>	CO	PM10	PM25	CO <sub>2</sub>	CH <sub>4</sub>	NO <sub>2</sub>	Total GHG Emissions (MT CO <sub>2</sub> e/year)
Haul Trucks	10	16.8	336	0.29	8.02	1.33	0.23	0.17	0.56	0.04	0.06	0.58
Note: Assumes operation of 5 haul trucks and 5 heavy-duty vehicles to deliver off-road equipment to the project site.												
Total Daily Emissions (lbs/day)						Annual GHG Emissions (MT)						
Total Trips	Distance	Average Daily Mileage	Total Mileage	ROG	NO <sub>x</sub>	CO	PM10	PM25	CO <sub>2</sub>	CH <sub>4</sub>	NO <sub>2</sub>	Total GHG Emissions (MT CO <sub>2</sub> e/year)
Worker Trips	14	16.8	470	0.08	0.56	1.56	0.08	0.09	0.11	0.04	0.06	0.17
Note: Assumes an average of 14 workers per day.												
Total Daily Emissions (lbs/day)						Annual GHG Emissions (MT)						
Total	Distance	Average Daily Mileage	Total Mileage	ROG	NO <sub>x</sub>	CO	PM10	PM25	CO <sub>2</sub>	CH <sub>4</sub>	NO <sub>2</sub>	Total GHG Emissions (MT CO <sub>2</sub> e/year)
				0.37	8.58	2.91	0.31	0.22	0.75	0.00	0.00	0.75

Dredging

0.02%

Off-Road Construction Emissions

Off-Road Equipment	Equipment Type	Number	Usage Factor (hours/day)	Total Hours	Emissions Summary (lbs/day)							Annual GHG Emissions (MT)				
					ROG	NOx	CO	PM10	PM2.5	CO2	CH4	NO2	Total GHG Emissions (MT)			
Dredge (35 hp)	Other Construction Equipment Composite	1	4	16	0.33	2.87	1.48	0.12	0.11	0.89	0.00	0.00	0.89			
Barges (80 hp)	Barge	2	1	8	0.18	1.31	1.05	0.10	0.09	0.29	0.00	0.00	0.29			
Pump (30 hp)	Pump	1	4	16	0.05	0.29	0.20	0.02	0.02	0.05	0.00	0.00	0.05			
Generator	Generator Sets Composite	1	4	16	0.28	2.03	1.19	0.12	0.11	0.44	0.00	0.00	0.44			
Rubber Tired Dozer	Rubber Tired Dozers Composite	1	4	16	1.14	9.55	4.42	0.40	0.37	1.74	0.00	0.00	1.74			
Off-Road Trucks	Off-Highway Trucks Composite	1	1	4	0.20	1.67	0.61	0.06	0.05	0.47	0.00	0.00	0.47			
					2.18	17.72	8.95	0.81	0.75	3.90	0.00	0.00	3.91			

On Road Construction Emissions

Haul Trucks	Trips Per Day	Distance	Average Daily Mileage	Total Mileage	Total Daily Emissions (lbs)					Annual GHG Emissions (MT)				
					ROG	NOx	CO	PM10	PM2.5	CO2	CH4	NO2	Total GHG Emissions (MT)	
	29	2	116	464	0.10	2.77	0.46	0.08	0.06	0.80	0.00	0.00	0.80	

Note: Assumes 29 trips per day based on 1,430 cubic yard dredging volume and 5,000 gallon tanker trucks.

Worker Trips	Total Trips	Distance	Average Daily Mileage	Total Mileage	Total Daily Emissions (lbs/day)					Annual GHG Emissions (MT)				
					ROG	NOx	CO	PM10	PM2.5	CO2	CH4	NO2	Total GHG Emissions (MT)	
	14	16.8	470	1,882	0.08	0.56	1.58	0.08	0.05	0.67	0.00	0.00	0.69	

Note: Assumes an average of 14 workers per day.

Total	Total Daily Emissions (lbs/day)					Annual GHG Emissions (MT)				
	ROG	NOx	CO	PM10	PM2.5	CO2	CH4	NO2	Total GHG Emissions (MT)	
	2.36	21.05	10.99	0.97	0.85	5.37	0.00	0.00	5.40	

**Fleet Average Emission Factors (Diesel)**

<b>Equipment</b>	<b>MaxHP</b>	<b>(lb/hr) ROG</b>	<b>(lb/hr) CO</b>	<b>(lb/hr) NOX</b>	<b>(lb/hr) SOX</b>	<b>(lb/hr) PM</b>	<b>(lb/hr) PM2.5</b>	<b>(lb/hr) CO2</b>	<b>(lb/hr) CH4</b>
Generator Sets Composite		0.0702	0.2974	0.5083	0.0007	0.0296	0.0272	61.0	0.0063
Off-Highway Trucks Composite		0.2034	0.6148	1.6679	0.0027	0.0579	0.0533	260	0.0183
Dredge	50	0.0670	0.2573	0.2471	0.0004	0.0183	0.0168	28.0	0.0060
Barge	120	0.0915	0.5237	0.6571	0.0009	0.0503	0.0462	80.9	0.0083
Pumps	15	0.0117	0.0488	0.0716	0.0001	0.0045	0.0042	7.4	0.0011
Rubber Tired Dozers Composite		0.2854	1.1058	2.3867	0.0025	0.0993	0.0914	239	0.0257

**SFBAAB 2014 On-Road Emission Factors**

VEH	FUEL	MDLYR	SPEED	POP	VMT	TRIPS	ROG_RUNEX (gms/mile)	CO_RUNEX (gms/mile)	NOX_RUNE X (gms/mile)	CO2_RUNEX (gms/mile)	PM10_Total (gms/mile)	PM2_5_Total (gms/mile)	CH4 (gms/mile)	N2O (gms/mile)
			(Miles/hr)	(Vehicles)	(Miles/day)	(Trips/day)								
LDA	GAS	AllMyr	AllSpeeds	2,812,158	98,052,435	17,707,132	0.05	1.45	0.14	301.13	0.05	0.02		
LDA	DSL	AllMyr	AllSpeeds	13,208	430,993	77,835	0.05	0.27	0.65	310.22	0.08	0.05		
LDT1	GAS	AllMyr	AllSpeeds	321,591	11,334,007	1,959,440	0.12	3.51	0.37	356.10	0.05	0.02		
LDT1	DSL	AllMyr	AllSpeeds	456	14,867	2,406	0.09	0.40	0.81	319.57	0.12	0.09		
LDT2	GAS	AllMyr	AllSpeeds	846,663	31,463,268	5,329,805	0.05	1.89	0.25	427.21	0.05	0.02		
LDT2	DSL	AllMyr	AllSpeeds	419	15,364	2,416	0.06	0.30	0.74	316.77	0.09	0.06		
Average							0.079	1.526	0.541	354.913	0.077	0.047	0.028	0.0369625

Source: EMFAC 2011

VEH	FUEL	MDLYR	SPEED	POP	VMT	TRIPS	ROG_RUNEX (gms/mile)	CO_RUNEX (gms/mile)	NOX_RUNE X (gms/mile)	CO2_RUNEX (gms/mile)	PM10_Total (gms/mile)	PM2_5_Total (gms/mile)	CH4 (gms/mile)	N2O (gms/mile)
			(Miles/hr)	(Vehicles)	(Miles/day)	(Trips/day)								
Tractor	DSL	AllMyr	AllSpeeds	7,106	1,112,419	0	0.39	1.80	10.85	1,729.40	0.31	0.23	0.0051	0.0048

Source: EMFAC 2011

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