PROPOSED MITGATED NEGATIVE DECLARATION
for the
Delta Dams Rodent Burrow Remediation Project

Project: Delta Dams Rodent Burrow Remediation Project

Lead Agency: California Department of Water Resources (DWR)

Project Location: The proposed Project activities would occur at three DWR facilities—Clifton Court Forebay, Dyer Dam, and Patterson Dam.

- **Clifton Court Forebay:** Contra Costa County, approximately 10 miles northwest from the City of Tracy.
- **Dyer Dam:** Alameda County, in the Altamont Hills, approximately 13 miles west of the City of Tracy and 7 miles southeast of the City of Livermore.
- **Patterson Dam:** Alameda County, approximately 1 mile east of the City of Livermore.

Project Description: The Delta Dams Rodent Burrow Remediation Project consists of remediation of rodent burrows and other maintenance and repair activities for the earthen embankment dams at Clifton Court Forebay, Dyer Dam, and Patterson Dam to improve the stability and safety of each dam. Specifically, the Project involves collapsing and/or excavating burrows, backfilling the dam surface, and compacting the soil. In some locations, wire and/or rock would be placed to provide permanent armoring to deter future rodent burrowing.

Mitigation Measures: The mitigation measures presented in Table 1 would 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.

Table 1. Mitigation Measures

Measure Number	Measure Text
BIO-1	**Avoid or Minimize Impacts on Native Plants and Wildlife.** To avoid or minimize impacts on plants and wildlife, the following general measures shall be implemented throughout the Project site: • Approved Biologists. At least 15 days prior to start of Project activities, the California Department of Water Resources (DWR) shall submit the names and credentials of personnel seeking to act as approved biologists to the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) for review. Biologists shall have appropriate training and experience with the species for which they are seeking approval. All biologists shall be approved in writing by USFWS and CDFW prior to conducting proposed Project activities. • Environmental Awareness Training. An approved biologist shall conduct environmental awareness training for all individuals working on the Project before work begins. The training shall cover the life history, habitat requirements, and conservation measures for potentially affected species. The training shall also include information on federal and state regulatory protections, restrictions, and guidelines that must be followed by crews to

Table 1. Mitigation Measures

Measure Number	Measure Text
	avoid and minimize impacts to threatened and endangered species and their habitat. Upon completion of training, crews shall sign a form stating that they attended the training and understand all conservation measures. If new personnel are added to the Project, the new personnel shall receive the training prior to starting work. • Approved Biologist Authority. An approved biologist shall be available to inspect all Project activities to ensure compliance with avoidance and minimization measures and shall monitor all ground-disturbing activities. Approved biologists shall perform weekly surveys of the Project area to ensure appropriate application of all general and species measures. Approved biologists shall have the authority to stop work if a listed species is encountered within active work areas or activities may result in take of listed species. • Speed Limits. Project-related vehicles shall observe a daytime speed limit of 15 mph, except on county roads and state and federal highways. Emergency vehicles are exempt from these restrictions in emergency situations. Any road mortality/injury of any animal that may be a listed species observed by workers shall be reported to an approved biologist who will inspect the remains and notify the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife within 24 hours if it is determined to be a listed species. At a minimum, the notification will include clear photographs that will aid in immediate identification. • Off-Road Traffic Prohibition. Off-road traffic outside of designated Project areas shall be prohibited. • Trash Abatement. All food-related trash items, such as wrappers, cans, bottles, and food scraps, shall be disposed of in a closed container and removed from the Project site daily. • Spill Prevention. A Spill Prevention Control and Countermeasure Plan shall be prepared prior to Project implementation. All machinery shall be properly maintained and cleaned to prevent spills and leaks. Any spills or leaks from equipment shall be reported and cleaned up in accordance with applicable local, state, and/or federal regulations. • Fire Prevention. A Fire Prevention and Suppression Plan shall be prepared prior to the start of Project activities. • Reporting. A final report containing details of the construction activities and any observations of listed species shall be submitted to the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife within 30 days of Project completion. The report shall document the number of each species encountered, and type and amount of any known take, as defined by the federal Endangered Species Act and California Endangered Species Act.
BIO-2	**Avoid, Minimize, and Mitigate Impacts to Special-Status Plants.** Permanent and temporary impacts to long-styled sand-spurrey (California Rare Plant Rank [CRPR] 1B.2) individuals would result from implementation of the Project at Clifton Court Forebay Dam; these impacts are significant and require mitigation. Compensatory mitigation for permanent impacts to long-styled sand-spurrey shall include the following: a. The protection, through land acquisition or a conservation easement, of an occurrence of equal or greater size and health. Or, b. If it is not feasible to acquire and preserve a known occurrence of a special-status plant to be impacted, suitable unoccupied habitat capable of supporting the species shall be acquired, and used to create a new population at a 1:1 ratio. For creation of an occurrence, the following considerations shall also be met: • A special-status plant mitigation plan shall be prepared by a qualified biologist and include (1) seed/propagule collection methods, (2) success criteria, (3) 5 years of

Table 1. Mitigation Measures

Measure Number	Measure Text
	maintenance and monitoring, (4) and adaptive management approaches. The special-status plant mitigation plan shall be implemented to document the success of creation of the new plant occurrence. • Prior to unavoidable and permanent disturbance to an occurrence of a special-status plant species, propagules shall be collected from the occurrence to be disturbed. This may include seed collection, cuttings, or seed-bearing topsoil salvage, and these propagules shall be used to establish a new population on suitable, unoccupied habitat as described above. Transplantation of whole plants may be attempted, but shall not be used as the primary means for creating a new occurrence. • Creation of new occurrences shall require identification of suitable locations and habitats, as well as conducting literature review to determine appropriate and viable propagation or planting techniques for the species, appropriate seed-collection techniques, and seeding rates. For temporary impacts to long-styled sand-spurrey, compensatory mitigation for temporary impacts shall include restoration of the occurrence on site at a 1:1 ratio. A restoration plan, which may be incorporated into the special-status plant mitigation plan, if applicable, shall be prepared. The restoration plan shall include (1) seed/propagule collection methods, (2) success criteria, and (3) 5 years of maintenance and monitoring. Additionally, a qualified California Department of Water Resources (DWR) biologist (qualified biologist) shall be present prior to and during construction to ensure avoidance of impacts on special-status plant species and special-status natural communities by flagging the population or natural community areas and/or allowing adequate buffers.
BIO-3	**Avoid, Minimize, and Mitigate Impacts to Sensitive Natural Communities.** The Project would result in permanent and temporary impacts to sensitive vegetation communities at Clifton Court Forebay Dam and Dyer Dam; these impacts are significant and require mitigation. All temporary impacts to sensitive vegetation communities shall be restored on site. Restoration shall include recontouring and seeding and/or planting with native plants that comprise the sensitive natural community impact. Prior to seeding and/or planting the temporary ground-disturbance areas, the approved biologist shall review the seeding/plant palette to ensure that seeding/planting does not contain non-native or invasive plant species, as identified in the most recent version of the California Invasive Plant Inventory for the region. The California Department of Water Resources (DWR) shall ensure recontouring and revegetation of disturbed portions of sensitive vegetation communities in areas temporarily affected by construction within 1 year of demobilization by the contractor during the appropriate seasonal period for revegetation. Mitigation for permanent impacts to sensitive natural communities shall occur at a mitigation bank or within an in-lieu fee program, and shall occur at a ratio no less than 1:1 for the impacts to sensitive natural communities.
BIO-4	**Minimize Temporary Impacts on Potential Vernal Pool Fairy Shrimp Habitat.** Prior to constructing the temporary toe access road adjacent to potential vernal pool fairy shrimp habitat at Clifton Court Forebay Dam (i.e., 5.36-acre wetland outboard of Stations 32 + 00 to 64 + 00), an approved biologist shall direct the placement of erosion control fencing along the downstream (southern) perimeter of the access road to avoid sedimentation of adjacent habitat. The biologist shall also direct the placement of rinsed gravel and covering with geotextile fabric over any depressions overlapping the road's footprint to minimize damage to the soils and protect existing contours. Erosion control fencing and temporary fill shall be removed within 72 hours of the completion of burrow remediation activities at this location.

Table 1. Mitigation Measures

Measure Number	Measure Text
BIO-5	**Avoid and Minimize Impacts to California Tiger Salamander and California Red-legged Frog.** This mitigation measure identifies two separate sets of requirements—one for Clifton Court Forebay Dam and the other for both Dyer Dam and Patterson Dam. Clifton Court Forebay Dam: The following measure shall be implemented to avoid take of individual California tiger salamanders at Clifton Court Forebay Dam: • California Tiger Salamander Take Avoidance. Within 30 days prior to clearing existing vegetation for staging areas south of the dam (i.e., between Skinner Fish Facility and intake channel), an approved biologist shall survey for the presence of potential underground refugia for California tiger salamander (i.e., small mammal burrows). If potential refugia are observed, they shall be covered with plywood to prevent collapse from temporary heavy equipment traffic. An approved biologist shall monitor and guide the placement of plywood over burrows. After the completion of burrow protection measures, temporary exclusion fencing shall be installed around the staging areas to prevent amphibians from entering. Exclusion fencing shall be a minimum of 2.5 feet tall and the bottom 6 inches shall be buried to prevent amphibians from crawling under the fence. During work hours, a portion of the fencing around upland staging areas may be removed to facilitate Project activities, but must be reinstalled at the end of the day and the bottom secured with sandbags or other heavy material. When sections are removed, the section shall be reviewed for resting or hiding species prior to removal. Exclusion fencing shall be removed within 72 hours of completion of work. Dyer Dam and Patterson Dam: The following measures shall be implemented to avoid and minimize impacts on California tiger salamander and California red-legged frog at Dyer Dam and Patterson Dam: • Work Window. The Project shall be performed during daylight hours, and any work in wetted areas shall occur between May 1 and October 31. • Access Road Burrow Protection. Any burrows or large cracks in the ground that may be traversed by heavy equipment traffic over unimproved access roads shall be covered with minimum 5/8-inch-thick plywood to prevent burrow collapse. • Morning Inspections. An approved biologist shall survey the work area for California red-legged frogs and California tiger salamanders each morning prior to Project activities. Any California red-legged frog or California tiger salamander found in the work area shall be captured, transported to a predetermined relocation site, and released. Only approved biologists shall capture and handle frogs or salamanders. The biologist shall monitor any relocated frog or salamander until such time that the animal is safe from any obvious or immediate hazard or danger. • Amphibian Exclusion Fencing. Exclusion fencing shall be installed between work areas and adjacent habitat for California red-legged frog and California tiger salamander. The fence shall be a minimum of 2.5 feet tall and the bottom 6 inches shall be buried to prevent amphibians from crawling under the fence. Placement and installation of fencing around drainage work areas shall be coordinated with any sediment control fencing requirements of other resource agency permits. During work hours, a portion of the fencing around upland staging areas may be removed to facilitate Project activities, but must be reinstalled at the end of the day and the bottom secured with sandbags or other heavy material. When sections are removed, the section shall be reviewed for resting or hiding species prior to removal. The exclusion fencing shall be maintained until all construction activities are completed and removed within 72 hours of the completion of work.

Table 1. Mitigation Measures

Measure Number	Measure Text
	• Vegetation Removal Inspections. Vegetation and sediment removed from drainages shall be carefully be placed in the dump truck bed and examined for frogs and salamanders by approved biologists prior to disposal. • Impacts on areas determined to be habitat for California tiger salamander and California red-legged frog shall be fully mitigated, in consultation with the U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife.
BIO-6	**Avoid and Minimize Impacts to Western Pond Turtle.** To minimize impacts on western pond turtles known to nest at the northeastern corner of Clifton Court Forebay, burrow remediation activities adjacent to the drainage along the toe access road (Stations 230+00 to 262+00, approximately) shall occur from May 1 to June 15 and September 1 to October 15 to avoid the peak nesting period (mid-June to August) and minimize mortality of hatchlings overwintering in nest sites (approximately November to April).
BIO-7	**Avoid and Minimize Impacts to Special-Status and Non-Special-Status Birds.** The following measures shall be implemented throughout the Project to avoid and minimize impacts to nesting birds, including special-status species: • A qualified biologist shall conduct preconstruction surveys for nesting birds no more than 7 days prior to any construction activity involving vegetation removal (i.e., grubbing of herbaceous vegetation and grass, removal of trees or shrubs) during the nesting season (March 15 to August 31). Surveys shall cover the construction footprint and suitable habitat within 100 feet for all birds, 300 feet for raptors (including white-tailed kite and northern harrier) and tricolored blackbird, and 0.25 miles for Swainson's hawk. If the biologist does not find any nests but suitable habitat would be removed, the biologist shall conduct a final survey of such habitat within 48 hours of the activity to confirm the absence of nests (habitat outside the direct impact area would not need to be surveyed). If a lapse in Project-related activities of 15 days or longer occurs, another preconstruction survey shall be conducted. Any construction activity that occurs from September 1 to March 14, outside the nesting season, shall not require preconstruction nesting bird surveys. • If nests are located during preconstruction surveys, impacts shall be minimized by establishing an appropriate nondisturbance buffer zone around active nests or vegetation patches supporting nesting birds. The size of the buffer shall be determined by the biologist based on the species' sensitivity to disturbance, time of year, and planned work activities in the vicinity. The buffer shall remain in effect until the nest is no longer active. Buffers for Swainson's hawk nests shall be based on the guidance in the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (SHTAC 2000).

Table 1. Mitigation Measures

Measure Number	Measure Text
BIO-8	**Avoid and Minimize Impacts to Burrowing Owl.** The following measures shall be implemented throughout the Project to avoid and minimize impacts to burrowing owl: • A qualified biologist shall conduct a burrowing owl take avoidance survey no more than 14 days prior to the initiation of any construction activities within burrowing owl habitat areas as identified during 2021 field surveys (Appendix B). Surveys shall cover the construction footprint and suitable habitat within 250 feet. • If an active burrow is found during the nesting season (March 15 to August 31), clear, visible markers will be placed on the roadways to clearly demarcate the burrow location so vehicles traveling either direction on the road and workers at the project site will avoid disturbing the area. If the burrow is in a proposed work area and work cannot be postponed until after the nesting season, a no-activity zone will be established by a qualified biologist and will at a minimum be 250-feet radius from the occupied burrow, following recommendations in the CDFW Staff Report on Burrowing Owl Mitigation (CDFG 2012). • If burrowing owls are present at the site during the non-breeding period, a qualified biologist will establish a no-activity zone of at least 160 feet. • If an effective no-activity zone cannot be established in either case, a qualified biologist will develop a site-specific plan (i.e., a plan that considers the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the owls, and the dissimilarity of the proposed activity with background activities) to minimize the potential to affect the reproductive success of the owls.
BIO-9	**Avoid and Minimize Impacts to San Joaquin Kit Fox.** Any potential kit fox dens identified during 2021 field surveys (Appendix B) that are on California Department of Water Resources (DWR) property and located within 50 feet of the Project site shall be temporarily blocked with burlap bags or filled with soil (after three consecutive nights of tracking or game camera monitoring have confirmed that the den is not currently in use) to prevent access to these dens during Project activities. If a den is determined to be a natal den, then exclusion may not occur until the family has moved to another den location. A 100-foot exclusion zone shall be marked around any known kit fox dens within the survey area using lathe and flagging. The U.S. Fish and Wildlife Service (USFWS) Standardized Recommendations for the Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (January 2011) or the latest guidance from the USFWS shall be referenced when implementing this measure.
BIO-10	**Avoid and Minimize Impacts to American Badger.** Within 14 days prior to the initiation of Project activities within 100 feet of potential badger dens identified during 2021 field surveys (Appendix B) and concurrent with the take avoidance surveys for burrowing owl, a qualified biologist shall perform a survey to identify the presence of active or inactive American badger dens. If this species is not found, no further mitigation shall be required. If badger dens are identified within the construction footprint during the surveys or afterwards, dens shall be inspected and closed as follows: • When unoccupied dens are encountered outside of work areas but within 100 feet of proposed activities, vacated dens shall be inspected to ensure they are empty and temporarily covered using plywood sheets or similar materials. If badger occupancy is determined at a given site within the work area, work activities at that site shall be halted. Depending on the den type, reasonable and prudent measures to avoid harming badgers shall be implemented and may include seasonal limitations on Project construction near the site (i.e., restricting the construction period to avoid spring–summer pupping season), and/or establishing a construction-exclusion zone around the identified site, or resurveying the den at a later time to determine species presence or absence.

Table 1. Mitigation Measures

Measure Number	Measure Text
	• Badgers may be passively relocated using burrow exclusion (e.g., installing one-way doors on burrows) or similar California Department of Fish and Wildlife– (CDFW-) approved exclusion methods. In unique situations it might be necessary to actively relocate badgers (e.g., using live traps) to protect individuals from potentially harmful situations. Such relocation shall be performed with advance CDFW coordination and concurrence.
BIO-11	**Avoid, Minimize, and Mitigate Impacts to Jurisdictional Waters.** All temporary impacts to jurisdictional waters of the United States/state shall be restored on site. Restoration shall include recontouring and erosion control with a native seed mix, where applicable. Prior to seeding temporary ground-disturbance areas, the approved biologist shall review the seeding palette to ensure that no seeding of non-native or invasive plant species, as identified in the most recent version of the California Invasive Plant Inventory for the region, will occur. The California Department of Water Resources (DWR) shall ensure recontouring and revegetation of disturbed portions of jurisdictional areas in areas temporarily affected by construction prior to demobilization by the contractor at the end of Project construction. Compensatory mitigation for permanent impacts shall occur either at a mitigation bank, within an in-lieu fee program, or through on-site or off-site permittee-responsible mitigation, and shall occur at a ratio no less than 1:1 for the impacts to jurisdictional waters or at a ratio determined in the jurisdictional waters permits. If a mitigation bank or in-lieu fee program is not utilized and DWR proceeds with permittee-responsible mitigation, a waters mitigation and monitoring plan shall be prepared that outlines the compensatory mitigation in compliance with requirements from applicable regulatory agencies (i.e., U.S. Army Corps of Engineers [USACE], Regional Water Quality Control Board [RWQCB], and California Department of Fish and Wildlife [CDFW]). Suitable mitigation lands provided for species and vegetation communities may be used for jurisdictional waters of the United States/state mitigation. If required, the wetland mitigation and monitoring plan shall be developed in coordination with CDFW, USACE, and RWQCB and shall detail mitigation and monitoring obligations for impacts to wetlands and other waters as a result of construction activities. The plan shall quantify the total acreage affected; annual success criteria; mitigation sites; monitoring and reporting requirements; and site-specific plans to compensate for wetland or other waters losses resulting from the Project.
CUL-1	**Unanticipated Archaeological Resources.** A Worker Environmental Awareness Training for cultural resources shall be prepared and provided to all construction workers prior to initiation of work. The training shall generally summarize the protocols provided below that must be followed in the event that there is an inadvertent discovery of cultural resources and/or potential tribal cultural resources. In the event that cultural resources (e.g., sites, features, or artifacts) are exposed during construction activities, all ground disturbing work occurring within 100 feet of the find shall immediately stop until a qualified specialist, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find and determine whether additional study is warranted. Prehistoric archaeological deposits may be indicated by the presence of discolored or dark soil, fire-affected material, concentrations of fragmented or whole freshwater bivalves shell, burned or complete bone, non-local lithic materials, or the characteristic observed to be atypical of the surrounding area. Common prehistoric artifacts may include modified or battered lithic materials; lithic or bone tools that appeared to have been used for chopping, drilling, or grinding; Projectile points; fired clay ceramics or non-functional items; and other items. Historic-age deposits are often indicated by the presence of glass bottles and shards, ceramic material, building or domestic refuse, ferrous metal, or old features such as concrete foundations or privies. Depending upon the significance of the find under the California Environmental Quality Act (CEQA) (14 CCR

Table 1. Mitigation Measures

Measure Number	Measure Text
	15064.5[f]; California Public Resources Code, Section 21082), the archaeologist may simply record the find and allow work to continue. If the discovery proves significant under CEQA, additional work, such as preparation of an archaeological treatment plan, testing, or data recovery, may be warranted.
CUL-2	**Unanticipated Human Remains.** In accordance with Section 7050.5 of the California Health and Safety Code, if potential human remains are found, the county coroner shall be immediately notified of the discovery. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the county coroner has made their determination regarding the appropriate next steps to be taken. This determination must be completed within 2 working days of notification of the discovery. If the county coroner determines that the remains are, or are believed to be, Native American, he or she shall notify the Native American Heritage Commission in Sacramento within 24 hours. In accordance with California Public Resources Code, Section 5097.98, the Native American Heritage Commission must immediately notify those persons it believes to be the most likely descendant from the deceased Native American. The most likely descendant shall complete his or her inspection within 48 hours of being granted access to the site. The designated Native American representative would then determine, in consultation with the property owner, the disposition of the human remains.
GEO-1	**Unanticipated Paleontological Resources.** In the event that paleontological resources (e.g., fossils) are exposed during construction activities for the Project, all construction work occurring within 50 feet of the find shall immediately stop until a qualified paleontologist meeting the professional standards of the Society of Vertebrate Paleontology (SVP) can evaluate the significance of the find and determine whether additional study is warranted. If the discovery is clearly not significant, the paleontologist may document the find and allow work to continue. If the discovery may consist of or include unique paleontological resources as defined under the California Environmental Quality Act, a qualified paleontologist shall evaluate the resource and prepare a proposed mitigation plan in accordance with SVP guidelines (1995) sufficient to ensure that the project does not result in the direct or indirect destruction of any unique paleontological resources. The proposed mitigation plan may include a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings,
HYD-1	**Avoid or Minimize Increased Erosion.** To avoid or minimize the potential for increased erosion downstream of the drainage ditch improvements at Dyer Dam and Patterson Dam, the California Department of Water Resources (DWR) shall complete a fluvial geomorphology study for each ditch that evaluates the physical shape of each ditch and the properties (e.g., velocity, volume, and flow resistance) of water and sediment transport through each ditch. The fluvial geomorphology study shall also provide design criteria for the proposed drainage ditch activities that will ensure the Project does not increase erosion within or downstream of the affected ditch segments.

Determination: In compliance with CEQA, DWR has prepared an Initial Study (IS) to evaluate the potential physical environmental effects of the proposed Project and identify mitigation measures that would avoid, reduce, or provide compensation for any significant adverse Project effects. As demonstrated in Section 3 of the IS, the analysis determined that the Project would result in potential adverse impacts associated with Biological Resources, Cultural Resources, Geology and Soils, Hydrology and Water Quality, and Tribal Cultural Resources, but that these impacts would be reduced to less-than-significant levels with implementation of mitigation measures. Thus, DWR proposes to adopt this Mitigated Negative Declaration for the Project.

Signature

December 1, 2021

Date

Gerald Snow
Environmental Assessment Branch Manager
Division of Operations and Maintenance
California Department of Water Resources

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INITIAL STUDY

Delta Dams Rodent Burrow Remediation Project

Prepared for:

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NOVEMBER 2021

Printed on 30% post-consumer recycled material.

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
2012 Plan	2012 Greenhouse Gas Emissions Reduction Plan
AB	Assembly Bill
APE	area of potential effect
BAAQMD	Bay Area Air Quality Management District
BEIER	Built Environment Inventory and Evaluation Report
BMP	best management practice
cal	calibrated years
CAL FIRE	California Department of Forestry and Fire Protection
CalEEMod	California Emissions Estimator Model
CCalC	Central California Information Center
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CEQA Guidelines	State of California CEQA Guidelines
CHRIS	California Historical Resources Information System
CRHR	California Register of Historical Resources
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CRPR	California Rare Plant Rank
dB	Decibels
Delta	Sacramento–San Joaquin River Delta
DSOD	Division of Safety of Dams
DWR	California Department of Water Resources
GHG	greenhouse gas
I	Interstate
IS	Initial Study
MT	metric tons
NOx	oxides of nitrogen
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
O&M	Division of Operations and Maintenance
O_3	Ozone
PG&E	Pacific Gas and Electric Company
PM_{10}	particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
Project	Delta Dams Rodent Burrow Remediation Project
ROG	reactive organic gas
RWQCB	Regional Water Quality Control Board
SVP	Society of Vertebrate Paleontology
SWP	California State Water Project
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
Update 2020	Greenhouse Gas Emissions Reduction Plan Update 2020

Acronym/Abbreviation	Definition
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

1 Introduction

1.1 Project Overview

The California Department of Water Resources (DWR) California State Water Project (SWP) is a water storage and delivery system that consists of many reservoirs, aqueducts, power plants, and pumping plants. The California Aqueduct is a central feature of the SWP; it begins at Clifton Court Forebay, located in the southwestern portion of Contra Costa County, and extends over 400 miles to the south. Another feature of the SWP, the South Bay Aqueduct begins at Bethany Reservoir, which is located south of Clifton Court Forebay, and carries water to communities in Alameda and Santa Clara Counties, passing through Dyer Reservoir, located west of Bethany Reservoir, and passing through Patterson Reservoir, located south of Dyer Reservoir (Figure 1, Project Location Overview).

The earthen embankment dams surrounding Clifton Court Forebay, Dyer Reservoir, and Patterson Reservoir have been subject to ongoing rodent burrowing throughout their service life. Rodent burrows are a recognized hazard to dams and levees because they can promote piping and internal erosion that can ultimately lead to dam failure. DWR proposes to undertake the Delta Dams Rodent Burrow Remediation Project (Project) to collapse/excavate and fill in existing burrows and improve the integrity of each of these dams. The Project would involve rodent burrow remediation and restoration measures, ongoing monitoring, and permanent measures to prevent future burrowing where warranted.

The proposed burrow remediation and dam restoration involves collapsing and/or excavating burrows, backfilling the dam surface, and compacting the soil. Measures to prevent future burrowing include placing wire and rock over the earthen dam face.

Each dam is unique in its design, construction, operation, downstream consequences, and severity of burrowing activity; thus, while the remediation activities are similar across all three dams, there are differences in the application of the remediation strategies to specific sections of each dam. These strategies are based on the location and density of the burrows on each dam or dam reach, complexity of burrow clusters, the phreatic surface (water level), slope stability, and other factors.

A detailed description of the Project is presented in Section 3, Initial Study Checklist.

1.2 California Environmental Quality Act Compliance

The California Environmental Quality Act (CEQA), which serves as the main framework of environmental law and policy in California, requires State and local government agencies to inform decision makers and the public about the potential environmental impacts of proposed projects, and to reduce those environmental impacts to the extent feasible. Except in cases where a project is either statutorily or categorically exempt, CEQA is applicable to any project subject to discretionary approval by a public agency. The Project does not fall under any of the statutory or categorical exemptions listed in the CEQA Statute and State of California CEQA Guidelines (CEQA Guidelines) (California Public Resources Code, Section 21000 et seq.; 14 CCR 15000 et seq.).

DWR has prepared this Initial Study (IS) to evaluate the potential physical environmental effects of the proposed Project and identify mitigation measures that would avoid, reduce, or provide compensation for any significant adverse Project effects. As demonstrated in the analysis throughout Section 3, where the Project would result in

significant or potentially significant impacts, those impacts would be reduced to a less-than-significant level with implementation of the mitigation measures identified in this IS. Thus, DWR proposes to adopt a Mitigated Negative Declaration for the Project to comply with CEQA.

1.3 Project Background

The proposed Project activities would occur at three DWR facilities—Clifton Court Forebay, Dyer Dam and Reservoir, and Patterson Dam and Reservoir. Because project activities would affect the dam embankments and surrounding land, the facilities are referred to throughout this IS as Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam, unless the text is specifically addressing the forebay or reservoir.

Clifton Court Forebay is located in Contra Costa County while Dyer Dam and Patterson Dam are located in Alameda County. Each is located within the unincorporated area of the respective county, and lands surrounding each facility are primarily in agricultural production, grazing, and/or open space. A water treatment plant is located south of Patterson Dam. All of the Project activities would occur within DWR property or rights-of-way.

More detailed information regarding the physical setting of each of the three DWR facilities is provided in Section 3. This section provides a general overview of the planning and environmental setting of the Project area.

Clifton Court Forebay and Patterson Dam and Reservoir were constructed in the 1960s as part of the early stages of development of the SWP. Dyer Dam and Reservoir were constructed between 2009 and 2012. Over time, the ability of DWR's Division of Operations and Maintenance (O&M) to address rodent burrows (i.e., backfill) has diminished due to the difficulty in obtaining permits to fill the rodent burrows. The burrows are considered potential habitat for listed species (e.g., California red-legged frog [*Rana draytonii*], California tiger salamander [*Ambystoma californiense*], and others), and therefore could require permits under the California and federal Endangered Species Acts, which can take significant time to obtain.

As an interim measure, DWR's Delta Field Division has implemented a rodent abatement/control plan that prescribes the placement of bait stations and the broadcasting of bait annually from, May 1 to September 1, in compliance with local county regulations. This activity is included in each dam's annual preventative maintenance plan, but has not resulted in sufficient minimization or elimination of widespread animal burrowing on the downstream slope of these dams.

Dam safety inspections have repeatedly identified the presence of rodent burrows, highlighted the hazard presented by rodent burrows, and emphasized the need for immediate action to address the existing burrows and an ongoing solution to address or eliminate the burrows on a regular basis. A 2018 Director's Safety Review Board report indicated the board's belief that burrows have not been addressed in a satisfactory timeframe at Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam, and now represent a serious dam safety concern (DSRB 2018). In July 2020, DWR's Division of Safety of Dams (DSOD) found that the severity of the dam safety issues at the dams "has increased to a level that now poses a significant dam safety concern" (DWR 2020a, p.1).

Thus, DWR proposes rodent burrow remediation and restoration measures at Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam to address ongoing deterioration of the dam embankments. DWR also proposes to implement a Rodent Burrow Maintenance and Monitoring Plan (DWR 2021), which describes a program for more frequent inspections, burrow collapse, excavation, compaction, and backfilling. In addition, permanent measures to prevent future burrowing may be necessary in areas that have been subject to the greatest burrowing or carry the greatest

consequence of failure. The increased frequency of inspections component of the Rodent Burrow Maintenance and Monitoring Plan would be implemented beginning in 2021 while remediation actions would be taken between 2022 (pending permit approval) and 2026. DWR would undertake ongoing monitoring and maintenance, as described in the Rodent Burrow Maintenance and Monitoring Plan (DWR 2021), to prevent formation of new habitat capable of supporting special-status wildlife species. The determination of whether to implement a permanent preventative measure would be based on the findings of the Rodent Burrow Maintenance and Monitoring Plan regarding burrow activity severity, as well as considerations of the consequence of dam failure. The specific permanent preventative measure applied to a given section of dam would be based on the dam engineering, design and burrow activity severity. After permanent preventative measures are installed, monitoring frequency would be reduced to the frequency defined in the Dam Safety Surveillance and Monitoring Plan for each site.

1.4 Public Review Process

This IS being circulated for public and agency review from December 3, 2021, to January 3, 2022. Copies of this document are available for review online at www.water.ca.gov/News/Public-Notices and ceqanet.opr.ca.gov, and at the following locations:

Department of Water Resources
Division of Operations and Maintenance Headquarters
715 P St, 5th Floor
Sacramento, California 94236-0001

Department of Water Resources
Delta Field Division
5280 Bruns Road
Byron, California 94514

Comments on this IS and proposed Mitigated Negative Declaration must be received by January 3, 2022. Comments should be mailed or emailed to the lead agency:

DWR O&M Environmental Assessment Branch
Attn: Sara Paiva-Lowry
P.O. Box 942836
Sacramento, California 94236-0001
Office phone: (916) 902-7709
Email: sara.paiva-lowry@water.ca.gov.

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2 Summary of Findings

2.1 Environmental Factors Potentially Affected

This IS analyzes the environmental impacts of the Project consistent with the format and analysis prompts provided in Appendix G of the CEQA Guidelines. The analysis determined that the Project would result in potential adverse impacts associated with Biological Resources, Cultural Resources, Geology and Soils, Hydrology and Water Quality, and Tribal Cultural Resources, but that these impacts would be reduced to less-than-significant levels with implementation of mitigation measures. Detailed analyses of impacts are provided under each resource section evaluated in Section 3 of this IS.

2.2 Environmental Determination

DWR finds that the proposed Project would result in significant and potentially significant environmental impacts, but that implementing the mitigation measures identified in Table 1 would reduce those impacts to less-than-significant levels by avoiding, minimizing, compensating for, or offsetting the impacts. The proposed Project would result in no impacts that would remain significant and unavoidable following implementation of the identified mitigation measures.

Table 1. Mitigation Measures

Measure Number	Measure Text
BIO-1	**Avoid or Minimize Impacts on Native Plants and Wildlife.** To avoid or minimize impacts on plants and wildlife, the following general measures shall be implemented throughout the Project site: • Approved Biologists. At least 15 days prior to start of Project activities, the California Department of Water Resources (DWR) shall submit the names and credentials of personnel seeking to act as approved biologists to the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) for review. Biologists shall have appropriate training and experience with the species for which they are seeking approval. All biologists shall be approved in writing by USFWS and CDFW prior to conducting proposed Project activities. • Environmental Awareness Training. An approved biologist shall conduct environmental awareness training for all individuals working on the Project before work begins. The training shall cover the life history, habitat requirements, and conservation measures for potentially affected species. The training shall also include information on federal and state regulatory protections, restrictions, and guidelines that must be followed by crews to avoid and minimize impacts to threatened and endangered species and their habitat. Upon completion of training, crews shall sign a form stating that they attended the training and understand all conservation measures. If new personnel are added to the Project, the new personnel shall receive the training prior to starting work. • Approved Biologist Authority. An approved biologist shall be available to inspect all Project activities to ensure compliance with avoidance and minimization measures and shall monitor all ground-disturbing activities. Approved biologists shall perform weekly surveys of the Project area to ensure appropriate application of all general and species measures.

Table 1. Mitigation Measures

Measure Number	Measure Text
	Approved biologists shall have the authority to stop work if a listed species is encountered within active work areas or activities may result in take of listed species. • Speed Limits. Project-related vehicles shall observe a daytime speed limit of 15 mph, except on county roads and state and federal highways. Emergency vehicles are exempt from these restrictions in emergency situations. Any road mortality/injury of any animal that may be a listed species observed by workers shall be reported to an approved biologist who will inspect the remains and notify the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife within 24 hours if it is determined to be a listed species. At a minimum, the notification will include clear photographs that will aid in immediate identification. • Off-Road Traffic Prohibition. Off-road traffic outside of designated Project areas shall be prohibited. • Trash Abatement. All food-related trash items, such as wrappers, cans, bottles, and food scraps, shall be disposed of in a closed container and removed from the Project site daily. • Spill Prevention. A Spill Prevention Control and Countermeasure Plan shall be prepared prior to Project implementation. All machinery shall be properly maintained and cleaned to prevent spills and leaks. Any spills or leaks from equipment shall be reported and cleaned up in accordance with applicable local, state, and/or federal regulations. • Fire Prevention. A Fire Prevention and Suppression Plan shall be prepared prior to the start of Project activities. • Reporting. A final report containing details of the construction activities and any observations of listed species shall be submitted to the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife within 30 days of Project completion. The report shall document the number of each species encountered, and type and amount of any known take, as defined by the federal Endangered Species Act and California Endangered Species Act.
BIO-2	**Avoid, Minimize, and Mitigate Impacts to Special-Status Plants.** Permanent and temporary impacts to long-styled sand-spurrey (California Rare Plant Rank [CRPR] 1B.2) individuals would result from implementation of the Project at Clifton Court Forebay Dam; these impacts are significant and require mitigation. Compensatory mitigation for permanent impacts to long-styled sand-spurrey shall include the following: a. The protection, through land acquisition or a conservation easement, of an occurrence of equal or greater size and health. Or, b. If it is not feasible to acquire and preserve a known occurrence of a special-status plant to be impacted, suitable unoccupied habitat capable of supporting the species shall be acquired, and used to create a new population at a 1:1 ratio. For creation of an occurrence, the following considerations shall also be met: • A special-status plant mitigation plan shall be prepared by a qualified biologist and include (1) seed/propagule collection methods, (2) success criteria, (3) 5 years of maintenance and monitoring, (4) and adaptive management approaches. The special-status plant mitigation plan shall be implemented to document the success of creation of the new plant occurrence. • Prior to unavoidable and permanent disturbance to an occurrence of a special-status plant species, propagules shall be collected from the occurrence to be disturbed. This may include seed collection, cuttings, or seed-bearing topsoil salvage, and these propagules shall be used to establish a new population on suitable, unoccupied habitat as described

Table 1. Mitigation Measures

Measure Number	Measure Text
	above. Transplantation of whole plants may be attempted, but shall not be used as the primary means for creating a new occurrence. • Creation of new occurrences shall require identification of suitable locations and habitats, as well as conducting literature review to determine appropriate and viable propagation or planting techniques for the species, appropriate seed-collection techniques, and seeding rates. For temporary impacts to long-styled sand-spurrey, compensatory mitigation for temporary impacts shall include restoration of the occurrence on site at a 1:1 ratio. A restoration plan, which may be incorporated into the special-status plant mitigation plan, if applicable, shall be prepared. The restoration plan shall include (1) seed/propagule collection methods, (2) success criteria, and (3) 5 years of maintenance and monitoring. Additionally, a qualified California Department of Water Resources (DWR) biologist (qualified biologist) shall be present prior to and during construction to ensure avoidance of impacts on special-status plant species and special-status natural communities by flagging the population or natural community areas and/or allowing adequate buffers.
BIO-3	**Avoid, Minimize, and Mitigate Impacts to Sensitive Natural Communities.** The Project would result in permanent and temporary impacts to sensitive vegetation communities at Clifton Court Forebay Dam and Dyer Dam; these impacts are significant and require mitigation. All temporary impacts to sensitive vegetation communities shall be restored on site. Restoration shall include recontouring and seeding and/or planting with native plants that comprise the sensitive natural community impact. Prior to seeding and/or planting the temporary ground-disturbance areas, the approved biologist shall review the seeding/plant palette to ensure that seeding/planting does not contain non-native or invasive plant species, as identified in the most recent version of the California Invasive Plant Inventory for the region. The California Department of Water Resources (DWR) shall ensure recontouring and revegetation of disturbed portions of sensitive vegetation communities in areas temporarily affected by construction within 1 year of demobilization by the contractor during the appropriate seasonal period for revegetation. Mitigation for permanent impacts to sensitive natural communities shall occur at a mitigation bank or within an in-lieu fee program, and shall occur at a ratio no less than 1:1 for the impacts to sensitive natural communities.
BIO-4	**Minimize Temporary Impacts on Potential Vernal Pool Fairy Shrimp Habitat.** Prior to constructing the temporary toe access road adjacent to potential vernal pool fairy shrimp habitat at Clifton Court Forebay Dam (i.e., 5.36-acre wetland outboard of Stations 32 + 00 to 64 + 00), an approved biologist shall direct the placement of erosion control fencing along the downstream (southern) perimeter of the access road to avoid sedimentation of adjacent habitat. The biologist shall also direct the placement of rinsed gravel and covering with geotextile fabric over any depressions overlapping the road's footprint to minimize damage to the soils and protect existing contours. Erosion control fencing and temporary fill shall be removed within 72 hours of the completion of burrow remediation activities at this location.
BIO-5	**Avoid and Minimize Impacts to California Tiger Salamander and California Red-legged Frog**. This mitigation measure identifies two separate sets of requirements—one for Clifton Court Forebay Dam and the other for both Dyer Dam and Patterson Dam. <u>Clifton Court Forebay Dam:</u> The following measure shall be implemented to avoid take of individual California tiger salamanders at Clifton Court Forebay Dam:

Table 1. Mitigation Measures

Measure Number	Measure Text
	• California Tiger Salamander Take Avoidance. Within 30 days prior to clearing existing vegetation for staging areas south of the dam (i.e., between Skinner Fish Facility and intake channel), an approved biologist shall survey for the presence of potential underground refugia for California tiger salamander (i.e., small mammal burrows). If potential refugia are observed, they shall be covered with plywood to prevent collapse from temporary heavy equipment traffic. An approved biologist shall monitor and guide the placement of plywood over burrows. After the completion of burrow protection measures, temporary exclusion fencing shall be installed around the staging areas to prevent amphibians from entering. Exclusion fencing shall be a minimum of 2.5 feet tall and the bottom 6 inches shall be buried to prevent amphibians from crawling under the fence. During work hours, a portion of the fencing around upland staging areas may be removed to facilitate Project activities, but must be reinstalled at the end of the day and the bottom secured with sandbags or other heavy material. When sections are removed, the section shall be reviewed for resting or hiding species prior to removal. Exclusion fencing shall be removed within 72 hours of completion of work. Dyer Dam and Patterson Dam: The following measures shall be implemented to avoid and minimize impacts on California tiger salamander and California red-legged frog at Dyer Dam and Patterson Dam: • Work Window. The Project shall be performed during daylight hours, and any work in wetted areas shall occur between May 1 and October 31. • Access Road Burrow Protection. Any burrows or large cracks in the ground that may be traversed by heavy equipment traffic over unimproved access roads shall be covered with minimum 5/8-inch-thick plywood to prevent burrow collapse. • Morning Inspections. An approved biologist shall survey the work area for California red-legged frogs and California tiger salamanders each morning prior to Project activities. Any California red-legged frog or California tiger salamander found in the work area shall be captured, transported to a predetermined relocation site, and released. Only approved biologists shall capture and handle frogs or salamanders. The biologist shall monitor any relocated frog or salamander until such time that the animal is safe from any obvious or immediate hazard or danger. • Amphibian Exclusion Fencing. Exclusion fencing shall be installed between work areas and adjacent habitat for California red-legged frog and California tiger salamander. The fence shall be a minimum of 2.5 feet tall and the bottom 6 inches shall be buried to prevent amphibians from crawling under the fence. Placement and installation of fencing around drainage work areas shall be coordinated with any sediment control fencing requirements of other resource agency permits. During work hours, a portion of the fencing around upland staging areas may be removed to facilitate Project activities, but must be reinstalled at the end of the day and the bottom secured with sandbags or other heavy material. When sections are removed, the section shall be reviewed for resting or hiding species prior to removal. The exclusion fencing shall be maintained until all construction activities are completed and removed within 72 hours of the completion of work. • Vegetation Removal Inspections. Vegetation and sediment removed from drainages shall be carefully be placed in the dump truck bed and examined for frogs and salamanders by approved biologists prior to disposal.

Table 1. Mitigation Measures

Measure Number	Measure Text
	• Impacts on areas determined to be habitat for California tiger salamander and California red-legged frog shall be fully mitigated, in consultation with the U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife.
BIO-6	**Avoid and Minimize Impacts to Western Pond Turtle.** To minimize impacts on western pond turtles known to nest at the northeastern corner of Clifton Court Forebay, burrow remediation activities adjacent to the drainage along the toe access road (Stations 230+00 to 262+00, approximately) shall occur from May 1 to June 15 and September 1 to October 15 to avoid the peak nesting period (mid-June to August) and minimize mortality of hatchlings overwintering in nest sites (approximately November to April).
BIO-7	**Avoid and Minimize Impacts to Special-Status and Non-Special-Status Birds.** The following measures shall be implemented throughout the Project to avoid and minimize impacts to nesting birds, including special-status species: • A qualified biologist shall conduct preconstruction surveys for nesting birds no more than 7 days prior to any construction activity involving vegetation removal (i.e., grubbing of herbaceous vegetation and grass, removal of trees or shrubs) during the nesting season (March 15 to August 31). Surveys shall cover the construction footprint and suitable habitat within 100 feet for all birds, 300 feet for raptors (including white-tailed kite and northern harrier) and tricolored blackbird, and 0.25 miles for Swainson's hawk. If the biologist does not find any nests but suitable habitat would be removed, the biologist shall conduct a final survey of such habitat within 48 hours of the activity to confirm the absence of nests (habitat outside the direct impact area would not need to be surveyed). If a lapse in Project-related activities of 15 days or longer occurs, another preconstruction survey shall be conducted. Any construction activity that occurs from September 1 to March 14, outside the nesting season, shall not require preconstruction nesting bird surveys. • If nests are located during preconstruction surveys, impacts shall be minimized by establishing an appropriate nondisturbance buffer zone around active nests or vegetation patches supporting nesting birds. The size of the buffer shall be determined by the biologist based on the species' sensitivity to disturbance, time of year, and planned work activities in the vicinity. The buffer shall remain in effect until the nest is no longer active. Buffers for Swainson's hawk nests shall be based on the guidance in the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (SHTAC 2000).
BIO-8	**Avoid and Minimize Impacts to Burrowing Owl.** The following measures shall be implemented throughout the Project to avoid and minimize impacts to burrowing owl: • A qualified biologist shall conduct a burrowing owl take avoidance survey no more than 14 days prior to the initiation of any construction activities within burrowing owl habitat areas as identified during 2021 field surveys (Appendix B). Surveys shall cover the construction footprint and suitable habitat within 250 feet. • If an active burrow is found during the nesting season (March 15 to August 31), clear, visible markers will be placed on the roadways to clearly demarcate the burrow location so vehicles traveling either direction on the road and workers at the project site will avoid disturbing the area. If the burrow is in a proposed work area and work cannot be postponed until after the nesting season, a no-activity zone will be established by a qualified biologist and will at a minimum be 250-feet radius from the occupied burrow, following recommendations in the CDFW Staff Report on Burrowing Owl Mitigation (CDFG 2012).

Table 1. Mitigation Measures

Measure Number	Measure Text
	• If burrowing owls are present at the site during the non-breeding period, a qualified biologist will establish a no-activity zone of at least 160 feet. • If an effective no-activity zone cannot be established in either case, a qualified biologist will develop a site-specific plan (i.e., a plan that considers the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the owls, and the dissimilarity of the proposed activity with background activities) to minimize the potential to affect the reproductive success of the owls.
BIO-9	**Avoid and Minimize Impacts to San Joaquin Kit Fox.** Any potential kit fox dens identified during 2021 field surveys (Appendix B) that are on California Department of Water Resources (DWR) property and located within 50 feet of the Project site shall be temporarily blocked with burlap bags or filled with soil (after three consecutive nights of tracking or game camera monitoring have confirmed that the den is not currently in use) to prevent access to these dens during Project activities. If a den is determined to be a natal den, then exclusion may not occur until the family has moved to another den location. A 100-foot exclusion zone shall be marked around any known kit fox dens within the survey area using lathe and flagging. The U.S. Fish and Wildlife Service (USFWS) Standardized Recommendations for the Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (January 2011) or the latest guidance from the USFWS shall be referenced when implementing this measure.
BIO-10	**Avoid and Minimize Impacts to American Badger.** Within 14 days prior to the initiation of Project activities within 100 feet of potential badger dens identified during 2021 field surveys (Appendix B) and concurrent with the take avoidance surveys for burrowing owl, a qualified biologist shall perform a survey to identify the presence of active or inactive American badger dens. If this species is not found, no further mitigation shall be required. If badger dens are identified within the construction footprint during the surveys or afterwards, dens shall be inspected and closed as follows: • When unoccupied dens are encountered outside of work areas but within 100 feet of proposed activities, vacated dens shall be inspected to ensure they are empty and temporarily covered using plywood sheets or similar materials. If badger occupancy is determined at a given site within the work area, work activities at that site shall be halted. Depending on the den type, reasonable and prudent measures to avoid harming badgers shall be implemented and may include seasonal limitations on Project construction near the site (i.e., restricting the construction period to avoid spring–summer pupping season), and/or establishing a construction-exclusion zone around the identified site, or resurveying the den at a later time to determine species presence or absence. • Badgers may be passively relocated using burrow exclusion (e.g., installing one-way doors on burrows) or similar California Department of Fish and Wildlife– (CDFW-) approved exclusion methods. In unique situations it might be necessary to actively relocate badgers (e.g., using live traps) to protect individuals from potentially harmful situations. Such relocation shall be performed with advance CDFW coordination and concurrence.

Table 1. Mitigation Measures

Measure Number	Measure Text
BIO-11	**Avoid, Minimize, and Mitigate Impacts to Jurisdictional Waters.** All temporary impacts to jurisdictional waters of the United States/state shall be restored on site. Restoration shall include recontouring and erosion control with a native seed mix, where applicable. Prior to seeding temporary ground-disturbance areas, the approved biologist shall review the seeding palette to ensure that no seeding of non-native or invasive plant species, as identified in the most recent version of the California Invasive Plant Inventory for the region, will occur. The California Department of Water Resources (DWR) shall ensure recontouring and revegetation of disturbed portions of jurisdictional areas in areas temporarily affected by construction prior to demobilization by the contractor at the end of Project construction. Compensatory mitigation for permanent impacts shall occur either at a mitigation bank, within an in-lieu fee program, or through on-site or off-site permittee-responsible mitigation, and shall occur at a ratio no less than 1:1 for the impacts to jurisdictional waters or at a ratio determined in the jurisdictional waters permits. If a mitigation bank or in-lieu fee program is not utilized and DWR proceeds with permittee-responsible mitigation, a waters mitigation and monitoring plan shall be prepared that outlines the compensatory mitigation in compliance with requirements from applicable regulatory agencies (i.e., U.S. Army Corps of Engineers [USACE], Regional Water Quality Control Board [RWQCB], and California Department of Fish and Wildlife [CDFW]). Suitable mitigation lands provided for species and vegetation communities may be used for jurisdictional waters of the United States/state mitigation. If required, the wetland mitigation and monitoring plan shall be developed in coordination with CDFW, USACE, and RWQCB and shall detail mitigation and monitoring obligations for impacts to wetlands and other waters as a result of construction activities. The plan shall quantify the total acreage affected; annual success criteria; mitigation sites; monitoring and reporting requirements; and site-specific plans to compensate for wetland or other waters losses resulting from the Project.
CUL-1	**Unanticipated Archaeological Resources.** A Worker Environmental Awareness Training for cultural resources shall be prepared and provided to all construction workers prior to initiation of work. The training shall generally summarize the protocols provided below that must be followed in the event that there is an inadvertent discovery of cultural resources and/or potential tribal cultural resources. In the event that cultural resources (e.g., sites, features, or artifacts) are exposed during construction activities, all ground disturbing work occurring within 100 feet of the find shall immediately stop until a qualified specialist, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find and determine whether additional study is warranted. Prehistoric archaeological deposits may be indicated by the presence of discolored or dark soil, fire-affected material, concentrations of fragmented or whole freshwater bivalves shell, burned or complete bone, non-local lithic materials, or the characteristic observed to be atypical of the surrounding area. Common prehistoric artifacts may include modified or battered lithic materials; lithic or bone tools that appeared to have been used for chopping, drilling, or grinding; Projectile points; fired clay ceramics or non-functional items; and other items. Historic-age deposits are often indicated by the presence of glass bottles and shards, ceramic material, building or domestic refuse, ferrous metal, or old features such as concrete foundations or privies. Depending upon the significance of the find under the California Environmental Quality Act (CEQA) (14 CCR 15064.5[f]; California Public Resources Code, Section 21082), the archaeologist may simply record the find and allow work to continue. If the discovery proves significant under CEQA, additional work, such as preparation of an archaeological treatment plan, testing, or data recovery, may be warranted.

Table 1. Mitigation Measures

Measure Number	Measure Text
CUL-2	**Unanticipated Human Remains.** In accordance with Section 7050.5 of the California Health and Safety Code, if potential human remains are found, the county coroner shall be immediately notified of the discovery. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the county coroner has made their determination regarding the appropriate next steps to be taken. This determination must be completed within 2 working days of notification of the discovery. If the county coroner determines that the remains are, or are believed to be, Native American, he or she shall notify the Native American Heritage Commission in Sacramento within 24 hours. In accordance with California Public Resources Code, Section 5097.98, the Native American Heritage Commission must immediately notify those persons it believes to be the most likely descendant from the deceased Native American. The most likely descendant shall complete his or her inspection within 48 hours of being granted access to the site. The designated Native American representative would then determine, in consultation with the property owner, the disposition of the human remains.
GEO-1	**Unanticipated Paleontological Resources.** In the event that paleontological resources (e.g., fossils) are exposed during construction activities for the Project, all construction work occurring within 50 feet of the find shall immediately stop until a qualified paleontologist meeting the professional standards of the Society of Vertebrate Paleontology (SVP) can evaluate the significance of the find and determine whether additional study is warranted. If the discovery is clearly not significant, the paleontologist may document the find and allow work to continue. If the discovery may consist of or include unique paleontological resources as defined under the California Environmental Quality Act, a qualified paleontologist shall evaluate the resource and prepare a proposed mitigation plan in accordance with SVP guidelines (1995) sufficient to ensure that the project does not result in the direct or indirect destruction of any unique paleontological resources. The proposed mitigation plan may include a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings,
HYD-1	**Avoid or Minimize Increased Erosion.** To avoid or minimize the potential for increased erosion downstream of the drainage ditch improvements at Dyer Dam and Patterson Dam, the California Department of Water Resources (DWR) shall complete a fluvial geomorphology study for each ditch that evaluates the physical shape of each ditch and the properties (e.g., velocity, volume, and flow resistance) of water and sediment transport through each ditch. The fluvial geomorphology study shall also provide design criteria for the proposed drainage ditch activities that will ensure the Project does not increase erosion within or downstream of the affected ditch segments.

3 Initial Study Checklist

3A Project Overview

Project title:

Delta Dams Rodent Burrow Remediation Project

Lead agency name and address:

California Department of Water Resources
P.O. Box 942836
Sacramento, California 94236-0001

Contact person and phone number:

Sara Paiva-Lowry
Environmental Regulatory Compliance Section Manager
Division of Operations and Maintenance
(916) 902-7709
Sara.Paiva-Lowry@water.ca.gov

Project locations:

Clifton Court Forebay Dam: State Dam No. 1-064
Contra Costa County, approximately 10 miles northwest from the City of Tracy
Township 1 South, Range 4 East, Section 7, 18, 17, 19, 20 and 30, within the 7.5-minute quadrangle
Township 1 South, Range 3 East, Section 13 and 24, within the 7.5-minute quadrangle
Assessor's Parcel Numbers: 001-041-040, 001-041-041, 001-081-028, 001-091-005, 001-101-007, and 002-240.

Dyer Dam and Reservoir: State Dam No. 1-093
Alameda County, in the Altamont Hills, approximately 13 miles west of the City of Tracy and 7 miles southeast of the Livermore
Township 2 South, Range 3 East, Section 17 and 25, within the 7.5-minute quadrangle.
Assessor's Parcel Number: 99B-6062-5-1

Patterson Dam and Reservoir: State Dam No. 1-062
Alameda County, approximately 1 mile east of the Livermore
Township 3 South, Range 3 East, Section 6, within the 7.5-minute quadrangle
Assessor's Parcel Number: 99B-5600-7

Project sponsor's name and address:

California Department of Water Resources
P.O. Box 942836
Sacramento, California 94236-0001

General plan designation:

Clifton Court Forebay: Water, Public Service, and Parks and Recreation (Contra Costa County 2020)

Dyer Dam and Reservoir: Large Parcel Agriculture (Alameda County 1994a)

Patterson Dam and Reservoir: Large Parcel Agriculture (Alameda County 1994a)

Zoning:

Clifton Court Forebay: Agriculture (A-2), with A-2-X, A-4, and A3-SG adjacent

Dyer Dam and Reservoir: Agriculture (A) with a 100-acre minimum site area

Patterson Dam and Reservoir: Agriculture (A) with a 160-acre minimum site area

Description of project:

3A.1 Introduction

DWR is proposing to implement permanent rodent burrow remediation and restoration measures for the downstream faces of Patterson, Dyer, and Clifton Court Forebay Dams to prevent ongoing deterioration of the dam embankments. Work includes preventive measures to curtail future burrowing for High Hazard Patterson and Dyer Dams, and segments of the Low Hazard Clifton Court Forebay Dam that have been subject to the greatest burrowing and/or have an increased consequence of failure. The Project also includes maintenance and repair work for appurtenant facilities at each dam, such as intake and drainage channel repairs, and creation of construction staging areas and temporary access roads along the toe of the dams.

As shown in Table 2, the Project is expected to affect a total of 84.62 acres—approximately 57.49 acres would be subject to permanent impacts and approximately 27.13 acres would be subject to temporary impacts from construction staging and access roads.

Table 2. Estimated Project Footprint

Location	Maximum Permanent Impact Area (acres)	Maximum Temporary Impact Area (acres)[1]
Clifton Court Forebay Dam	48.42	16.15
Dyer Dam	6.19	5.64
Patterson Dam	2.87	5.34
Total	*57.49*	*27.13*
Grand Total	**84.62**	

Notes:
[1] Includes construction staging and temporary construction access roads.
Totals may not sum due to rounding.

3A.2 Background and Overview

The earthen embankment dams at Clifton Court Forebay, Dyer Dam, and Patterson Dam have been subject to ongoing rodent burrowing throughout their service life. Rodent burrows are a recognized hazard to dams and levees as they can be associated with potential failure modes for dams by promoting piping and internal erosion that can ultimately lead to dam of a failure. A burrow that intercepts the phreatic surface (water level) within the dam can cause erodible material from the dam embankment to migrate and be carried away. This "piping" action progresses upstream, elongating the pipe, until it reaches the reservoir. Once connection is made to the reservoir, the piping can cause a catastrophic breaching of the dam ultimately leading to dam failure.

Over time, O&M's ability to address rodent burrows (i.e., backfill) has diminished due to the difficulty in obtaining permits to fill the rodent burrows. The burrows are considered habitat for listed species (e.g., California red-legged frog, California tiger salamander, and others) and require permits under the California and federal Endangered Species Acts, which take significant time to obtain. As an interim measure, DWR's Delta Field Division has implemented a rodent abatement/control plan that prescribes the placement of bait stations and the broadcasting of bait annually from, May 1 to September 1, in compliance with local county permitting. This activity is included in the dam's annual preventative maintenance plan but has not sufficiently minimized or eliminated widespread animal burrowing on the downstream slope of these dams.

Dam safety inspections by O&M, DSOD, and independent Director's Safety Review Boards have all repeatedly identified the presence of rodent burrows during dam safety inspections and have each independently highlighted the hazard the rodent burrows present, as well as the need for immediate action to address the existing burrows and the need for an ongoing solution to address or eliminate the burrows on a regular basis. A 2018 Director's Safety Review Board report indicated that burrows had not been addressed in a satisfactory timeframe at Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam, and now represent a serious dam safety concern. See Figure 2, Existing Burrow and Erosion Conditions.

DWR's proposed restoration and remediation activities at each of the three dams consider the location and density of the burrows on each dam or dam reach, complexity of burrow clusters, the phreatic surface, slope stability, and other factors. The specific repairs and restoration proposed by DWR were identified based on dam assessments performed by DWR Dam Safety Engineers to identify embankment distress associated with burrowing.

3A.2-1 Remediation Approach

To combat rodent burrow activity, DWR proposes to conduct remediation by collapsing burrows and/or excavating and backfilling the holes and compacting the soil. Where warranted, treated areas would be covered with sand and gravels, wire mesh, and/or rock to deter future burrowing and associated surficial dam distresses. Where rock placement is not warranted, the holes will be backfilled and compacted, and the disturbed area would be revegetated. The primary steps in this process are illustrated in Figure 3, Burrow Remediation Overview. DWR also proposes to repair shallow ruts and near-surface deformations at each of the three dams by filling these areas with native soil and compacting it. The proposed remediation program includes additional individual, site-specific work, as discussed in the detailed descriptions for each dam in Sections 3A.3, 3A.4, and 3A.5.

Initial rodent burrow remediation work to restore the dam embankments and ensure burrow prevention measures will occur in 2022 pending permitting approval. These actions would include:

- Utilizing long-reach excavators with sheepsfoot roller attachments to collapse and compact burrow holes (i.e., sheepsfoot compacting);
- Using hand tools to collapse, backfill, and compact burrow holes (i.e., hand-backfilling); and
- Track-walking the downstream dam embankment slopes using a dozer or similar heavy track-mounted equipment to collapse and compact burrow holes (i.e., track-walking).

Additional remediation work where permanent burrow prevention measures are warranted would take place between May and October in the years 2022 through 2026.

After construction, any materials not used or reused in the Project would be hauled off site and reused, disposed of in a landfill, or recycled at a recycling facility. Construction would include clearing and grubbing of trees and shrubs, including any stumps. Cleared and grubbed vegetation would be removed from the site and disposed of at a commercial green-waste disposal facility. Construction would occur continuously during daylight hours between May and October in each year that construction takes place, with no work occurring for 24 hours following a rain event.

3A.2-2 Remediation Types

Remediation is planned to occur in three stages—restoration, short-term prevention, and long-term prevention. Restoration involves collapsing and/or excavating burrows and backfilling the dam surface in one or more of the following approaches:

- Track-walking the embankment slopes using a dozer or similar heavy construction equipment to collapse and compact burrow holes
- Using long-reach excavators with sheepsfoot roller attachment to collapse and compact burrow holes
- Filling burrow holes with a soil-cement slurry (i.e., mud-packing method)
- Using hand tools to collapse and compact burrow holes (i.e., hand-backfilling)

Further, the short-term and long-term prevention measures involve applying one of the five different restoration and prevention measures summarized in Table 3. The depth and width of excavation for each individual remediation location is dependent on the site-specific conditions, as discussed further in Sections 3A.3, 3A.4, and 3A.5. The particular restoration and prevention measures applied in a specific area are based on the priority rating for each section or segment of each dam—high, medium, and low priority, as described below. The priority level is based on the severity of burrow activity, the influence of the burrow activity on dam integrity, and the potential consequences of dam failure.

Table 3. Remediation Types

Type	Associated Hazard Level	Description		
		Restoration	*Short-Term Prevention*	*Long-Term Prevention*
Type I	High	Excavate, scarify, recompact, backfill; create or maintain 5:1 slope	Place prevention trenches and backfill; place wire mesh and 12-inch-thick rock layer	Place 18-inch-thick rock layer
Type II	High	Excavate, scarify, recompact, backfill; create or maintain 2:1 slope	Place wire mesh and 12-inch-thick rock layer	Place 18-inch-thick rock layer
Type III	High	Excavate, scarify, recompact, backfill; create or maintain 3:1 slope	Place wire mesh and 12-inch-thick rock layer	Place 18-inch-thick rock layer
Type IV	Medium	Excavate, scarify, recompact, backfill	Place wire mesh and 12-inch-thick rock layer	Monitor and place rock layer, if warranted
Type V	Low	Grout rodent holes, scarify, recompact	Monitor; if warranted, place wire mesh and 12-inch-thick rock layer	—

High-Priority Areas

Treatment in areas designated as high priority would involve the use of lightweight and heavy construction equipment to collapse burrows and/or excavate and backfill the holes depending on location, size, burrow cluster density, and depth. This includes performing track-walking using a track-mounted bulldozer or a long-reach excavator with sheepsfoot roller attachments.

This backfill soil would consist of impervious native soil, cementitious-soil slurry, low-pressure grout, and/or similar embankment material and would be compacted and smoothed to be level with the surrounding ground. Grouting may be implemented as a maintenance measure where well-defined holes that are at least 3 inches in diameter and extend beyond 18 inches in depth/penetration. This method involves filling burrow holes with a cement water slurry with a relatively small amount of bentonite (a typical mix is 15% bentonite and 85% cement, though the specific grout mix may vary somewhat). Pipes and hoses would be used to gravity fill the burrow holes to the extent possible. Native soil would then be placed and compacted to restore the embankment surface.

After compaction, a combination of bedding material (sand and gravels), wire mesh, and/or rock would be installed in the upper zones of the downstream face to deter future burrowing and associated surficial dam distresses.

Medium-Priority Areas

Remediation in areas designated as medium priority would involve the use of hand-tools as well as lightweight and heavy construction equipment to collapse burrows and/or excavate and backfill the holes depending on location, size, burrow cluster density, and depth. This includes performing track-walking using a track-mounted bulldozer or a long-reach excavator with sheepsfoot roller attachments. Shovels and hand tampers would also be used. Once excavated, burrow holes would be backfilled and compacted with native soil. Where burrows exhibit deep penetration, grouting under gravity

flow would be performed. The permanent armoring measures would be limited and determined on a case-by-case basis. Where rock placement is not warranted, the disturbed area would be revegetated.

Low-Priority Areas

Remediation in areas designated as low priority would involve filling isolated burrow clusters with native soil or similar type to that of the dam embankment and/or targeted with cementitious-soil slurry or low-pressure grout. This soil backfill would be placed as deeply as possible, compacted with hand tools, and revegetated.

3A.2-3 Implementation Timeline

DWR proposes to implement initial rodent burrow remediation activities at each of the three Project sites in 2022 pending permitting approval, including burrow treatment in high-priority areas, tree removal, and intake channel repairs. All other burrow treatment, repairs and maintenance activities described herein would occur between May and October in the years 2022 through 2026. After completion of burrow treatment, repairs, and maintenance activities included in the Project, DWR would undertake routine monitoring and maintenance at each of the dam sites to prevent formation of new habitat capable of supporting special-status wildlife species. The specific timeline and application of maintenance activities would be based on site-specific conditions as determined through routine and ongoing monitoring at each site, as described in DWR's proposed Rodent Burrow Maintenance and Monitoring Plan (DWR 2021).

3A.2-4 Construction Equipment

The following construction equipment would be used to implement the proposed rodent burrow remediation efforts and other facility remediation and maintenance work included in the Project:

- skid-steer
- dozer
- backhoe
- skip-loader
- mobile grout mixing plant
- truck
- soil compactor
- excavator
- concrete pump truck
- scraper
- water truck
- dump trucks
- flatbed trucks
- concrete

3A.3 Clifton Court Forebay Dam

3A.3-1 Background

As shown in Figure 1, Clifton Court Forebay is located at the southwestern edge of the Sacramento–San Joaquin River Delta (Delta), approximately 10 miles northwest of the City of Tracy and adjacent to Byron Road.

Clifton Court Forebay Dam is a low, earthen dam that was constructed inside the levee of the Clifton Court Tract. The dam was constructed between 1967 and 1969 and provides storage for off-peak pumping and permits regulation of flows into the Harvey O. Banks Pumping Plant (Banks Pumping Plant).

Clifton Court Forebay Dam is approximately 8 miles long and impounds 28,653-acre-feet. It serves as the intake point and northernmost terminus of the California Aqueduct. As shown in Figure 4, Clifton Court Forebay Overview, water from the Delta enters the forebay through a gated intake control structure at the southeast end of the reservoir. This structure connects the forebay to the West Canal, which is a channel of the Old River. Water leaves the forebay through a designed opening in the east levee of the Banks Pumping Plant intake channel just north of the Delta Fish Protective Facility (also known as the Skinner Fish Facility). The Banks Pumping Plant lifts water from the intake channel into the California Aqueduct. As shown in Figure 5, Clifton Court Forebay Dam Typical Section, the dam embankment has a maximum height of 30 feet and a crest width of 20 feet. The overall crest length of the dam is 36,500 feet (6.9 miles).

3A.3-2 Site Access

As shown in Figure 6, Clifton Court Forebay Access, the primary access to the dam is via Byron Highway to Clifton Court Road and a secondary access is provided from Byron Highway via the Skinner Fish Facility entrance. The primary access point provides access to the west, north, and east dam segments. Typical access to the south dam segment is also from Clifton Court Road, but this access point is subject to traffic load restrictions because it passes over the intake control structure bridge. Thus, the additional access point through the Skinner Fish Facility entrance would provide access to the southern dam embankment and intake channel for heavy haul trucks or equipment. There is a potential alternative access point from Byron Highway via Herdlyn Road, but this alternative would require access through private farmland and would only be used if access through the Skinner Fish Facility would interfere with ongoing O&M operations. Additionally, this alternative would require a temporary entry permit for evaluation of the existing farm road if needed as site access for construction. Additionally, new temporary and permanent toe access roads covering up to 5.75 and 10.64 acres, respectively, may be necessary for construction and long-term operations and maintenance.

3A.3-3 Remediation Program

Burrow Treatment

Remediation is needed at Clifton Court Forebay Dam to address animal burrowing that occurs throughout most of the dam at varying levels of severity and density. Clifton Court Forebay Dam is classified by DSOD as a low-hazard dam because failure of this dam is not expected to result in loss of human life, but would result in economic and environmental impacts, with property damage and losses expected to be principally limited to the adjacent private property. Specifically, failure of Clifton Court Forebay Dam would disrupt the principal intake for the SWP, which would adversely affect water deliveries. Failure along Clifton Court Forebay Dam's north, west, and east segments would result in inundation of a narrow, low-lying area between the dam and nearby Delta levees, which could result in damage to DWR's seepage pump equipment and maintenance roads. Failure of the dam's southern segment would result in flooding of private farmland. Although DSOD has classified the facility as a low-hazard dam based on property loss, disruption of SWP water deliveries could result in substantial adverse effects to residential, agricultural, and industrial land uses throughout Central and Southern California.

Burrowing activity has been identified at locations in all portions of the dam embankment. DWR's Dam Safety engineers have categorized areas of high, medium, and low burrow density/activity, as shown in Figure 7, Clifton Court Forebay Rodent Burrow Damage Severity. The most extensive burrowing—and therefore most severe damage—occurs mostly along three segments (in the northwest corner, along the central portion of the western side, and along central and eastern portions of the southern side), while less widespread individual burrow holes and burrow clusters occur throughout all reaches of the dam.

Remediation within high-priority and medium-priority areas would include collapsing and/or excavating burrows; backfilling the holes with impervious native soil, cementitious-soil slurry, low-pressure grout, and/or similar embankment material; and compacting and smoothing the resulting surface to be level with the surrounding ground. Following compaction and smoothing, all high-priority areas in the upper zones of the downstream face would receive permanent armoring using a combination of bedding material (sand and gravels), wire mesh, and/or rock. Controlled low-strength material–filled trenches would be installed in the high-density burrow areas to prevent rodent burrowing beyond the armoring measures. The maximum repair area for high-priority areas is estimated at 17.0 acres. Medium-priority areas would receive permanent armoring similar to that of the high-priority areas, but would generally use small rock and require a thinner cross section. The maximum repair area for medium-priority areas is estimated at 9.2 acres.

Low-priority areas are those with more localized clumping of burrows. These burrows would be filled with native soil or soil similar to that of the dam embankment and/or targeted with cementitious-soil slurry or low-pressure grout. Soil backfill would be placed as deeply as possible and compacted with hand tools. The fill soil would be compacted and smoothed to be level with the surrounding surface. The maximum repair area for low-priority areas is estimated at 11.2 acres.

DWR has identified staging areas around the dam perimeter totaling approximately 10.4 acres. The locations where remediation would occur and staging areas are shown in Figure 8, Clifton Court Forebay Proposed Activities. Burrow remediation activities are expected to affect a total of 37.46 acres of the downstream face of the Clifton Court Forebay Dam.

Shallow Near-Surface Ruts and Deformations

Where shallow ruts and near-surface deformations occur, DWR would fill and compact these areas with native soil of similar type to that of the downstream dam embankment slope. This would require use of lightweight and heavy construction equipment such as skid-steer, scraper, dozer, backhoe, skip-loader, soil compactor, excavator, and water trucks. Fill material would be delivered to the site from a stockpile location using dump trucks or concrete trucks.

3A.3-4 Tree Removal at Sump No. 4

Clifton Court Forebay Dam has a seepage collection system consisting of perimeter drainage channels and several collection sumps. The drainage channels capture seepage water and convey it into the sumps, which continuously pump water back into the forebay. As shown on Figure 8, Sump No. 4 is located at the northwest end of the dam and several large trees within its footprint are proposed to be removed in the fall of one of the project implementation years (2022 through 2026) to prevent leaves and limbs from obstructing the intake pump screens.

3A.3-5 Intake Channel Repair

DWR has identified a high-priority repair area at the Clifton Court Forebay intake channel to restore the slope and install permanent improvement measures to prevent animal burrowing. The repairs are expected to occur between 2022 (pending permitting approval)and 2023, using the Type III remediation described in Table 2. This includes excavation, grouting, backfill, and recompaction; installation of PVC-coated steel wire mesh and bedding material; and permanent armoring. This work would occur over an approximately 0.67-acre area between the downstream crest and the downstream slope within the intake channel. In this location, the downstream crest is at an elevation

of approximately 16.5 feet above mean sea level, and work would extend into the intake channel to an elevation of approximately 4 feet and be performed during low flow conditions to avoid working directly within waters.

Clearing and grubbing would occur on the downstream slope to remove debris, vegetation, and existing riprap remains from original construction of the dam. Restoration of the dam intake channel slope will require excavating to a depth of approximately 2 feet. After excavation has exposed subgrade, any holes or cavities that remain would be grouted as needed. Grouting is expected to be performed on a limited basis and as determined by the field engineer. Once grouting is complete, the excavated areas would be backfilled and recompacted in lifts, restoring the original design slope. The embankment slope would be backfilled with a combination of impervious native soil and/or material similar to the existing embankment material. It is anticipated that any excavation and recompaction of the dam's face would result in minor import of materials.

Following the recompaction effort, a layer of bedding material (6 inches thick) and wire mesh would be placed over the restored embankment slope. The bedding material and PVC-coated steel wire mesh would be placed on the entire remediation area. An 18-inch-thick layer of permanent armoring would be placed over the bedding material and PVC wire mesh to deter future animal burrowing and prevent erosion within the intake channel slope due to wave action.

3A.3-6 Construction Logistics

Staging Areas

As noted above and shown on Figure 8, DWR has identified staging areas around the perimeter of the dam totaling approximately 10.4 acres. This includes existing maintenance staging areas between the dam and surrounding Delta levees and areas that are presently undisturbed. Staging areas would be used to stockpile material needed to implement the burrow remediation, and for filling ruts and deformations. The materials would include rock, bedding material, wire mesh, or other materials required for armoring and/or backfilling the burrow holes.

In addition to the access provided by the dam's paved crest roadway, existing and new maintenance roads along the dam toe may be used. The project includes construction of up to 10.6 acres of new permanent toe access roads to support construction, long-term operations, and maintenance. Rock, bedding material, wire mesh, or other materials required for armoring and/or backfilling the burrow holes, will be imported to the site via the existing crest and maintenance access roads. Placement of materials will be achieved from the dam crest and toe.

Schedule

DWR anticipates initial burrow treatment within the high-priority burrow areas, and intake channel repairs at Clifton Court Forebay will occur in 2022, pending permitting approval. Burrow treatment within the medium-priority and low-priority areas would occur between May and October in the years 2022 through 2026. Tree removal would occur outside of the nesting season during one of the project implementation years. In following years, DWR would undertake ongoing monitoring and maintenance to prevent formation of new habitat capable of supporting special-status wildlife species. The specific timeline and application of maintenance activities would be based on site-specific conditions as determined through routine and ongoing monitoring at each site, as described in DWR's proposed Rodent Burrow Maintenance and Monitoring Plan (DWR 2021). As described in that plan, before remediation actions are implemented, monitoring is expected to occur 5 days per week, with 4 days of monitoring observations made by DWR personnel driving along the crest and/or toe roads and one day of monitoring observations made by DWR personnel walking along the dam embankments to identify any changes in rodent

burrow activity and evidence of seepage, internal erosion, and instability. Once remediation actions have been implemented, monitoring would occur on a monthly basis. Where permanent armoring measures are installed, the frequency for monitoring the armored areas may be reduced to an annual schedule, consistent with the Clifton Court Forebay Dam Safety Surveillance and Monitoring Plan (DWR 2018).

Grading

It is estimated that completing the remediation program and intake channel repair would require excavations ranging from 0.5 feet to 3 feet in depth, with a net removal of approximately 112,500 cubic yards of soil. The tree removal would not require grading. Provision of construction access as well as implementation of the remediation program and intake channel repair would require compaction of soil in an approximately 48.4-acre area (see Table 4).

Table 4. Clifton Court Forebay Dam Estimated Grading Impacts

Impact Area	Acres
Burrow remediation area	37.46
Toe road	10.64
Tree removal	0.33

Estimated Materials Quantities

No export of soil is anticipated for excavation and recompaction of the dam face, but import would be needed while armoring the dam. Rock, bedding material, mesh, grout, concrete, controlled low-strength material, or other suitable materials required for armoring would be imported to the site via the existing or proposed construction access roads and staged in staging areas or access roads. The estimated quantity of materials needed to complete the proposed improvements at Clifton Court Forebay Dam are identified in Table 5.

Table 5. Clifton Court Forebay Dam Estimated Materials Quantities

Item	Estimated Quantity Imported	Unit
Clearing and grubbing	65.2	Acres
Rock	39,900	Tons
Bedding material	40,400	Tons
PVC-coated wire mesh	1,255,000	Square feet
Import soil	11,000	Cubic yards
Controlled low strength material	3,100	Cubic yards
Miscellaneous concrete	3,000	Cubic yards
Grout	9,500	Cubic yards

Construction Traffic

During construction, it is expected that the proposed activities at Clifton Court Forebay Dam would require of 10 worker trips per day, 2 vendor trips per day, and up to 6,259 hauling trips in total throughout project implementation. Hauling trucks would be needed to import and export material from the Project site. Hauling trucks would typically have a capacity of 16 cubic feet. Project activities at Clifton Court Forebay Dam are estimated to require no export of material and import of up to 26,600 cubic feet of material and 80,300 tons of rock.

3A.4 Dyer Dam

3A.4-1 Background

As shown in Figure 1, Dyer Dam is located in Altamont Hills in Alameda County, approximately 13 miles west of the City of Tracy and approximately 7 miles northeast of Livermore.

Dyer Reservoir provides an active storage capacity of 425 acre-feet, and total storage capacity of 515 acre-feet. It has a surface area of approximately 20 acres and the dam is approximately 0.75 miles long. As shown in Figure 9, Dyer Reservoir Overview, the reservoir receives water from Bethany Reservoir via the South Bay Aqueduct and the Brushy Creek Pipeline and discharges water back to the South Bay Aqueduct via Dyer Canal. Additionally, there is a 25-acre-foot settling pond east of the northeast end of the reservoir. The South Bay Aqueduct conveys water to Alameda and Santa Clara Counties. Water from the South Bay Aqueduct flows into Dyer Reservoir via a 78-inch-diameter steel pipe at the northwest corner. This intake is the terminus of the Brushy Creek Pipeline that extends from the South Bay Pumping Plant, which is located at the upper end of Bethany Reservoir east of Dyer Dam, and lifts water from Bethany Reservoir into the first reach of the South Bay Aqueduct. Water from Dyer Reservoir is discharged to Dyer Canal through a reinforced concrete outlet control structure at the southern end of the reservoir and flows by gravity from the reservoir into the South Bay Aqueduct to provide water supply for Bay Area communities. The spillway is located on the southeast end of the reservoir.

Dyer Dam is an earthen embankment dam with a height that ranges from 20 to 30 feet. The dam has upstream slope protection/lining and a downstream blanket drain for seepage control. It was constructed between 2009 and 2011, and an emergency liner repair project was completed in 2018. The dam is 2,100 feet long, with a slope of 3.5:1 between the crest road and the reservoir, 2:1 on the downstream slope (western side), and 2.5:1 on the upstream slope (eastern side). The dam crest has an elevation of 810 feet, with a maximum height of approximately 30 feet above the streambed. The crest is 20 feet wide and 1,850 feet long. The upstream and downstream dam embankments schematics are shown in Figure 10, Dyer Dam Typical Sections.

Under normal operating conditions, the reservoir elevation fluctuates between 785 feet and 805 feet, which is the maximum operating water surface elevation. Dyer Reservoir provides off-peak storage for the SWP by receiving up to 525 acre-feet of water from the South Bay Pumping Plant at night.

3A.4-2 Site Access

Dyer Dam is located in Altamont Hills, north of Altamont Pass Road. As shown in Figure 11, Dyer Dam Access, this site can be accessed from Dyer Road via the existing entrance road serving the reservoir facility. Access to the entire toe of the dam and the dam facility is provided by an existing gravel road, which provides access to a paved roadway atop the crest of the dam via ramps on the north and south side of the reservoir. Existing gravel access roads and the paved crest road would provide access to the western embankment slope while the eastern embankment slope would be accessed from the paved crest road and from the upper settling pond maintenance road. The Project includes construction of a temporary construction road connected to the existing maintenance road near the spillway to minimize impacts to existing traffic on the north access road. The temporary construction road would be 20 feet wide and 0.29 miles long, with a gravel surface. Construction of the temporary road would result in 0.45 acres of disturbance.

3A.4-3 Remediation Program

Burrow Treatment

Dyer Dam is a relatively small dam, and rodent burrowing within its downstream embankment is relatively dense. As noted in the Background and Overview discussion above, routine rodent baiting has not reduced burrowing activity. DSOD classifies Dyer Dam as a high-hazard dam, indicating that its failure is likely to result in the loss of at least one human life. As such, Dyer Dam is a candidate for restoration and improvement measures, including excavation, recompaction, and permanent armoring. Significant burrowing also has compromised embankments outside of the dam prism; this adversely affects existing drainage facilities that have required recurring emergency maintenance repairs.

As shown in Figure 12, Dyer Dam Rodent Burrow Damage Severity, burrowing occurs on all sides of Dyer Dam, with the west side–fill embankment section–categorized as high priority and the north, east, and south sides–in cut or ascending embankment–categorized as medium priority. In addition, significant burrowing has been observed along the east side of the dam in a slope above the crest roadway. While this area is not within the dam prism, repairs are warranted to remediate burrowing activity that could ultimately result in instability, potential embankment failure, and increased annual maintenance. DWR has identified three staging areas to facilitate the remediation work, as identified in Section 3A.4-6. The areas where remediation, construction staging, and drainage ditch improvements described in this section would occur are shown in Figure 13, Dyer Reservoir Proposed Activities.

Remediation is expected to be required on approximately 5.54 acres of the dam, with approximately 2.07 acres on the downstream dam face (western side) and 3.47 acres on the upstream dam face (eastern side). The permanent armoring area includes a buffer area around the areas with the highest density of burrow activity. Depending on location, size, burrow cluster density, and depths, burrow holes may alternatively be excavated and backfilled. Then native soil, cementitious-soil slurry, low-pressure grout, and/or similar embankment material would be used to backfill holes and would be compacted level with the surrounding ground. For zones where heavy construction equipment cannot be used, burrows may be filled by hand and/or lightweight equipment. Permanent armoring with wire mesh and rock would be placed on the dam embankment to deter future rodent burrowing.

Shallow Near-Surface Ruts and Deformations

Where shallow ruts and near-surface deformations occur outside of the Dyer Dam prism, the proposed Project includes filling these areas with native soil of similar type to that of the downstream dam embankment slope and this soil would be compacted. Equipment for these activities would include lightweight and heavy construction equipment such as skid-steer, scraper, dozer, backhoe, skip-loader, soil compactor, excavator, and water trucks. Some fill material would be needed to offset shrinkage of the excavated and recompacted material. Imported fill materials would be delivered to the site using dump trucks or light-duty trucks.

3A.4-4 North Access Road Drainage Ditch

Surface runoff is collected by a V-shaped ditch and stormwater control feature that runs parallel to the north access road west of Dyer Dam and Reservoir. This runoff is conveyed downstream of Dyer Dam. The V-shaped ditch has an unlined segment that runs along the western dam toe road adjacent to Dyer Canal. The embankment between the unlined V-shaped ditch and aqueduct has been breached in recent storm events. These stormwater control features have been subject to ongoing failure that can be attributed to high drainage velocities focused on the unlined

segments of the V-shaped ditch, poor foundation/embankment material, and rodent burrowing along the reach. There are two areas near existing Pacific Gas and Electric Company (PG&E) power poles that have failed and required temporary repair measures to contain the drainage ditch flows. Emergency repairs were performed using corrugated metal pipes and backfill material to stabilize the V-shaped ditch and reduce internal erosion/instability of the adjacent embankment slope. The failures allowed eroded material to flow into Dyer Canal, which severely degraded water quality.

Approximately 1,300 linear feet of the existing V-shaped ditch and stormwater control features are proposed for improvements that include regrading and concrete lining to improve drainage and structural integrity and to reduce erosion, as shown in Figure 13. Remediation of the existing embankment slope includes limited excavation, backfilling, compaction, and concrete lining. Backfill, grouting, and/or soil-cement slurry would be imported and used to backfill cavities, cracks, or holes. The embankment slope would be restored where it shows signs of instability and where recent internal erosion occurred during the V-shaped ditch failures and stormwater control feature failures. The improvement area is estimated at 0.62 acres and the adjacent access road provides sufficient construction access to perform improvements.

3A.4-5 Entrance Road

Directly south of these ditch and stormwater control features, ongoing erosion is also occurring along a portion of the south side of Entrance Road, which intersects with the South Bay Aqueduct. At this location, erosion along Entrance Road is evident from deep furrows developing within interspersed areas of riprap. Similar to the original stabilization methods, the bank slope along the southern side of Entrance Road would be stabilized using riprap, as shown in Figure 13. Fill and riprap material would be delivered using dump trucks or light-duty trucks staged in staging areas or access roads. A combination of soil fill and riprap will be placed in between the existing riprap at this location to repair and stabilize the eroding slope. Additionally, accumulated sediment downstream of the culvert pipes under the road would be excavated and removed to an upland disposal location.

3A.4-6 Construction Logistics

Staging Areas

DWR has identified three staging areas for remediation activities at Dyer Dam, as shown in Figure 13. The staging areas would be located on both existing improved areas and undisturbed areas totaling approximately 5.11 acres. Staging Area 1 is an approximately 0.31-acre rectangular area along the western side of the South Bay Aqueduct; Staging Area 2 is an approximately 0.34-acre roughly triangular area south of the southeast corner of the dam and southwest of the spillway; and Staging Area 3 is an approximately 4.46-acre roughly triangular area east of the settling pond. Staging Areas 2 and 3 would be located on undisturbed areas and would require grubbing, minor grading, and laying of a gravel surface.

Schedule

DWR anticipates completing initial burrow treatment as described in the Rodent Burrow Maintenance and Monitoring Plan (DWR 2021) in 2022 pending permitting approval. Additional burrow treatment, drainage ditch repair, and entrance road repair would be completed between May and October in the years 2022 through 2026. The initial burrow treatment would include minimal backfill and collapse of burrow holes. In following years, DWR would undertake ongoing monitoring and maintenance to prevent formation of new habitat capable of supporting

special-status wildlife species. The specific timeline and application of maintenance activities would be based on site-specific conditions as determined through routine and ongoing monitoring at each site, as described in DWR's proposed Rodent Burrow Maintenance and Monitoring Plan (DWR 2021), which anticipates monthly monitoring after initial burrow treatment is completed. If permanent armoring measures are installed, the frequency for monitoring the armored areas could be reduced to an annual schedule, consistent with the Dyer Dam and Reservoir Safety Surveillance and Monitoring Plan (DWR 2019).

Grading

It is estimated that completing the remediation program would require excavations ranging from 0.5 feet to 3 feet deep, affecting approximately 9,000 cubic yards of dirt. Excavated material would be reused on site to backfill holes and restore the dam embankment. Excavation and grading for the drainage ditch repairs would be a maximum of one foot deep, with a net removal of approximately 3,600 cubic yards of dirt. The burrow remediation program, drainage ditch repairs, and entrance road repairs would also require compaction of soil in an approximately 6.19-acre area.

Estimated Materials Quantities

Small quantities of soil import is anticipated for backfilling and recompacting the dam face after excavation, while armoring the dam and improvements to the drainage ditch and entrance road would require import of rock, bedding material, mesh, or other suitable materials required for armoring. Imported materials would be brought to the site via the existing access roads and staged on established maintenance roads or temporary construction access roads. The estimated quantity of materials needed to complete the proposed improvements at Dyer Dam are identified in Table 6.

Table 6. Dyer Dam Estimated Materials Quantities

Item	Estimated Quantity Imported	Unit
Armoring rock	5,500	Tons
Bedding material	13,000	Tons
PVC-coated wire mesh	203,000	Square feet
Riprap	150	Tons
Aggregate base	4,750	Tons
Concrete or shotcrete	400	Cubic yards
Grout	2,100	Cubic yards
Miscellaneous concrete	200	Cubic yards

Construction Traffic

During construction, it is expected that the proposed activities at Dyer Dam would require a total of 10 worker trips per day, 2 vendor trips per day, and 1,813 hauling trips in total. Hauling trucks would be needed to import material to the Project site. Hauling trucks would typically have a capacity of 16 cubic feet. Project activities at Dyer Dam are estimated to require import of 2,550 cubic feet of material and 18,500 tons of rock.

3A.5 Patterson Dam

3A.5-1 Background

As shown in Figure 1, Patterson Dam is located about 4 miles east of Livermore, California, on the east side of Livermore Valley. Patterson Reservoir is a 104-acre-foot off-stream storage facility along the South Bay Aqueduct at the terminus of the Livermore Valley Canal. This reservoir, which was constructed between 1960 and 1962, provides off-line storage for the Alameda County Flood Control and Water Conservation District, Zone 7 Water Agency (Zone 7) Patterson Pass Water Treatment Plant . As shown in Figure 14, Patterson Reservoir Overview, water enters the reservoir by flowing over a 175-foot-long reinforced concrete ogee-crest weir from the adjoining South Bay Aqueduct. Flow is controlled by regulation of the canal water surface elevation with Check Structure No. 3. Typically, water is delivered from the reservoir to the Zone 7 Patterson Pass Water Treatment Plant through a 42-inch-diameter outlet pipe located at the southern corner of the reservoir. Additionally, water may be delivered through a 30-inch-diameter reinforced concrete bypass pipeline directly from the canal to the treatment plant. The facility also includes a 4,000 cubic yard settling basin for storage of sediment removed from Patterson Reservoir. Downstream of Patterson Reservoir, the South Bay Aqueduct continues to deliver water to Lake Del Valle and to its terminus at the Santa Clara Terminal Reservoir in San Jose.

Patterson Dam has compacted earth embankment on three sides of Patterson Reservoir; the fourth side is formed by the adjacent South Bay Aqueduct. The reservoir invert and interior slopes are lined with a 3-inch-thick layer of permeable asphalt concrete. The reservoir can be drained via a 12-inch-diameter reinforced concrete drain line that is controlled with a 12-inch butterfly valve. Figure 15, Patterson Dam Typical Section, shows the typical height, slope, and materials that comprise the Patterson Dam embankment.

3A.5-2 Site Access

As shown in Figure 16, Patterson Dam Access, the site is accessed from Patterson Pass Road. Approximately 1 mile to the west, Patterson Pass Road intersects with Greenville Road, which then provides access to Interstate (I) 580. Existing paved and gravel access roads within the Patterson Dam facility would provide access to most of the construction areas within this site. As shown in Figure 16, a temporary construction access area would be constructed north of the proposed staging area and existing settling pond on the east side of the reservoir, and a second temporary construction access area would be provided through the existing maintenance yard. Construction of these temporary access areas would result in approximately 0.37 acres of temporary disturbance.

3A.5-3 Remediation Program

Burrow Treatment

Similar to Dyer Dam, Patterson Dam is a relatively small dam with relatively dense rodent burrowing within its downstream embankment. As previously stated, regular rodent baiting has not reduced burrowing activity. DSOD classifies Patterson Dam as high hazard, indicating that its failure is likely to result in the loss of at least one human life. As such, Patterson Dam is a candidate for restoration and improvement measures, including permanent armoring using wire mesh and rock.

As shown in Figure 17, Patterson Dam Rodent Burrow Damage Severity, all areas of Patterson Dam are subject to high-severity burrow damage. DWR has identified four staging areas to facilitate the remediation work, as identified in Section 3A.5-6. The locations where remediation treatments would be applied and staging areas are shown in Figure 18, Patterson Reservoir Proposed Activities. Remediation is expected to be required for the downstream dam face and the ascending slope in the east side of the facility, adjacent to the crest road access ramp. Depending on location, size, burrow cluster density, and depths, burrow holes may alternatively be excavated and backfilled. Then native soil, cementitious-soil slurry, low-pressure grout, and/or similar embankment material would be used to backfill holes and would be compacted level with the surrounding ground. For zones where heavy construction equipment cannot be used, burrows may be filled by hand and/or lightweight equipment. Permanent armoring with wire mesh and rock would be placed on the dam embankment to deter future rodent burrowing. Due to steep downstream slopes (1.5:1 to 2:1), other suitable materials may be required for armoring. Large disturbed areas would be revegetated by hydroseeding or hand-seeding using native seed mix if areas are not armored.

The permanent armoring area is estimated at 2.36 acres for the downstream dam embankment face at Patterson Dam. The permanent armoring area includes a buffer area around the areas with the highest density of burrowing activity, as well as a cut-off trench wall that uses controlled low-strength material beyond the dam toe.

Shallow Near-Surface Ruts and Deformations

The proposed Project would entail filling shallow ruts and near-surface deformations near the ground surface with native soil of similar type to that of the downstream dam embankment slope and compacting and smoothing the fill material to be level with the surrounding ground. Larger ruts may use larger-diameter fill material and would be similarly compacted and smoothed to surface level. This work would occur in limited areas outside of the Patterson Dam prism. Equipment for this activity would include lightweight and heavy construction equipment such as skid-steer, scraper, dozer, backhoe, skip-loader, soil compactor, excavator, and water trucks. If needed, fill material would be delivered to the site from a stockpile location using dump trucks or concrete trucks. This work is expected to occur between May and October 2022 and/or between May and October 2023.

3A.5-4 Low-Level Outlet Drainage Channel

In order to comply with a DSOD recommendation, this component of the proposed Project would involve improvements to the low-level outlet drainage channel, as shown on Figure 18. Currently, dense vegetation within this channel limits/impedes the seepage flow and any discharges through the outlet works that may be required in an emergency. Proposed improvements include vegetation removal, minor regrading of channel invert slope, and placement of permanent vegetation barriers and erosion control. This work is expected to occur between May and October 2022 and/or between May and October 2023.

Permanent vegetation control (e.g., rock and geofabric) is proposed for approximately 180 linear feet of the trapezoidal channel downstream of the concrete outfall structure. A one-time vegetation clearing and removal is proposed for approximately 500 linear feet of the downstream drainage channel beyond the permanent drainage channel improvements within DWR's right-of-way. Minor concrete repairs are also proposed for spalled concrete and exposed rebar at the wingwall outfall structure. This component of the Project would result in approximately 0.51 acres of disturbance of the drainage channel, of which 0.16 acres would support the permanent vegetation control and outfall repairs while the one-time vegetation clearing would affect 0.35 acres. A permanent maintenance road would be constructed adjacent to the permanently improved drainage channel to provide better access for annual maintenance. The maintenance road would include a vehicle turnaround area and have a gravel surface; the road would result in 0.16 acres of disturbance. The one-time vegetation clearing within this drainage channel would also require construction of a temporary construction access road, as noted in Section 3A.5-2. Creation of this temporary construction access road would require disturbance on an additional 0.12 acres.

3A.5-5 Surface Drainage Improvements

The proposed Project includes minor modifications and improvements to drainage features in upland areas northwest of Patterson Dam that currently experience sheet flow, as shown on Figure 18. This work is expected to occur between May and October in the years 2022 through 2026. A damaged 18-inch-diameter corrugated metal pipe culvert crossing near the toe access road and a second 12-inch-diameter corrugated metal pipe culvert crossing near the maintenance building would both be replaced with improved high-density polyethylene culverts. Existing drainage features upstream and downstream of the culverts would be modified to convey water more efficiently to the main western drainage channel. The improvements may include excavating, regrading, and/or lining of the drainage features and culverts.

3A.5-6 Construction Logistics

Staging Areas and Access

DWR has identified four staging areas at Patterson Dam, as shown on Figure 18. These staging areas include 0.48 acres at the existing maintenance yard south of the reservoir, 3.47 acres of currently undisturbed land surrounding the existing settling pond east of the reservoir, and 0.68 acres east of the temporary construction access area. These staging areas have a combined acreage of approximately 4.63 acres. Access to the staging areas would be from Patterson Pass Road on the existing paved and gravel access roads and from two new temporary construction access roads, as shown on Figure 16. The paved toe and crest roads may be used to repair the downstream dam embankment slope; however, the crest road is narrow and would only be accessible to smaller vehicles and equipment. As noted previously, if this limitation of the crest road prevents use of heavy construction equipment in certain areas, burrows may be filled by hand and/or lightweight equipment.

Schedule

DWR anticipates completing initial burrow treatment in 2022 pending permitting approval, and completing additional burrow remediation, outlet drainage channel improvements, and surface drainage improvements as indicated in Figure 18 between May and October in the years 2022 through 2026. The initial burrow treatment in 2022 would include minimal backfill and collapse of burrow holes. Between 2022 and 2026, DWR would undertake regular monitoring inspections and additional maintenance measures as described in the Rodent Burrow Maintenance and Monitoring Plan (DWR 2021). The specific timeline and application of maintenance measures would be based on site-specific conditions as determined through routine and ongoing monitoring at each site, as described in the proposed Rodent Burrow Maintenance and Monitoring Plan (DWR 2021), which anticipates monthly monitoring once initial burrow treatment is completed. If permanent armoring measures are installed, the frequency for monitoring the armored areas could be reduced to an annual schedule, consistent with the Patterson Dam Safety Surveillance and Monitoring Plan.

Grading

It is estimated that completing the remediation program and outlet drainage channel maintenance would require excavations ranging from 0.5 feet to 3 feet in depth, with a net removal of 4,100 cubic yards of soil. The remediation program and drainage feature improvements would also require compaction of soil in an approximately 2.87-acre area.

Estimated Materials Quantities

Rock, bedding material, mesh, or other suitable materials required for armoring would be imported to the site via the existing access roads and staged on established maintenance roads or temporary construction access roads. Minor import of soil and vegetation would be needed to accommodate excavation and recompaction of the dam face and implementation of the outlet drainage channel and surface drainage improvements. The estimated quantity of materials needed to complete the proposed improvements at Patterson Dam are identified in Table 7.

Table 7. Patterson Dam Estimated Materials Quantities

Item	Estimated Quantity Imported	Unit
Armoring rock	8,300	Tons
Bedding material	5,500	Tons
PVC-coated wire mesh	95,000	Square feet
Geofabric	5,000	Square feet
Aggregate base	3,525	Tons
Grout	1,000	Cubic yards
Fill	4,500	Cubic yards
Asphalt	140	Tons
Riprap	350	Tons
Miscellaneous concrete	150	Cubic yards
Concrete or shotcrete	200	Cubic yards
18-inch-diameter high-density polyethylene pipe	150	Linear feet

Construction Traffic

During construction, it is expected that the proposed activities at Patterson Dam would require a total of 10 worker trips per day, 2 vendor trips per day, and 1,263 hauling trips in total. Hauling trucks would be needed to import and export material from the Project site. Hauling trucks would typically have a capacity of 16 cubic feet. Project activities at Patterson Dam are estimated to require import of 5,850 cubic feet of material and 14,290 tons of rock/asphalt.

3A.6 Ongoing Maintenance

It is expected that Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam would require ongoing maintenance to address rodent activity and its deleterious impacts on the dams. The Rodent Burrow Maintenance and Monitoring Plan (DWR 2021) proposes monitoring to occur five days per week before remediation actions are implemented. After those actions are implemented, DWR proposes that where permanent armoring is not installed, sites will be monitored with monthly inspections, and maintenance actions would be implemented as needed. Where permanent armoring measures are installed, the frequency for monitoring the armored areas may be reduced to an annual schedule, consistent with the Dam Safety Surveillance and Monitoring Plan for each site.

3A.6-1 Rodent Control Bait Stations

As noted in the Background and Overview discussion above, as part of DWR's existing maintenance program, DWR implements a rodent abatement/control plan that prescribes the placement of bait stations and the broadcasting of bait annually, from May 1 to September 1, in compliance with local county regulations. This activity is included in each dam's annual preventative maintenance plan and would continue to be implemented to minimize further rodent burrowing into the dam faces.

3A.6-2 Armoring Maintenance

Armoring material would require annual inspection and localized maintenance due to disturbance through vandalism, animal activity, and incidental disturbance from vehicles, consistent with each facility's Dam Safety Surveillance and Monitoring Plan. An estimated 10.64 acres of permanent toe access road would be required at Clifton Court Forebay Dam where downstream armoring is placed, for periodic maintenance.

3A.6-3 Rodent Burrow Repairs for Areas Without Armoring

Once the initial burrow repairs are completed, DWR anticipates that areas without armoring would be subject to some degree of ongoing rodent activity, which would warrant ongoing monitoring, maintenance, and repairs. As described in the Rodent Burrow Maintenance and Monitoring Plan, monitoring and maintenance would occur monthly after initial burrow treatment is completed in areas where permanent armoring is not installed. Any new rodent burrow damage that is deemed to be a risk to dam safety would be addressed in accordance with the treatment protocol described in the Remediation Approach discussion above.

3A.6-4 Access Roads

Access roads at each facility would be restored to their original condition after construction is completed. Access road repairs would be confined to the original road footprint and materials. This includes the dam crest road and improved gravel maintenance access roads.

Surrounding land uses and setting:

Clifton Court Forebay Dam: Agricultural land

Dyer Dam and Reservoir: Agricultural land

Patterson Dam and Reservoir: Zone 7 Patterson Pass Water Treatment Plant to the south and agricultural land to the east, west, and north

Other public agencies whose approval is required:

Implementation of the proposed Project is expected to require the following permits and approvals:

- U.S. Army Corps of Engineers Clean Water Act Section 404 Permit
- U.S. Fish and Wildlife Service Biological Opinion
- California Department of Fish and Wildlife Lake or Streambed Alteration Agreement and California Endangered Species Act Incidental Take Permit

- Regional Water Quality Control Board Clean Water Act Section 401 Water Quality Certification
- Regional Water Quality Control Board National Pollutant Discharge Elimination System permit/Waste Discharge Requirements
- State Office of Historic Preservation National Historic Preservation Act Section 106 Finding

Have California Native American tribes traditionally and culturally affiliated with the Project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

In compliance with Assembly Bill (AB) 52, DWR sent notification of the Project to the Ione Band of Miwok Indians on 2/25/21 and 3/3/21. No response has been received, thus there was no request for consultation pursuant to Public Resources Code section 21080.3.1 and no known tribal cultural resources have been identified in any of the Project locations.

3B Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a "Potentially Significant Impact." However, the analysis in this IS demonstrates that with implementation of mitigation measures included herein, all such impacts would be reduced to less-than-significant levels, and thus DWR proposes to adopt a Mitigated Negative Declaration for this Project.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☐ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Energy
☒ Geology and Soils	☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials
☒ Hydrology and Water Quality	☐ Land Use and Planning	☐ Mineral Resources
☐ Noise	☐ Population and Housing	☐ Public Services
☐ Recreation	☐ Transportation	☐ Tribal Cultural Resources
☐ Utilities and Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

3C Determination

On the basis of this initial evaluation:

☐ I find that the proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Project have been made by or agreed to by the Project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is required.

Signature

December 1, 2021

Date

Gerald Snow
Environmental Assessment Branch Manager
Division of Operations and Maintenance
California Department of Water Resources

3.1 Aesthetics

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
I. AESTHETICS – Except as provided in Public Resources Code Section 21099, would the Project**:**				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Setting

Clifton Court Forebay Dam

Clifton Court Forebay, located in the southwestern edge of the Delta, about 10 miles northwest of the city of Tracy, is a shallow reservoir at the head of the California Aqueduct. Lands surrounding the forebay support agricultural production and grazing. Topography is generally flat to gently sloping. The earthen embankment around the forebay is visible from Byron Highway as a gentle rise in topography; the water surface within the forebay is also visible. Where the California Aqueduct passes under Byron Highway, the water within the aqueduct is visible. The Skinner Fish Facility is located adjacent to Byron Highway and the California Aqueduct. The facility consists of one-story buildings with a utilitarian appearance, equipment, and storage areas. Byron Highway is designated by Contra Costa County as a scenic route (Contra Costa County 2005).

Dyer Dam and Patterson Dam

Dyer Dam and Patterson Dam are located in the unincorporated area of Alameda County. Properties surrounding Dyer Dam include large parcels for agricultural uses, including several agricultural/residential parcels located on the west side of Dyer Road. Properties north and east of Patterson Dam include agricultural production and open space. The property immediately south of Patterson Dam supports the Zone 7 Patterson Pass Water Treatment Plant. Industrial uses are present west of Patterson Dam.

Impact Analysis

a) Would the Project have a substantial adverse effect on a scenic vista?

A vista is a view from a particular location or composite views along a roadway or trail. Scenic vistas are often views of natural lands, but may also be compositions of natural and/or developed areas. The features that comprise a scenic vista are visual resources. Adverse impacts to individual visual resources or the addition of structures or developed areas may or may not adversely affect a vista. Determining the level of impact to a scenic vista requires analyzing the changes to the vista as a whole and to individual visual resources.

Clifton Court Forebay Dam

Contra Costa County identifies the two primary types of scenic resources as "(1) scenic ridges, hillsides, and rock outcroppings; and (2) the San Francisco Bay/Delta estuary system" (Contra Costa County 2005). As shown in the Contra Costa General Plan, Figure 9-1, Scenic Ridges and Waterways, there are no scenic ridgelines identified near Clifton Court Forebay Dam, but the forebay is identified as a scenic waterway. Thus views of Clifton Court Forebay can be considered a scenic vista.

Byron Highway is approximately 0.33 miles west of the Project site at Clifton Court Forebay Dam. Views from Byron Highway predominantly consist of flat agricultural land in the foreground, with rolling hills in the background. As noted above, Clifton Court Forebay is visible from Byron Highway and thus is a feature within the scenic corridor associated with this scenic route.

The proposed burrow remediation and restoration work would not substantially change views of Clifton Court Forebay because the dam embankment would be restored to the existing conditions. The proposed activities include excavating to a maximum depth of 2 feet, compacting the soil, placing new soil, restoring the embankment slope to match existing conditions, and, in some locations, installing rock and other materials to prevent animal burrowing. The height and slope of the embankment would not be altered. When remediation and restoration occurs on the south and west portions of the embankment, equipment and activity (e.g., vegetation removal and changes in soil color due to excavation and grading) would be visible from Byron Highway. However, these effects would be temporary in nature, with work in specific reaches of the embankment generally lasting less than 3 months at a time. Therefore, this impact would be **less than significant**.

Dyer Dam

Dyer Dam is located in the Altamont Hills, approximately 7 miles southeast of Livermore. The Alameda County General Plan Scenic Route Element does not identify Dyer Road as a scenic route.

The Alameda County General Plan Open Space Element identifies agricultural land as one of four types of primary open space and recognizes that open space is an important visual resource that enhances communities. Views from Dyer Road include rural residential properties to the west, and agricultural land and rolling hills on both sides of the road. Views to the east from Dyer Road also include wind turbines. On the segment of Dyer Road west of Dyer Dam, views include the uppermost portion of the Dyer Dam embankment. While there are no officially identified scenic vistas in the vicinity and Dyer Road is not identified as a scenic route, the views from Dyer Road can be considered scenic vistas due to the combination of open space and varied vegetation and topography.

The proposed burrow remediation and restoration work would be limited to the existing Dyer Dam property and would have no effect on views of the surrounding lands from Dyer Road. Further, the proposed work would not substantially change views of Dyer Dam and Reservoir because the dam embankment would be restored to its existing contours. The height and slope of the embankment would not be altered. When remediation and restoration occurs on the south and west portions of the embankment, equipment and activity (e.g., vegetation removal and changes in soil color due to excavation and grading) would be visible from Dyer Road. However, these effects would be temporary in nature, with work in specific reaches of the embankment generally lasting less than 3 months at a time. Therefore, this impact would be **less than significant**.

Patterson Dam

Patterson Dam is approximately 1 mile east of Livermore and immediately north of the Zone 7 Patterson Pass Water Treatment Plant. Primary access to Patterson Dam is from Patterson Pass Road, which is identified as a scenic route in the Alameda County General Plan Scenic Route Element. Flynn Road, which extends northerly from Patterson Pass Road approximately 800 feet east of Patterson Dam, is also identified as a scenic route (Alameda County 1994b). Views of Patterson Dam and the water surface within Patterson Reservoir are available from one segment of Flynn Road—the segment immediately north of Patterson Pass Road until Flynn Road turns easterly. The vertical and horizontal curves in Flynn Road preclude views of the reservoir from all other portions of this roadway. The Zone 7 Patterson Pass Water Treatment Plant obscures views of Patterson Dam from Patterson Pass Road.

Similar to the conditions around Dyer Dam, lands surrounding Patterson Dam include agricultural production, rural residential properties, and rolling hills. While there are no officially identified scenic vistas in the vicinity, Patterson Pass Road and Flynn Road are identified as scenic routes, and the views from both roads can be considered scenic vistas due to the combination of open space and varied vegetation and topography.

The proposed burrow remediation and restoration work would occur only within the existing Patterson Dam property and would have no effect on views of the surrounding lands from Patterson Pass Road or Flynn Road. Further, the proposed work would not substantially change views of Patterson Dam and Reservoir that are available from Flynn Road because the dam embankment would be restored to the existing conditions and the water surface elevation would not change. The height and slope of the dam embankment would not be altered. When remediation and restoration occurs on the eastern portions of the embankment, equipment and activity (e.g., vegetation removal and changes in soil color due to excavation and grading) would be visible from a short segment of Flynn Road. However, these effects would be confined to a very limited viewpoint from Flynn Road and would be temporary in nature, with work in specific reaches of the embankment generally lasting less than 3 months at a time. Therefore, this impact would be **less than significant**.

b) Would the Project substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

There are no state-designated or eligible scenic routes that offer views of Clifton Court Forebay Dam, Dyer Dam, or Patterson Dam. The nearest state-designated or eligible scenic route to any of these facilities is I-580 in Alameda County to the San Joaquin County border, which passes approximately 2.4 miles from Dyer Dam and 1.6 miles from Patterson Dam, and ends approximately 5.5 miles south of Clifton Court Forebay Dam. However, as discussed in Section 3.1(a), views of Clifton Court Forebay and of Patterson Dam and Reservoir are available from locally designated scenic routes. There are few trees and no rock outcroppings

or historic buildings visible from these scenic routes in the same views that include Clifton Court Forebay and Patterson Dam and Reservoir, although the California Aqueduct, Clifton Court Forebay, South Bay Aqueduct, and Patterson Dam and Reservoir are all eligible for designation as historical resources, as discussed in Section 3.5, Cultural Resources.

Clifton Court Forebay Dam

The closest designated state scenic highway to Clifton Court Forebay Dam is I-580, located approximately 5.5 miles south of the southernmost portion of the forebay. No views of Clifton Court Forebay Dam or the forebay water surface are available from I-580. Accordingly, no impacts would occur to scenic resources within view of a state scenic highway as a result of the proposed Project.

Byron Highway, which is designated by Contra Costa County as a scenic route, but is not identified as a scenic highway under Caltrans's "Designated and Eligible Routes" (Caltrans 2020; Contra Costa County 2005), is located approximately 0.25 miles southwest of the Project site at Clifton Court Forebay Dam.

Views of Clifton Court Forebay are visible from Byron Highway. These views consist of flat agricultural land in the foreground, the southwestern side of the dam embankment and the water surface in the mid-ground, and trees in the background. As discussed in Section 3.1(a), the proposed burrow remediation and restoration work would not substantially change views of Clifton Court Forebay because the dam embankment would be restored to the existing conditions and the water surface elevation would not change. During implementation of the proposed Project, equipment and activity would be temporarily visible from Byron Highway. However, these effects would be temporary in nature, with work in specific reaches of the embankment generally lasting less than 3 months at a time.

The Project includes removal of several trees from Sump No. 4, which is located near the northwestern corner of the forebay, approximately 2 miles from Byron Highway. Removal of these trees would not be discernible from Byron Highway. The Project does not involve any work within or changes to the California Aqueduct. The Project would not result in a significant change in the views available from this scenic route and this impact would be **less than significant**.

Dyer Dam

The closest designated state scenic highway to Dyer Dam is I-580, located approximately 2.4 miles south of the site. Existing topography north of I-580 blocks views of Dyer Dam and the reservoir water surface.

The closest roadway to the Project site is Dyer Road, which is located approximately 567 feet west of the Project site at Dyer Dam, and is not an officially designated state scenic highway (Caltrans 2020) or a designated scenic route by Alameda County. Accordingly, **no impacts** would occur to scenic resources within a state scenic highway as a result of the proposed Project.

Patterson Dam

The closest designated state scenic highway to Patterson Dam is I-580, located approximately 1.6 miles north of the site. Existing topography south of I-580 blocks views of Patterson Dam and the reservoir water surface. Accordingly, no impacts would occur to scenic resources within view of a state scenic highway as a result of the proposed Project.

As discussed in Section 3.1(a), Patterson Pass Road and Flynn Road are the nearest scenic routes to Patterson Dam. Views of Patterson Dam and the reservoir water surface are not available from Patterson Pass Road but are available from one segment of Flynn Road. These views consist of flat agricultural land in the foreground, rolling hills, the Zone 7 Patterson Pass Water Treatment Plant, the eastern side of the dam embankment, a sliver of the reservoir water surface, the water storage tanks north of the reservoir, and trees in the background. The South Bay Aqueduct is not visible from Flynn Road.

As discussed in Section 3.1(a), the proposed burrow remediation and restoration work would not substantially change views of Patterson Dam and Reservoir because the dam embankment would be restored to existing contours and the water surface elevation would not change. During implementation of the proposed Project, equipment and activity would be visible from Flynn Road. However, these effects would be temporary in nature, with work in specific reaches of the embankment generally lasting less than 3 months at a time. The proposed Project would not involve the removal of any trees. The Project would include removal of vegetation from a drainage channel that runs north–south on the west side of Patterson Dam, but this vegetation is not visible from Flynn Road. Thus, the Project would result in **less-than-significant** impacts due to changes in scenic resources visible from this locally designated scenic route.

c) In non-urbanized areas, would the Project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam are predominantly surrounded by land used for agricultural purposes and livestock grazing. Rolling hillsides are present in the background of the three Project sites. As stated in Section 3.1(a), there are few trees, no rock outcroppings, and few other scenic resources within the vicinity of the Project sites. Buildings adjacent to Clifton Court Forebay Dam are maintenance and facility structures to serve the SWP. Buildings and facilities adjacent to Patterson Dam are associated with the Zone 7 Paterson Pass Water Treatment Plant. A storage facility and outdoor paint ball facility are located approximately 0.13 miles west and industrial land uses are located approximately 0.65 miles west of Patterson Dam. Several rural-residential and residential–agricultural properties are located on the west side of Dyer Road, approximately 0.14 miles west of Dyer Dam.

Views of the DWR facilities included in this Project are available from Byron Highway, located southwest of Clifton Court Forebay Dam; Dyer Road, located west of Dyer Dam; and Flynn Road, located east of Patterson Dam. As discussed in Section 3.1(a), the proposed burrow remediation and restoration work would not substantially change views of each of the three DWR facilities because the dam embankments would be restored to the existing conditions and water surface elevations would not change. During implementation of the Project, equipment and activity would be visible from public viewpoints. However, these effects would be temporary in nature, with work in specific reaches of the embankment generally lasting less than 3 months at a time. The proposed Project would not involve the removal or alteration of scenic resources. Thus, the Project would result in **less-than-significant** impacts due to the temporary degradation of the existing visual character of public views of each site and its surroundings.

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

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

The proposed Project would not include installation of any new light sources or the use of reflective materials. The proposed Project sites are predominantly surrounded by agricultural land and open space. Existing sources of lighting in the vicinity of each site include lighting around building exteriors, headlights from vehicles, and utility development in the area. The proposed Project would not involve creating additional lighting at Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam. Thus, the Project would result in **no impact** due to an increase in light or glare.

3.2 Agriculture and Forestry Resources

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
II. AGRICULTURE AND FORESTRY RESOURCES – 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) 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. Would the Project:				
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?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
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))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Setting

Clifton Court Forebay Dam

The Contra Costa County General Plan designates the lands surrounding Clifton Court Forebay Dam for agricultural use. These properties support agricultural production, viticulture, pasture grazing, and agricultural preserves.

Dyer Dam and Patterson Dam

Dyer Dam and Patterson Dam are both located in the unincorporated area of Alameda County. Properties surrounding Dyer Dam include large parcels for agricultural uses, including several agricultural/residential parcels located on the west side of Dyer Road. Properties north and east of Patterson Dam include agricultural production and open space. The property immediately south of Patterson Dam supports the Zone 7 Patterson Pass Water Treatment Plant. Industrial uses are present west of Patterson Dam.

Impact Analysis

a) Would the Project 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?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

The proposed Project would be located entirely within DWR property associated with Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam. According to the Farmland Mapping and Monitoring Program, Clifton Court Forebay Dam is surrounded by Prime Farmland, Farmland of Statewide Importance, and Grazing Land; Patterson Dam is surrounded by Non-Irrigated Farmland; and Dyer Dam is surrounded by Grazing Land (DOC 2021).

The remediation and maintenance activities included in the proposed Project would all occur within DWR property and would not convert the surrounding farmland into non-agricultural uses. No off-site improvements, such as to existing roads or other infrastructure, would be required. As such, the Project would result in **no impacts** due to conversion of farmland. Additionally, the purpose of the proposed Project is to remediate existing rodent burrows to improve the integrity of each Project dam. Thus, implementation of the Project would result in a reduced potential for dam failure that could result in flooding of the agricultural land surrounding each of these DWR facilities.

b) Would the Project conflict with existing zoning for agricultural use, or a Williamson Act contract?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

The remediation and maintenance activities included in the proposed Project would all occur within DWR property. At Clifton Court Forebay Dam, use of an existing private farm road as a temporary construction access route may be necessary for a portion of the remediation activities. No off-site improvements, such as to existing roads or other infrastructure, are required. Dyer Dam and Patterson Dam are zoned by Alameda County as Agriculture; Clifton Court Forebay Dam is zoned by Contra Costa County as Agriculture. Properties surrounding each of the sites are also designated Agriculture.

The Project would not involve altering the land uses of DWR facilities or any of the surrounding land uses, which include agricultural production, viticulture, pasture for livestock, and agricultural reserves (Alameda County 2021a; City of Livermore 2021; Contra Costa County 2021). Implementation of the Project would result in **no impacts** due to conflicts with existing agricultural zoning. Additionally, the purpose of the proposed Project is to remediate existing rodent burrows to improve the integrity of each dam. Thus, the Project would result in a reduced potential for dam failure that could result in flooding of the agricultural land surrounding each of the DWR facilities included in this Project.

c) Would the Project 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))?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

As shown in Figures 4, 9, and 14, no forest land or timberland exists within or adjacent to the Project sites. No forest land or timberland would be impacted by Project activities, therefore, there would be **no impact.**

d) Would the Project result in the loss of forest land or conversion of forest land to non-forest use?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

As noted above in Section 3.2(c), the Project sites and surrounding properties do not include any forest land; therefore, there would be **no impact**.

e) Would the Project 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?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

The proposed Project activities would not alter the existing land use of the Project sites or adjacent lands and no impacts to farmland or forestland would occur. As stated in Section 3.2(b), the objective of the proposed Project is to remediate existing rodent burrows to lower the risk of dam failure, and thus lower risks of adverse effects to surrounding lands, including surrounding agricultural activities. The proposed Project would not involve altering existing land use, rather the Project activities would protect existing land use from the risk of dam failure. Therefore, there would be **no impact**.

3.3 Air Quality

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
III. AIR QUALITY – Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the Project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) 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?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

Setting

The Bay Area Air Quality Management District (BAAQMD) adopted updated CEQA Air Quality Guidelines, including new thresholds of significance in June 2010 (BAAQMD 2010), which were revised in May 2011. The CEQA Air Quality Guidelines advise lead agencies on how to evaluate potential air quality impacts, including establishing quantitative and qualitative thresholds of significance. The BAAQMD resolutions adopting and revising the significance thresholds in 2011 were set aside by a judicial writ of mandate on March 5, 2012. In May 2012, the BAAQMD updated its CEQA Air Quality Guidelines to continue to provide direction on recommended analysis methodologies, but without recommended quantitative significance thresholds (BAAQMD 2012). On August 13, 2013, the First District Court of Appeal ordered the trial court to reverse the judgment and upheld the BAAQMD's CEQA thresholds. The BAAQMD CEQA Air Quality Guidelines were re-released in May 2017 and include the same thresholds as in the 2010 and 2011 guidelines for criteria air pollutants, toxic air contaminants (TACs), and greenhouse gases (GHGs) (BAAQMD 2017a). The CEQA Air Quality Guidelines also address the December 2015 Supreme Court's opinion (*California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal. 4th 369). These BAAQMD significance thresholds are summarized in Table 8.

In general, the BAAQMD significance thresholds for reactive organic gases (ROGs), oxides of nitrogen (NO_x), particulate matter less than or equal to 10 microns in diameter (PM_{10}), particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$), and carbon monoxide (CO) address the first three CEQA air quality significance criteria. The BAAQMD determined that reliance on these thresholds would maintain ambient air quality concentrations of these criteria air pollutants below state and federal standards and prevent a cumulatively considerable contribution to regional nonattainment with ambient air quality standards. The TAC thresholds (cancer and noncancer risks) and local CO thresholds address the fourth CEQA significance criterion, and the BAAQMD odors threshold addresses the fifth CEQA significance criterion.

Table 8. Thresholds of Significance

Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (pounds/day)	*Average Daily Emissions (pounds/day)*	*Maximum Annual Emissions (tons/year)*
ROG	54	54	10
NOx	54	54	10
PM_{10}	82 (exhaust)	82	15
$PM_{2.5}$	54 (exhaust)	54	10
$PM_{10}/PM_{2.5}$ (fugitive dust)	Best Management Practices	None	
Local CO	None	9.0 ppm (8-hour average, 20.0 ppm (1-hour average)	
Risks and Hazards (Individual Project)	Compliance with Qualified Community Risk Reduction Plan or Increased cancer risk of >10.0 in a million Increased noncancer risk of >1.0 Hazard Index (Chronic or Acute) Ambient $PM_{2.5}$ increase >0.3 µg/m³ annual average Zone of Influence: 1,000-foot radius from property line of source or receptor		
Risks and Hazards (Cumulative)	Compliance with Qualified Community Risk Reduction Plan or Cancer risk of >100 in a million (from all local sources) Noncancer risk of >10.0 Hazard Index (chronic, from all local sources) Ambient $PM_{2.5}$ >0.8 µg/m³ annual average (from all local sources) Zone of Influence: 1,000-foot radius from property line of source or receptor		
Accidental Release of Acutely Hazardous Air Pollutants	None	Storage or use of acutely hazardous material located near receptors or new receptors located near stored or used acutely hazardous materials considered significant	
Odors	None	Five confirmed complaints to BAAQMD per year averaged over 3 years	

Source: BAAQMD 2017a.
Notes: ROG = reactive organic gas; NO_x = oxides of nitrogen; PM_{10} = particulate matter less than or equal to 10 microns in diameter; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; CO = carbon monoxide; ppm = parts per million; mg/m³ = micrograms per cubic meter; BAAQMD = Bay Area Air Quality Management District.

Impact Analysis

a) Would the Project conflict with or obstruct implementation of the applicable air quality plan?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

An area is designated as "in attainment" when it is in compliance with the federal and/or state standards. These standards are set by the U.S. Environmental Protection Agency or California Air Resources Board for the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or public welfare with a margin of safety. The Project sites are located within the San Francisco Bay Area Air Basin, which is designated nonattainment for the federal 8-hour ozone (O_3) and 24-hour $PM_{2.5}$ standards. The area is in attainment or unclassified for all other federal standards. The area is

designated nonattainment for state standards for 1-hour and 8-hour O_3, 24-hour PM_{10}, annual PM_{10}, and annual $PM_{2.5}$. On April 19, 2017, the BAAQMD adopted the Spare the Air: Cool the Climate Final 2017 Clean Air Plan (2017 Clean Air Plan) (BAAQMD 2017b). The 2017 Clean Air Plan provides a regional strategy to protect public health and protect the climate. To protect public health, the 2017 Clean Air Plan includes all feasible measures to reduce emissions of O_3 precursors (ROG and NO_x) and reduce O_3 transport to neighboring air basins. In addition, the 2017 Clean Air Plan builds upon the BAAQMD efforts to reduce fine particulate matter and TACs. To protect the climate, the 2017 Clean Air Plan defines a vision for transitioning the region to a post-carbon economy needed to achieve ambitious GHG reduction targets for 2030 and 2050, and provides a regional climate protection strategy that will put the Bay Area on a pathway to achieve those GHG reduction targets.

The BAAQMD CEQA Air Quality Guidelines identify a three-step methodology for determining a project's consistency with the current Clean Air Plan. If the responses to these three questions can be concluded in the affirmative and those conclusions are supported by substantial evidence, then the BAAQMD considers the project to be consistent with air quality plans prepared for the Bay Area.

The first question to be assessed in this methodology is "does the project support the goals of the Air Quality Plan?" The BAAQMD-recommended measure for determining project support for these goals is consistency with BAAQMD thresholds of significance. If a project would not result in significant and unavoidable air quality impacts, after the application of all feasible mitigation measures, the project would not conflict with goals outlined within the 2017 Clean Air Plan. As indicated in the following discussion, with regard to CEQA air quality impact questions b) and c), the proposed Project would result in less-than-significant construction emissions. Therefore, the Project would be consistent with the current Clean Air Plan.

The second question to be assessed in this consistency methodology is "does the project include applicable control measures from the Clean Air Plan?" The 2017 Clean Air Plan contains 85 control measures aimed at reducing air pollution in the Bay Area. Projects that incorporate all feasible air quality plan control measures are considered consistent with the Clean Air Plan. The Project would involve rodent burrow remediation and restoration measures, as well as permanent measures to prevent future burrowing. The control strategies of the 2017 Clean Air Plan include measures in the categories of stationary sources, the transportation sector, the buildings sector, the energy sector, the agriculture sector, natural and working lands, the waste sector, the water sector, and super-GHG pollutant measures, most of which are not applicable to the Project. Many of these measures will be implemented by BAAQMD and therefore, are not suited for implementation through local planning efforts or project approval actions. The 2017 Clean Air Plan measures that may apply to the proposed Project include MSM-C1, Construction and Farming Equipment, which calls for incentives to retrofit construction equipment with diesel particulate matter filters or upgrade to Tier 3 or 4 engines and use renewable alternative fuels in applicable equipment. In addition, the measure MSM-B2, Low NO_x Retrofits in Heavy-Duty On-Road Vehicles, would be applicable to the proposed Project. Measure MSM-B2 provides incentives to install abatement equipment to reduce NO_x emissions. The Project would be consistent with these applicable control measures from the 2017 Clean Air Plan.

The third question to be assessed in this consistency methodology is "does the Project disrupt or hinder implementation of any control measures from the Clean Air Plan?" Examples of how a project may cause the disruption or delay of control measures include a project that precludes an extension of a transit line or bike path or proposes excessive parking beyond parking requirements. The proposed Project includes construction activities, but would not create any barriers or impediments to planned or future

improvements to transit or bicycle facilities in the Project areas, and would not create any new parking. Therefore, the Project would not hinder implementation of 2017 Clean Air Plan control measures.

In summary, the Project would not conflict with or obstruct implementation of the 2017 Clean Air Plan. Therefore, the proposed Project would result in **no impact**.

b) Would the Project 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?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development, and the BAAQMD develops and implements plans for future attainment of ambient air quality standards. Based on these considerations, project-level thresholds of significance for criteria pollutants are used in the determination of whether a project's individual emissions would have a cumulatively considerable contribution on air quality. If a project's emissions would exceed the BAAQMD significance thresholds, it would have a cumulatively considerable contribution. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant (BAAQMD 2017a). A quantitative analysis was conducted to determine whether the proposed Project would result in a cumulatively considerable net increase in emissions of criteria air pollutants for which the San Francisco Bay Area Air Basin is designated as nonattainment under the National Ambient Air Quality Standards or California Ambient Air Quality Standards.

Appendix G of the CEQA Guidelines indicates that, where available, the significance criteria established by the applicable air district may be relied upon to determine whether a project would have a significant impact on air quality. The BAAQMD has established air quality significance thresholds that set forth quantitative emissions significance thresholds below which a project would not have a significant impact on ambient air quality (BAAQMD 2017a). The quantitative air quality analysis provided herein applies the BAAQMD thresholds, as listed in Table 8, to determine the potential for the proposed Project to result in a significant impact under CEQA.

Proposed construction activities would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment and soil disturbance) and off-site sources (i.e., on-road delivery trucks and worker vehicle trips). Construction emissions can vary substantially from day to day, depending on the level of activity; the specific type of operation; and, for dust, the prevailing weather conditions. Therefore, such emission levels can only be approximately estimated with a corresponding uncertainty in precise ambient air quality impacts.

The California Emissions Estimator Model (CalEEMod) Version 2016.3.2 was used to estimate emissions from construction of the Project (CAPCOA 2017). CalEEMod is a statewide computer model developed in cooperation with air districts throughout the state to quantify criteria air pollutant and GHG emissions associated with construction activities and operation of a variety of land use projects, such as residential, commercial, and industrial facilities. CalEEMod input parameters, including the land use type representing the Project and its size, construction schedule, and anticipated use of construction equipment, were based on default model assumptions where Project specifics were unavailable.

For the purposes of estimating the Project construction emissions, the CalEEMod modeling inputs assumed that construction activities in 2021 would occur over 2 months and would focus on the high-priority repairs at Clifton Court Forebay Dam. To ensure a conservative analysis, the CalEEMod modeling

inputs assumed that the rest of the work at Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam would occur between May and October 2022. Average daily emissions were computed by dividing the total construction emissions by the number of active construction days. To the extent that construction activities continue between May and October in the years 2023 through 2026, this would reduce the average daily amount of construction activities during 2022 and thus would not result in any increases in average daily emissions.

The average daily emissions computed based on the CalEEMod modeling outputs were compared to the BAAQMD construction thresholds of significance. Table 9 shows average daily construction emissions of O_3 precursors (ROG and NO_x), PM_{10} exhaust, and $PM_{2.5}$ exhaust during the assumed Project construction period reflected in the CalEEMod modeling for years 2021 and 2022. Details of the emission calculations are provided in Appendix A.

Table 9. Average Daily Unmitigated Construction Emissions

Year	ROG	NO_x	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
	Pounds per day			
2021–2022	4.0	49.0	1.8	0.7
BAAQMD Construction Thresholds	*54*	*54*	*82*	*54*
Exceed Threshold?	**No**	**No**	**No**	**No**

Source: Appendix A.
Notes: ROG = reactive organic gas; NOx = oxides of nitrogen; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter.
The values shown are average daily emissions based on total overall tons of construction emissions, converted to pounds, and divided by 218 active work days.

As shown in Table 9, construction of the Project would not exceed BAAQMD significance thresholds. Thus, the Project would have a **less-than-significant** cumulative impact in relation to regional emissions.

c) Would the Project expose sensitive receptors to substantial pollutant concentrations?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

The BAAQMD has adopted project and cumulative thresholds for three risk-related air quality indicators for sensitive receptors, including (1) cancer risks, (2) noncancer health effects, and (3) increases in ambient air concentrations of $PM_{2.5}$. These impacts are addressed on a localized rather than regional basis and are specific to the sensitive receptors identified for a specific Project. Sensitive receptors are groups of individuals—including children, the elderly, the acutely ill, and the chronically ill—that may be more susceptible to health risks due to chemical exposure. Sensitive receptor population groups are likely to be located at hospitals, medical clinics, schools, playgrounds, childcare centers, residences, and retirement homes (BAAQMD 2017a). The closest existing sensitive receptors to the Project facilities are a small residential subdivision immediately north of the northeast corner of Clifton Court Forebay; the residential–agricultural properties located west of Dyer Dam, with the residence nearest to the Project work area being approximately 0.2 miles away; and a residential property located south of Patterson Pass Road and east of the South Bay Aqueduct, approximately 0.28 miles from Patterson Dam.

Toxic Air Contaminants

"Incremental cancer risk" is the net increased likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 9-, 30-, and 70-year exposure period would contract

cancer based on the use of standard Office of Environmental Health Hazard Assessment risk-assessment methodology (OEHHA 2015). In addition, some TACs have non-carcinogenic effects. TACs that would potentially be emitted during construction activities would be diesel particulate matter, emitted from heavy-duty construction equipment and heavy-duty trucks. Heavy-duty construction equipment and diesel trucks are subject to California Air Resources Board air toxic control measures to reduce diesel particulate matter emissions. According to the Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 30-year exposure period for the maximally exposed individual resident; however, such assessments should be limited to the period/duration of activities associated with a project (OEHHA 2015). Thus, the duration of proposed construction activities (no more than 6 months per year over 7 years) would constitute less than 12 percent of the total 30-year exposure period. Project-related health risk impacts associated with construction activities would therefore be **less than significant**.

Local Carbon Monoxide Concentrations

Mobile source impacts occur on two scales of motion. Regionally, Project-related travel would add to regional trip generation and increase the vehicle miles traveled within the local airshed and the San Francisco Bay Area Air Basin. Locally, Project-generated traffic would be added to the local roadway system near the Project site. If such traffic occurs during periods of poor atmospheric ventilation, consists of a large number of vehicles "cold-started" and operating at pollution-inefficient speeds, and/or is operating on roadways already crowded with non-Project traffic, there is a potential for the formation of microscale CO hotspots in the area immediately around points of congested traffic. Because of continued improvement in vehicular emissions at a rate faster than the rate of vehicle growth and/or congestion, the potential for CO hotspots in the San Francisco Bay Area Air Basin is steadily decreasing.

The BAAQMD thresholds of significance for local CO emissions is the 1-hour and 8-hour California Ambient Air Quality Standards of 20 parts per million and 9 parts per million, respectively. By definition, these represent levels that are protective of public health. According to the BAAQMD, a project would result in a less-than-significant impact to localized CO concentrations if the following screening criteria are met (BAAQMD 2017a):

1. The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.
2. The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
3. The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

After completion of the burrow remediation, dam restoration, and other Project activities, new traffic trips would not be generated as a result of the Project. Accordingly, the Project would not result in the exceedance of CO standards and therefore, no further analysis was conducted for CO impacts. Thus, the CO emissions impact would be **less than significant** on a Project-level and cumulative basis.

d) Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Odors would be potentially generated from vehicles and equipment exhaust emissions during Project construction. Potential odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment. However, the proposed activities are in remote areas located away from substantial numbers of residences and other occupied facilities, so a limited number of people would be affected. In addition, Project implementation activities would occur in various locations within each of the DWR facilities, with work in each location or dam segment generally lasting for 3 months or less. This would limit the exposure period of the nearest residents. The potential release of odors associated with construction equipment would be minor, temporary, and unlikely to impact a substantial number of people; therefore, Project impacts would be **less than significant**.

3.4 Biological Resources

	Potentially Significant Impact	Less-Than-Significant Impact 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 or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
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?	☐	☒	☐	☐

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Setting

Information presented here is summarized from the Biological Resources Existing Conditions Report for the Delta Dams Rodent Burrow Remediation Project, attached to this IS as Appendix B. Details on methodology, profiles of each of the special status species considered in this analysis, species occurrence information, vegetation community composition, aquatic resource types, and other resource information are available in the report.

Methods

Three DWR facilities are included in the overall Project—Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam. For each site, a biological resources study area was defined as including the area of disturbance for each of the Project components as well as a buffer extending 300 feet from the edge of disturbance, but within DWR property, easements, and/or right-of-way, to create a biological resources study area. The DWR right-of-way and easement land within this 300-foot buffer area was surveyed to map vegetation communities, potential aquatic resources, rare plants, and wildlife species; wildlife movement was also studied. Because biological resources on each site differ, the sites are analyzed separately in this document.

The following existing information on biological resources was reviewed by Dudek biologists:

- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation online tool (USFWS 2020)
- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CDFW 2021a, 2021b, 2020c)
- California Native Plant Society Online Inventory of Rare and Endangered Vascular Plants (CNPS 2021)
- Soil Survey Geographic Database for California (USDA 2021) (to identify potentially occurring special-status plants based upon known soil associations)

Biological surveys were conducted from December 2020 to August 2021. Vegetation mapping and aquatic resource delineations were performed from December 2020 to January 2021. Wildlife biologists conducted a reconnaissance-level field survey on January 11, 2021; multispecies burrow assessment in February 2021; focused surveys for nesting Swainson's hawks (*Buteo swainsoni*) from March to July 2021; focused surveys for burrowing owls (*Athene cunicularia*) from February to July 2021; and camera trap surveys for San Joaquin kit fox (*Vulpes macrotis mutica*) from March to August 2021. Spring botanical surveys were conducted in March, May, and April 2021 and summer botanical surveys were conducted in July 2021. The results of these surveys, mapping, and

delineations are reported in detail in the Biological Resources Existing Conditions Report for the Delta Dams Rodent Burrow Remediation Project (Appendix B) and summarized in the following discussions and impact analyses.

Vegetation Communities and Land Cover Types

The acreages of the mapped vegetation associations and/or alliances and other land covers within the Project sites are presented in Table 10, including those that are considered sensitive biological resources by CDFW under CEQA per the California Natural Community List (CDFW 2020); sensitive natural communities are included in Table 10 in bold text. The term "semi-natural stands" is used to distinguish between natural vegetation communities and vegetation types dominated by non-native plant species (Sawyer et al. 2009). The alliances and other land covers are grouped in Table 10 by the generalized habitat. The locations of the vegetation community alliances and land covers within the Project sites are shown on Figures 19A through 19J, Impacts to Vegetation Communities – Clifton Court Forebay Dam, Figure 20, Impacts to Vegetation Communities – Dyer Dam, and Figure 21, Impact to Vegetation Communities – Patterson Dam, and are described by generalized habitat type in Appendix B.

Sensitive Natural Communities

There are 12 sensitive vegetation communities totaling 47.9 acres within the Project sites, including *Frankenia salina* association, *Schoenoplectus americanus* association, *Schoenoplectus acutus* association, *Allenrolfea occidentalis/Distichlis spicata* provisional association, *Allenrolfea occidentalis* association, *Elymus glaucus* association, needle grass–melic grass grassland (*Nassella* spp.–*Melica* spp.) alliance, *Salix lasiolepis* association, *Cephalanthus occidentalis* association, *Salix gooddingii* association, *Juglans hindsii* semi-natural association, and *Alnus rubra/Salix lasiolepis/Rubus* spp. Association (Appendix B).

Jurisdictional Aquatic Resources

Aquatic resources include waters (i.e., wetlands and non-wetland waters) of the United States under the jurisdiction of U.S. Army Corps of Engineers (USACE), waters of the state under the jurisdiction of the Regional Water Quality Control Board (RWQCB), and streams and lakes under the jurisdiction of the CDFW. The agencies tend to have overlapping jurisdiction over many resources; however, waters of the state extend beyond USACE waters of the United States and CDFW regulates riparian vegetation beyond the limits of waters of the United States/state.

Aquatic resources delineation reports were prepared for the Project sites, including the biological resources study areas for Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam and submitted to the USACE, CDFW, and RWQCB for verification. The following is a summary of the potential jurisdictional aquatic resources by agency.

U.S. Army Corps of Engineers

Potential waters of the United States within the Project sites total 85 acres and are composed of 20.4 acres of wetlands and 64.6 acres of non-wetlands (Appendix B). Table 11 summarizes the potential USACE waters of the United States by each Project facility (Figures 22A through 22J, USACE – Impacts to Delineated Aquatic Resources – Clifton Court Forebay Dam, Figure 23, Impacts to USACE-Jurisdictional Areas – Dyer Dam, and Figure 24, Impacts to USACE-Jurisdictional Areas – Patterson Dam).

Table 10. Vegetation Communities within the Project Site (acres)

General Category	Alliance Name	Vegetation Community	Clifton Court Forebay Dam	Dyer Dam	Patterson Dam	Grand Total
Bog and Marsh	Alkali heath marsh	***Frankenia salina* Association**	1.9	—	—	1.9
	American bulrush marsh	***Schoenoplectus americanus* Association**	1.8	—	—	1.8
	Baltic and Mexican rush marshes	*Juncus arcticus* var. *balticus* – (var. *mexicanus*) Association	0.3	—	—	0.3
	Cattail marshes	*Typha* (*latifolia*, *angustifolia*) Association	—	0.6	0.7	1.3
	Common and giant reed marshes	*Arundo donax* Semi-Natural Association	0.9	—	—	0.9
	Hardstem and California bulrush marshes	***Schoenoplectus acutus* Association**	0.2	—	0.0[1]	0.2
	Iodine bush scrub	***Allenrolfea occidentalis/Distichlis spicata* provisional Association**	5.4	—	—	5.4
		Allenrolfea occidentalis Association	7.5	—	—	7.5
	Perennial pepper weed patches	*Lepidium latifolium* Semi-Natural Association	21.5	—	—	21.5
	Quailbush scrub	*Atriplex lentiformis* Association	7.3	0.1	—	7.4
	Salt grass flats	*Distichlis spicata* Association	0.6	1.3	0.5	2.3
	Smartweed – cocklebur patches	*Polygonum* (*amphibium*, *lapathifolium*) Association	7.1	—	—	7.1
		Bog and Marsh Subtotal	*54.5*	*2.0*	*1.2*	*57.7*
Disturbed and Developed	N/A	Disturbed habitat	13.9	3.9	0.4	18.2
	N/A	General agriculture	0.0[1]	—	—	0.0[1]
	N/A	Open water	60.6	—	0.0[1]	60.7
	N/A	Urban/developed	109.6	21.5	15.4	146.4
		Disturbed and Developed Total	*184.2*	*25.3*	*15.8*	*225.3*
Dune	Ice plant mats	*Carpobrotus* (*edulis*) Semi-Natural Association	1.9	—	—	1.9
		Dune Subtotal	*1.9*	—		*1.9*
Grass and Herb Dominated	California brome – blue wildrye prairie	***Elymus glaucus* association**	2.6	—	—	2.6
	Needle grass – Melic grass grassland	**Needle grass – Melic grass grassland (*Nassella* spp. – *Melica* spp.) Alliance**	—	17.2	0.7	17.9

Table 10. Vegetation Communities within the Project Site (acres)

General Category	Alliance Name	Vegetation Community	Clifton Court Forebay Dam	Dyer Dam	Patterson Dam	Grand Total
	Perennial rye grass fields	*Lolium perenne – Hordeum marinum – Ranunculus californicus* Semi-Natural Association	22.3	1.1	—	23.4
	Poison hemlock or fennel patches	*Conium maculatum* Semi-Natural Association	12.7	—	—	12.7
	Upland mustards or star-thistle fields	*Brassica nigra* Semi-Natural Association	18.4	3.6	5.8	27.9
		Carduus pycnocephalus – Silybum marianum Provisional Semi-Natural Association	—	2.5		2.5
		Raphanus sativus Semi-Natural Association	—	—	2.3	2.3
	Wild oats and annual brome grasslands	Wild oats and annual brome grasslands (*Avena* spp. – *Bromus* spp.) Semi-Natural Alliance	45.6	6.9	9.2	61.7
		Grass and Herb Dominated Total	*101.6*	*31.3*	*18.0*	*150.9*
Riparian	Arroyo willow thickets	***Salix lasiolepis* association**	—	0.0[1]	—	0.0[1]
	Button willow thickets	***Cephalanthus occidentalis* association**	1.4	—	—	1.4
	Goodding's willow – red willow riparian woodland and forest	***Salix gooddingii association***	7.6	—	—	7.6
	Himalayan blackberry – rattlebox edible fig riparian scrub	*Rubus armeniacus Semi-Natural Association*	4.1	—	—	4.1
	Hinds's walnut and related stands	***Juglans hindsii* Semi-Natural Association**	1.2	—	—	1.2
	Red alder forest	***Alnus rubra/Salix lasiolepis/Rubus* spp. Association**	0.3	—	—	0.3
		Riparian Subtotal	*14.6*	*0.0*		*14.7*
Scrub	Coyote brush scrub	*Baccharis pilularis*/annual grass – herb Association	2.4	—	—	2.4
		Scrub Subtotal	*2.4*	—	—	*2.4*
		Grand Total	**359.3**	**58.7**	**35.0**	**452.9**

Notes: An alliance and/or association is considered **sensitive** (bolded above) if indicated with a state rarity rank of S1–S3 or indicated as sensitive without a rarity ranking in the California Natural Community List (CDFW 2020).
Totals may not sum due to rounding.
[1] 0.0 are values that are less than 0.05 acres.

Table 11. Acres of USACE Potential Waters of the United States by Project Facility

Feature Type	Clifton Court Forebay Dam	Dyer Dam	Patterson Dam	Total
Wetland	18.2	1.2	1.0	20.4
Non-wetland waters	64.1	0.5	0.0[1]	64.6
Total[2]	**82.4**	**1.6**	**1.0**	**85.0**

Notes: USACE = U.S. Army Corps of Engineers.
1 0.0 are values that are less than 0.05 acres.
2 Totals may not sum due to rounding.

Regional Water Quality Control Board

Potential waters of the state within the Project sites total 87.6 acres and are composed of 2.40 acres of wetlands and 67.2 acres of non-wetlands (Appendix B). Table 12 summarizes the potential RWQCB waters of the state by each Project facility (Figures 25A through 25J, RWQCB – Impacts to Delineated Aquatic Resources – Clifton Court Forebay Dam, Figure 26, Impacts to RWQCB-Jurisdictional Areas – Dyer Dam, and Figure 27, Impacts to RWQCB-Jurisdictional Areas – Patterson Dam).

Table 12. Acres of RWQCB-Jurisdictional Waters of the United States/State by Project Facility

Feature Type	Clifton Court Forebay Dam	Dyer Dam	Patterson Dam	Total
Wetland	18.2	1.2	1.0	2.40
Non-wetland waters	64.6	2.4	0.2	67.2
Total[1]	**82.8**	**3.6**	**1.2**	**87.6**

Notes: RWQCB = Regional Water Quality Control Board.
1 Totals may not sum due to rounding.

California Department of Fish and Wildlife

CDFW-jurisdictional waters within the Project site total 65.7 acres and consist of 4.1 acres of riparian habitat and 61.6 acres of streambed (Appendix B). Table 13 summarizes the CDFW waters of the state by each Project facility (Figures 28A through 28J, Impacts to CDFW-Jurisdictional Areas – Clifton Court Forebay Dam, Figure 29, Impacts to CDFW-Jurisdictional Areas – Dyer Dam, and Figure 30, Impacts to CDFW-Jurisdictional Areas – Patterson Dam).

Table 13. Acres of CDFW-Jurisdictional Waters by Project Facility

Feature Type	Clifton Court Forebay Dam	Dyer Dam	Patterson Dam	Total
Riparian	1.9	1.2	1.0	4.1
Streambed	58.9	2.5	0.2	61.6
Total	**60.8**	**3.7**	**1.2**	**65.7**

Note: CDFW = California Department of Fish and Wildlife.

Special-Status Species

Special-status species are plants and wildlife that are legally protected under state and/or federal regulations. Special-status species also include species considered sufficiently rare by regulatory agencies and the scientific community to warrant consideration in environmental impact analysis. For the purposes of this analysis, special-status species include the following:

- Plants or wildlife (including fish) listed, proposed for listing, or candidates for listing as threatened or endangered under the federal Endangered Species Act
- Plants or wildlife (including fish) listed as threatened or endangered, or proposed for listing, under the California Endangered Species Act
- Wildlife or fish designated by CDFW as a California Species of Special Concern Wildlife designated as fully protected species under Sections 3511, 4700, 5050, and 5515 the California Fish and Game Code
- Plants designated as rare under the California Native Plant Protection Act of 1977
- Plants with a California Rare Plant Rank (CRPR) of 1 or 2
- Plants or wildlife that meet the definition of rare, threatened, or endangered as described in the CEQA Guidelines, Section 15380

Special-Status Plant Species

Based on the review of the above-listed information sources, biologists evaluated 58 special-status plant species for potential to occur in the biological resources study areas (Appendix C in Appendix B). Of these, six special-status species were observed within the Clifton Court Forebay Dam biological resources study area—long-styled sand-spurrey (*Spergularia macrotheca* var. *longistyla;* CRPR 1B.2), woolly rose-mallow (*Hibiscus lasiocarpos* var. *occidentalis*; CRPR 1B2), brittlescale (*Atriplex depressa*; CRPR 1B.2), heartscale (*Atriplex cordulata* var. *cordulata*; CRPR 1B.2); Mason's lilaeopsis (*Lilaeopsis masonii*; CRPR 1B.1), and Suisun Marsh aster (*Symphyotrichum lentum*; CRPR 1B.2) (Appendix B). Profiles of each of these species are presented in Appendix B. Crownscale (*Atriplex coronata* var. *coronata*) was observed within the Clifton Court Forebay Dam biological resources study area (DWR, unpubl. data), but this species has a CRPR of 4.2, which is not considered special-status because this occurrence is not significant locally,[1] and impacts to this occurrence would not be considered significant. Figure 31, Impacts to Special-Status Plants – Clifton Court Forebay Dam, shows the location of special-status plant species observed within the Clifton Court Forebay Dam biological resources study area.

No special-status plants were observed within the Dyer Dam and Patterson Dam biological resources study areas (Appendix B). Special-status plant species that are not expected to occur or have a low potential to occur are not discussed further because no significant direct, indirect, or cumulative impacts to those species are expected to result from the proposed Project (see Appendix C in Appendix B). Due, in part, to the extensive surveys conducted in each of the study areas, there are no special-status plants with a moderate or high potential to occur in any of the three study areas.

[1] Plants with a CRPR of 4 that may be considered significant locally are: (1) the type locality; (2) populations at the periphery of a species' range; (3) areas where the taxon is especially uncommon; (4) areas where the taxon has sustained heavy losses; and (5) populations exhibiting unusual morphology or occurring on unusual substrates.

Special-Status Wildlife Species

Based on the review of the above-listed information sources, biologists evaluated 51 special-status wildlife species for potential to occur in the biological resources study areas (Appendix D in Appendix B). Of these, 15 species have been observed or are considered to have high potential to occur based on the presence of suitable habitat. Table 14 includes a list of these species and summary of their potential to occur by dam. Profiles of each of these species are presented in Appendix B. Listed fish species known to occur in or near Clifton Court Forebay and San Joaquin kit fox are also included in Table 14 because of their legal status.

Detailed information on habitat suitability at each dam, as well as rationale for the exclusion of other special-status plant species from further analysis, is provided in Appendix D in Appendix B.

Table 14. Special-Status Wildlife Species Observed or with High Potential to Occur in Biological Resources Study Areas

Common Name	Scientific Name	Status	Potential to Occur		
			Clifton Court Forebay Dam	*Dyer Dam*	*Patterson Dam*
Invertebrates					
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT/None	High	Moderate	None
Fish					
Green sturgeon (southern DPS)	*Acipenser medirostris*	FT/SSC	Moderate	None	None
Steelhead (Central Valley DPS)	*Oncorhynchus mykiss irideus* pop. 11	FT/None	Moderate	None	None
Chinook salmon (Sacramento winter-run ESU)	*Oncorhynchus tshawytscha*	FE/SE	Moderate	None	None
Chinook salmon (Central Valley River spring-run ESU)	*Oncorhynchus tshawytscha*	FT/ST	Moderate	None	None
Delta smelt	*Hypomesus transpacificus*	FT/SE	Moderate	None	None
Longfin smelt	*Spirinchus thaleichthys*	FC/ST	Moderate	None	None
Amphibians and Reptiles					
California tiger salamander	*Ambystoma californiense*	FT/ST	Moderate	High	High
California red-legged frog	*Rana draytonii*	FT/SSC	Moderate	High	Observed
Western pond turtle	*Actinemys marmorata*	None/SSC	Observed	Moderate	High
San Joaquin coachwhip	*Masticophis flagellum ruddocki*	None/SSC	High	Low	Moderate

Table 14. Special-Status Wildlife Species Observed or with High Potential to Occur in Biological Resources Study Areas

Common Name	Scientific Name	Status	Potential to Occur		
			Clifton Court Forebay Dam	*Dyer Dam*	*Patterson Dam*
Birds					
Golden eagle (nesting and wintering)	*Aquila chrysaetos*	BCC/FP	Moderate (wintering)	High (wintering)	High (wintering)
Swainson's hawk (nesting)	*Buteo swainsoni*	None/ST	Observed	None	None
Northern harrier (nesting)	*Circus hudsonius*	None/SSC	High	High	High
White-tailed kite (nesting)	*Elanus leucurus*	None/FP	High	None	None
Bald eagle (nesting and wintering)	*Haliaeetus leucocephalus*	FDL, BCC/FP, SE	Observed	None	None
Burrowing owl (burrow sites and some wintering sites)	*Athene cunicularia*	None/SSC	Observed	High	High
Loggerhead shrike (nesting)	*Lanius ludovicianus*	BCC/SSC	High	Moderate	Moderate
Song sparrow ("Modesto" population)	*Melospiza melodia* ("Modesto" population)	None/SSC	Observed	None	None
Tricolored blackbird (nesting colony)	*Agelaius tricolor*	None/SSC, ST	High	High	High
Mammals					
American badger	*Taxidea taxus*	None/SSC	High	High	High
San Joaquin kit fox	*Vulpes macrotis mutica*	FE/ST	Moderate	Moderate	Moderate

Notes: DPS = distinct population segment; ESU = evolutionarily significant unit.

Status Legend

Federal

BCC: USFWS—Birds of Conservation Concern
FC: Candidate for federal listing as threatened or endangered
FD: Federally delisted; monitored for 5 years
FE: Federally listed as endangered
FT: Federally listed as threatened
FPE: Federally proposed for listing as endangered
FPT: Federally proposed for listing as threatened
FPD: Federally proposed for delisting

State

FP: CDFW Fully Protected species
SE: State listed as endangered
ST: State listed as threatened
SCE: State candidate for listing as endangered
SCT: State candidate for listing as threatened
SCD: State candidate for delisting
SSC: California Species of Special Concern
WL: CDFW Watch List species

Wildlife Movement

The following summarizes wildlife movement patterns and habitat connectivity within the Project site for each of the biological resource study areas at the three dams. Additional information is provided in Appendix B (Section 4.5.4, Wildlife Movement).

Clifton Court Forebay Dam

The Clifton Court Forebay Da, study area is located at the western edge of the San Joaquin Valley near its transition to the rolling foothills of the Diablo Range west of the Byron Highway. Clifton Court Forebay and the surrounding waterways—the California Aqueduct, the Old River, Italian Slough, and the West Canal—effectively block most wildlife movement potential in the vicinity of the study area. Some movement potential exists within the study area between Clifton Court Forebay Dam and Bethany Reservoir to the southwest, but it is constrained by DWR support facilities and roads, leaving canal termini, overchutes (e.g., bridges, siphons), and underchutes (e.g., culverts), available for wildlife to use. Land is available to the north but is generally fragmented by multiple canals and other wide waterways.

The study area is not readily identifiable as a regional wildlife corridor or habitat linkage because wildlife is not anticipated to normally move through the area due to existing human-made features. The forebay and canal system likely serve as barriers to movement of small, ground-based wildlife from the surrounding ranchlands, and the Byron Highway likely serves as a barrier to such movement from the Diablo foothills to the west. While the Byron Highway, other roads, and canals represent a significant barrier to larger mammal (e.g., coyote [*Canis latrans*], bobcat [*Lynx rufus*], mule deer [*Odocoileus hemionus*]) movement, it is possible that wildlife may occasionally cross canals by using any of multiple overchutes, underchutes, and road crossings present along the California Aqueduct within the study area.

The study area is located within the Pacific Flyway, which is a major north–south migration route for birds that travel between North and South America. The longest and most important migration route of the Pacific Flyway is that originating in northeastern Alaska. This route, which includes most waterfowl and shorebirds, passes through the interior of Alaska and then branches such that large flights continue southeast into the Central and Mississippi Flyways, or they turn in a southwesterly direction and pass through the interior valleys of California, ending or passing through the Salton Sea. The Clifton Court Forebay Dam study area is on the western edge of the Central Valley routes and the forebay and nearby waterways attract migrating waterbirds. Evidence of this is provided by the large rafts of migratory waterfowl observed during Dudek's field surveys from December 2020 to March 2021.

Dyer Dam

The Dyer Dam study area is in the Altamont Hills of the Diablo Range in eastern Alameda County, approximately 7 miles northeast of Livermore and 2.3 miles north of Interstate 580. It is located in a large expanse of annual grassland with various land uses such as wind energy facilities, private ranchland, and waste management (i.e., Altamont Landfill approximately 0.5 miles to the east) through which most wildlife can move freely, although local movements are constrained by the fence around the reservoir, the South Bay Aqueduct, and fencing associated with other human land uses. Some movement potential exists within the study area at canal terminuses, overchutes, and underchutes available for wildlife to use to navigate over and around the South Bay Aqueduct. The Dyer Dam study area is in the "Mt. Diablo-Diablo Range" critical linkage mapped by the Critical Linkages: Bay Area and Beyond project (Penrod et al. 2013). Like Clifton Court Forebay, Dyer Reservoir provides habitat for migratory waterbirds that use the Pacific Flyway.

Patterson Dam

The Patterson Dam study area is located on the eastern edge of the Livermore Valley approximately 1 mile east of Livermore. Local wildlife movement is constrained by the South Bay Aqueduct. Additionally, wildlife movement in the vicinity of Patterson Dam is constrained by development to the west, Patterson Pass Road to the south, and Interstate 580 to the north. Combined, these facilities can be a substantial barrier to California tiger salamander, large mammals, and smaller wildlife, though some movement is possible across the South Bay Aqueduct overchutes in the vicinity. The Patterson Dam study area is also in the "Mt. Diablo-Diablo Range" critical linkage mapped by the Critical Linkages: Bay Area and Beyond project (Penrod et al. 2013) as described above for Dyer Dam. Patterson Reservoir does not support the large numbers of migratory waterbirds known to occur at Clifton Court Forebay and Dyer Reservoir because of its smaller size, but still has habitat value for such species, as evidenced by the observation of several species of migratory waterfowl (e.g., northern shoveler [*Spatula clypeata*], ring-necked duck [*Aythya collaris*], bufflehead [*Bucephala albeola*], common merganser [*Mergus merganser*]) during the wildlife reconnaissance survey conducted on January 11, 2021.

Impact Analysis

Like the other IS sections, the following impact analysis is organized by CEQA significance threshold. In contrast to other sections, however, the analysis under each threshold is organized first by resource type (e.g., special-status plants, special-status amphibians and reptiles) then by location (i.e., Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam). Within each discussion, a clear statement about the potential impact to each resource type as it relates to the Project is provided. Organization of the impact analysis in this manner helps streamline the analysis and eliminate the need for repetition of text that could apply to multiple dams.

The following terms are used in this impact analysis to describe the areas studied and potentially impacted by the Project, from least to most inclusive:

- The Project site refers to the area that would be physically affected by proposed construction activities (including temporary disturbance) and the location of permanent structures. The Project site also includes all staging areas.
- The biological resource study area (or study area) includes the Project site and adjacent lands in which indirect impacts on biological resources could occur, including disturbance from construction-related noise, vibration, and lighting. It is identical to the biological resource study area used in the Biological Resources Existing Conditions Report for the Delta Dams Rodent Burrow Remediation Project (Appendix B).

a) Would the Project 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 Game or U.S. Fish and Wildlife Service?

Special-Status Plant Species

Clifton Court Forebay Dam

Direct Impacts

Permanent impacts to approximately 102 long-styled sand-spurrey (CRPR 1B.2) individuals and temporary impacts to approximately 3,609 long-styled sand-spurrey (CRPR 1B.2) individuals would result from implementation of the Project at Clifton Court Forebay Dam. Permanent impacts to approximately 1 Suisun

Marsh aster (CRPR 1B.2) individual would result from implementation of the Project at Clifton Court Forebay Dam. The woolly rose-mallow, brittlescale, heartscale, and Mason's lilaeopsis at Clifton Court Forebay Dam would be avoided (Appendix B). Figure 31 shows the location of the impacts in relationship to the special-status species observed within the Clifton Court Forebay Dam biological resources study area.

Implementation of **Mitigation Measure BIO-2** would avoid, minimize, and/or mitigate for direct impacts to long-styled sand spurrey at the Clifton Court Forebay Dam study area. Additionally, permanent impacts to one Suisun marsh aster is less than significant. Therefore, the Project would result in a **less-than-significant impact with mitigation incorporated**.

Indirect Impacts

Construction-related indirect impacts could affect special-status plants and habitat where special-status plants have at least a moderate potential to occur. Potential short-term or temporary indirect impacts to special-status plants resulting from construction activities include the generation of fugitive dust; changes in hydrology resulting from construction, including sedimentation and erosion; the release of chemical pollutants; and adverse effects of invasive plant species. Potential short-term or temporary indirect impacts to special-status plants would be significant absent mitigation. Implementation of **Mitigation Measure BIO-1** and the Stormwater Pollution Prevention Plan (SWPPP) required under the State Water Resources Control Board (SWRCB) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) would reduce indirect impacts to special-status plant species and their habitat at the Clifton Court Forebay Dam study area; therefore, the Project would result in a **less-than-significant impact with mitigation incorporated**.

Dyer Dam

No special-status plant species were observed during surveys in March, May, and July 2021. Due, in part, to the extensive surveys conducted in the Dyer Dam biological study area, there are no special-status plants with a moderate or high potential to occur. The remainder of the special-status species evaluated are either not expected to occur or have a low potential to occur (Appendix B). No significant direct, indirect, or cumulative impacts to special-status plants are expected to result from the proposed Project at Dyer Dam.

Patterson Dam

No special-status plant species were observed during surveys in March, May, and July 2021. Due, in part, to the extensive surveys conducted in the Patterson Dam biological study area, there are no special-status plants with a moderate or high potential to occur. The remainder of the special-status species evaluated are either not expected to occur or have a low potential to occur (Appendix B). No significant direct, indirect, or cumulative impacts to special-status plants are expected to result from the proposed Project at Patterson Dam.

Special-Status Wildlife Species

Invertebrates

Clifton Court Forebay Dam

The Project would occur next to potential habitat for vernal pool fairy shrimp (*Branchinecta lynchi*) and could therefore result in indirect impacts on this species. Construction of the temporary toe access road

adjacent to the 5.36-acre wetland that may support the species may alter downstream hydrology and ponding duration from the placement of fill, causing pools to evaporate before fairy shrimp have completed their life cycle; this impact would be potentially significant. However, implementation of **Mitigation Measure BIO-3** would minimize indirect impacts to downstream habitat; therefore, the Project would result in a **less-than-significant impact with mitigation incorporated**.

Dyer Dam and Patterson Dam

No special-status invertebrate species are expected to occur at Dyer Dam and at Patterson Dam (Appendix B). Therefore, these components of the Project would result in **no impacts** to special-status invertebrates.

Fish

Clifton Court Forebay Dam

Six listed fish species occur in Delta waterways in the Clifton Court Forebay Dam study area (i.e., the Old River, the West Canal, intake channel) at various times of the year—green sturgeon (*Acipenser medirostris*), Central Valley steelhead (*Oncorhynchus mykiss irideus* pop. 11), Sacramento River winter-run and Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*), delta smelt (*Hypomesus transpacificus*), and longfin smelt (*Spirinchus thaleichthys*) (see Appendix D in Appendix B). Proposed slope restoration at the intake channel could result in direct and indirect impacts on these species, if present, at the time of construction.

The only potential direct impact on listed fish would be temporary disruption of normal behaviors if individuals present in the intake channel at the time of construction avoid any sudden increases in turbidity and suspended sediment. Both juvenile and adult fish would also be able to detect areas of disturbance and would typically actively avoid areas where equipment is operating in or at the edge of open water or where a turbidity plume occurs. Occasionally, foraging juvenile salmonids may be attracted to activities that disturb bottom sediment, although if immediate danger is detected, they can quickly move away from the area. Injury or mortality of individual fish is not expected because work would be conducted during low flow conditions to avoid working within waters. Additionally, the area disturbed by embankment excavation and associated turbidity and the placement of structural materials along the bank is expected to only affect a small portion of the channel width; as a result, juveniles would be able to move to other areas of the channel to avoid potential injury or mortality.

Potential indirect impacts on listed fish include temporary habitat degradation from short-term increases in turbidity and suspended sediment, and chemical contamination from equipment fluids. Short-term localized increases in turbidity and suspended sediment levels associated with bank restoration activities may negatively affect fish temporarily through reduced availability of food, reduced feeding efficiency, and exposure to sediment released into the water column. However, based on the limited extent of bank restoration areas relative to the abundance of suitable habitat within the West Canal and the intake channel that would not be affected, such effects are expected to be less than significant. Equipment refueling and fluid leakage associated with construction within and near the channel pose some risk of contamination and could result in potential take of any listed fish species that encounter toxic chemicals inadvertently released into the water. As described in Section 3.10, Hydrology and Water Quality, however, the Project would be subject to the SWRCB Construction General Permit. The Construction General Permit requires preparation and implementation of a SWPPP, which must include best management practices designed to

reduce potential impacts to surface water quality throughout construction and operation of the Project, including introduction of pollutants. DWR would be required to submit a Notice of Intent to the SWRCB to be covered by a National Pollutant Discharge Elimination System permit and prepare the SWPPP prior to the beginning of construction. Specifically, the SWPPP must identify the erosion and pollutant control measures that would be implemented to protect water quality and avoid significant adverse effects from erosion, siltation, and introduction of water pollutants. With implementation of the SWPPP required for the Project, proposed activities at the Project would result in **less-than-significant** impacts on special-status fish species and their habitat.

Dyer Dam and Patterson Dam

No special-status fish species are expected to occur at Dyer Dam or at Patterson Dam (Appendix B). Therefore, these components of the Project would result in **no impacts** to special-status fish.

Amphibians and Reptiles

The Project would occur in habitat for California tiger salamander, California red-legged frog, western pond turtle, and San Joaquin coachwhip and could therefore result in direct and indirect impacts on these species (Appendix B). Direct impacts include permanent and temporary habitat loss and potential injury or mortality of individuals. Potential indirect impacts are effects from noise and vibration, increased human presence, and trash and food items. Noise, vibration, and increased human presence from construction could disrupt normal behavioral patterns of any special-status amphibians and reptiles that regularly use or move through affected areas. Trash and food items at work areas could attract bird species that prey on amphibians and reptiles (e.g., American crow [*Corvus brachyrhynchos*]), thus exposing special-status amphibians and reptiles to increased risk of predation. These indirect impacts would be the same for any special-status amphibians and reptiles occurring at or near proposed work areas throughout the Project.

In contrast, potential direct impacts at each dam would be slightly different because of variation in habitat conditions within each study area and slight differences in proposed activities. Therefore, direct impacts on these species at each dam are discussed below.

Clifton Court Forebay Dam

California tiger salamander and California red-legged frog are not expected to occur in most of the Clifton Court Forebay Dam study area (including proposed burrow remediation areas), but the staging areas south of the dam are connected to grassland habitat within dispersal distance of potential California tiger salamander aquatic habitat between the California Aqueduct and Bruns Road (seasonal pool showing on March 2017 aerial imagery), approximately 0.9 miles southwest of the proposed staging area east of the Skinner Fish Facility (Appendix B). If this feature were occupied by tiger salamanders, there is some potential that individuals could cross Byron Highway and venture into the southern staging areas during rain events. It is unlikely that such movements would occur during the Project because staging activities would occur outside the rainy season. Nevertheless, additional species protection measures during construction would be required to completely avoid direct impacts on California tiger salamander individuals (**Mitigation Measure BIO-5**).

Western pond turtle is known to occur in the Clifton Court Forebay Dam study area and has been observed nesting in the northeastern dam embankment where burrow remediation activities would occur (i.e.,

grassland and disturbed habitat west of linear open water feature in Figures 19F and 19G). If conducted during the nesting period, collapse and excavation of burrows in this area could crush, entomb, or physically disturb individual turtles or hatchlings. The likelihood of such impacts during the initial construction period is relatively low because Project activities would occur after the peak nesting activity period for most pond turtles in the northern part of their range (June to July) (Buskirk 2002). Nevertheless, additional species protection measures during construction would be required to completely avoid direct impacts on western pond turtle individuals (**Mitigation Measure BIO-6**).

San Joaquin coachwhip has high potential to occur in grassland and scrub communities in the southern portion of the Clifton Court Forebay Dam study area where staging activities and temporary construction access would occur. If present, individual coachwhips could be injured or killed during clearing of staging areas or by equipment movement during construction, although protection measures for California tiger salamander and California red-legged frog (**Mitigation Measure BIO-5**) would minimize the likelihood of such mortality.

In summary, impacts to California tiger salamander, California red-legged frog, western pond turtle, and San Joaquin coachwhip at Clifton Court Forebay Dam would be potentially significant. However, implementation of **Mitigation Measures BIO-5** and **BIO-6** would avoid, minimize, or mitigate for direct impacts to these special-status species at the Clifton Court Forebay Dam study area; therefore, the Project would result in a **less-than-significant impact with mitigation incorporated**.

Dyer Dam

The Project is likely to directly impact California tiger salamanders and California red-legged frogs at the Dyer Dam study area. Ground disturbance associated with the collapse and excavation of burrows could cause injury or mortality of individual California tiger salamanders and California red-legged frogs using such burrows for refugia. Permanent backfilling of burrows and armoring of portions of the dam faces could also bury or entomb individual California tiger salamanders and California red-legged frogs when rodent burrows are sealed and the face of the dams are armored. Project activities or personnel may also disturb California tiger salamanders and California red-legged frogs that are present in the study area, which may disrupt their normal behavioral patterns, cause the individuals to disperse to different habitat, or prevent dispersal through the study area making them more likely to be predated upon or desiccate. Finally, the Project would result in the loss and modification of existing habitat for both California tiger salamanders and California red-legged frogs to the extent shown in Table 15 and Figure 33, Impacts on California Red-legged Frog and California Tiger Salamander Habitat at Dyer Dam. Impacts on these species would be potentially significant and protection measures would be required (**Mitigation Measure BIO-5**).

Table 15. Project Impacts on California Tiger Salamander and California Red-Legged Frog Habitat

Project Component	Acres Affected	
	Permanent	*Temporary*
Dyer Dam		
Burrow Remediation Area	5.3	0.0
Concrete-lined Ditch and Stormwater Control Feature Repairs	0.1	0.0
Construction Access	0.0	0.3
Sediment Removal	0.0	0.05

Table 15. Project Impacts on California Tiger Salamander and California Red-Legged Frog Habitat

Project Component	Acres Affected	
	Permanent	*Temporary*
Staging Area	0.0	4.7
Dyer Subtotal	*5.4*	*5.1*
Patterson Dam		
Burrow Remediation Area	1.7	0.0
Concrete-lined Ditch and Stormwater Control Feature Repairs	0.02	0.0
Construction Access	0.0	0.3
Drainage Feature Improvements	0.1	0.0
Drainage Feature Improvements – Vegetation Removal	0.0	0.3
Drainage Channel Access	0.1	0.0
Staging Area	0.0	3.7
Patterson Subtotal	*2.0*	*4.3*
Total	**7.4**	**9.4**

Note: Totals may not sum due to rounding.

Marginally suitable aquatic habitat for western pond turtle is present in the drainages within the Dyer Dam study area, and the reservoir is also suitable. If these aquatic features are used by pond turtles, nearby uplands with loose soils and low disturbance levels could be used for nesting and/or overwintering. Proposed burrow remediation in the slope east of the reservoir could result in the same direct impacts on individual turtles and hatchlings as described above for Clifton Court Forebay Dam if the species is present at the time of such activities. No pond turtles have been observed in the study area to date, however, (DWR, unpubl. data), and there are no recent California Natural Diversity Database occurrences nearby. The likelihood of direct impacts on this species is therefore low. Moreover, although impacts on nesting or overwintering individuals of this species would be potentially significant, **Mitigation Measure BIO-6** requires that species protection measures be implemented during construction to completely avoid direct impacts on western pond turtle individuals. Further, **Mitigation Measure BIO-5** requires implementation of protection measures for California tiger salamander and California red-legged frog, which would also protect western pond turtles.

Direct impacts on San Joaquin coachwhip at the Dyer Dam study area are unlikely. The study area is on the periphery of the species' range and there are no nearby California Natural Diversity Database occurrences.

In summary, impacts to California tiger salamander, California red-legged frog, and western pond turtle at Dyer Dam would be potentially significant. However, implementation of **Mitigation Measures BIO-5** and **BIO-6** would avoid, minimize, or mitigate for direct impacts to these special-status species at the Dyer Dam study area; therefore, the Project would result in a **less-than-significant impact with mitigation incorporated**.

Patterson Dam

The Project is likely to directly impact California tiger salamander and California red-legged frog at Patterson Dam. The impacts would be the same as those described above for Dyer Dam except for the lower amount of affected acreage (see Table 15). In addition, there is slightly higher potential for injury or mortality of individual California red-legged frogs than at Dyer Dam because they are known to occur in the low-outlet

drainage affected by proposed channel improvements and require moist areas during the nonbreeding season. In contrast, any breeding adult California tiger salamanders or metamorphosed larvae would have moved to underground refugia in upland areas during the Project and therefore would not be affected by Project activities in or near aquatic habitat (Appendix B). The Project would also result in the loss and modification of existing habitat for both California tiger salamander and California red-legged frog to the extent shown in Table 15 and Figure 34, Impacts on California Red-Legged Frog and California Tiger Salamander Habitat at Patterson Dam. Impacts to these species would be potentially significant and protection measures would be required (**Mitigation Measure BIO-5**).

Marginally suitable aquatic habitat for western pond turtle is present in the drainages within the Patterson Dam study area, and the reservoir is also suitable (Appendix B). If these aquatic features are used by pond turtles, nearby uplands with loose soils and low disturbance levels could be used for nesting and/or overwintering. Proposed drainage channel improvements west of the reservoir and staging activities east of the reservoir could result in the same direct impacts on individual turtles and hatchlings as described above for Clifton Court Forebay Dam if the species is present at the time of such activities. No pond turtles have been observed in the study area to date, however, (DWR, unpubl. data), and there are no recent California Natural Diversity Database occurrences nearby (Appendix B). The likelihood of direct impacts on this species is therefore low. Moreover, although impacts on nesting or overwintering individuals of this species would be potentially significant, species protection measures during construction would be required to completely avoid direct impacts on western pond turtle individuals (**Mitigation Measure BIO-6**). Further, protection measures for California tiger salamander and California red-legged frog (**Mitigation Measure BIO-5**) would also protect western pond turtles.

Direct impacts on San Joaquin coachwhip at Patterson Dam are unlikely. Suitable grassland habitat is present within the study area north of the South Bay Aqueduct, but this habitat would not be impacted by proposed activities (Appendix B).

In summary, direct impacts to California tiger salamander, California red-legged frog, and western pond turtle at Patterson Dam would be potentially significant. However, implementation of **Mitigation Measures BIO-5** and **BIO-6** would avoid, minimize, and/or mitigate for direct impacts to these special-status species at the Patterson Dam study area; therefore, the Project would result in a **less-than-significant impact with mitigation incorporated**.

Birds

The Project would occur in or near habitat for nine special-status bird species—golden eagle (*Aquila chrysaetos*), Swainson's hawk, northern harrier (*Circus hudsonius*), white-tailed kite (*Elanus leucurus*), bald eagle (*Haliaeetus leucocephalus*), burrowing owl, loggerhead shrike (*Lanius ludovicianus*), song sparrow (*Melospiza melodia;* "Modesto" population), and tricolored blackbird (*Agelaius tricolor*). Golden eagle and bald eagle are not expected to nest in the Project site due to lack of suitable trees, but there is a known golden eagle nest approximately 0.5 miles north of Patterson Dam. These species may occasionally forage over the Project site (especially at Dyer and Patterson Dams), but given the availability of high-quality foraging habitat in the region and relatively small amount of foraging habitat that would be affected by the Project, the loss of grassland foraging habitat for golden eagle would be less than significant (the Project would not remove any open-water foraging habitat for bald eagle) (Appendix B). Except for the golden eagle nest north of Patterson Dam, these species are not discussed further in this section. Potential direct impacts on the remaining species include temporary and permanent habitat loss and removal of active

nests during Project activities conducted during the nesting season (i.e., removal of trees or shrubs supporting nests or clearing of herbaceous vegetation for staging areas). Potential indirect impacts include disturbance of active nests from construction-related noise and increased human activity, which could cause adults to abandon eggs or recently hatched young if they perceive such activities as a threat. Potential direct and indirect impacts on special-status birds at each Project site are discussed below.

Clifton Court Forebay Dam

Suitable nesting habitat for Swainson's hawk, white-tailed kite, and loggerhead shrike in the Project site at Clifton Court Forebay Dam is limited to the trees near Sump No. 4 at the northwest end of the dam. There are many trees and shrubs suitable for nesting in the immediate Project vicinity, but none would be removed by Project activities. The trees at Sump No. 4 would be removed in one of the fall seasons during project implementation, outside the nesting season (Appendix B). Therefore, no direct impacts on these species are expected. Indirect impacts on these species could occur in the future if Project activities are initiated during the nesting season and adults nesting nearby perceive such activities as a threat and abandon eggs or recently hatched young. These impacts would be significant and protection measures would be required (**Mitigation Measure BIO-7**).

Burrows suitable for use by burrowing owl occur throughout the Project site within existing grassland habitats and along dam embankments and roadsides. Although focused surveys have not yet resulted in any observations of burrowing owls or their sign (e.g., whitewash, pellets, feathers, and/or bone fragments in or around burrow entrances) within the Project site, owls may occur during the future (Appendix B). In the event that burrowing owls are present on the site at the time of construction, burrow remediation and staging activities could result in mortality to owls through entombment in burrows or could result in abandonment of nests and destruction of eggs, nests, or nestlings. These impacts would be potentially significant and protection measures would be required (**Mitigation Measure BIO-8**).

Suitable nesting habitat for northern harrier, Modesto song sparrow, and tricolored blackbird is abundant in the biological resources study area but relatively limited in the Project site. Grassland, marsh, and ruderal thickets (e.g., perennial pepperweed, mustard, and poison hemlock patches) provide nesting habitat for northern harrier. Mixed stands of freshwater and brackish marsh, riparian thickets (e.g., Himalayan blackberry [*Rubus armeniacus*]) and scrub, and ruderal thickets provide high-quality nesting habitat for Modesto song sparrow and tricolored blackbird. Most of this habitat occurs outside the footprint of proposed activities but some would be affected by Project construction (Appendix B). If conducted during the nesting season, clearing and grubbing of vegetation could result in the loss of active nests of these species. Impacts would be potentially significant and protection measures would be required (**Mitigation Measure BIO-7**).

In summary, impacts to special-status birds potentially nesting in the Clifton Court Forebay Dam study area would be potentially significant. However, implementation of **Mitigation Measure BIO-7** would avoid and minimize impacts to Swainson's hawk, white-tailed kite, loggerhead shrike, northern harrier, Modesto song sparrow, and tricolored blackbird and **Mitigation Measure BIO-8** would avoid, minimize, and/or mitigate for impacts to burrowing owl; therefore, the Project would result in a **less-than-significant impact with mitigation incorporated**.

Dyer Dam

The Project site at Dyer Dam contains limited habitat for most of the above-listed special-status bird species. There are no trees or shrubs suitable for nesting by Swainson's hawk, golden eagle, loggerhead shrike, or white-tailed kite in the Project site at Dyer Dam, and there are not any large stands of freshwater emergent or ruderal vegetation suitable for nesting by tricolored blackbirds. Suitable Swainson's hawk nesting habitat is present within 0.5 miles of the Project site, but Dudek did not observe any Swainson's hawks nesting or foraging in this area during 2021 field surveys (Appendix B). Grassland suitable for northern harrier nesting is present in the biological resources study area, but is limited to the northeastern staging area (due to dense groundcover) in the Project site at Dyer Dam (Appendix B). Use of the staging area during the nesting season could result in direct impacts. Any harriers nesting on surrounding grassland during such activities could be indirectly impacted. These impacts would be significant and protection measures would be required (**Mitigation Measure BIO-7**).

Burrows suitable for use by burrowing owl occur throughout the Project site within existing grassland habitats and along dam embankments and roadsides. Although focused surveys did not detect burrowing owls or their sign (e.g., whitewash, pellets, feathers, and/or bone fragments in or around burrow entrances) within the Project site, owls may occur during the future (Appendix B). In the event that burrowing owls are present on the site at the time of construction, burrow remediation and staging activities could result in mortality to owls through entombment in burrows or could result in abandonment of nests and destruction of eggs, nests, or nestlings. These impacts would be significant and protection measures would be required (**Mitigation Measure BIO-8**).

In summary, impacts to northern harriers potentially nesting and burrowing owls potentially using burrows in the Dyer Dam study area would be potentially significant. However, implementation of **Mitigation Measure BIO-7** would avoid, minimize, and/or mitigate for impacts to northern harrier, and **Mitigation Measure BIO-8** would avoid, minimize, and/or mitigate for impacts to burrowing owl; therefore, the Project would result in a **less-than-significant impact with mitigation incorporated**.

Patterson Dam

The Project site at Patterson Dam contains limited habitat for most of the above-listed special-status bird species. There are no trees or shrubs suitable for nesting by golden eagle, Swainson's hawk, loggerhead shrike, or white-tailed kite in the Project site at Patterson Dam, and there are not any large stands of freshwater emergent or ruderal vegetation suitable for nesting by tricolored blackbirds. Golden eagles are known to nest 0.5 miles north of the Project site, but construction would be initiated after the February egg-laying period and the adults would not be able to see or hear Project construction because of intervening hills. Therefore, indirect disturbance impacts on nesting golden eagles are not expected. Suitable Swainson's hawk nesting habitat is present within 0.5 miles of the Project site, but Dudek did not observe any Swainson's hawks nesting or foraging in this area during 2021 field surveys. Northern harrier nesting habitat is present in the eastern staging area (due to dense groundcover) in the Project site at Patterson Dam (Appendix B). Use of the staging area during the nesting season could result in direct impacts. Any harriers nesting on surrounding grassland during such activities could be indirectly impacted. These impacts would be significant and protection measures would be required (**Mitigation Measure BIO-7**).

Burrows suitable for use by burrowing owl occur in the eastern dam embankment and staging area within the Project site. Although focused surveys did not detect burrowing owls or their sign (e.g., whitewash, pellets, feathers, and/or bone fragments in or around burrow entrances) within the Project site, owls may occur during

the future (Appendix B). In the event that burrowing owls are present on the site at the time of construction, burrow remediation and staging activities could result in mortality to owls through entombment in burrows or could result in abandonment of nests and destruction of eggs, nests, or nestlings. These impacts would be significant and protection measures would be required (**Mitigation Measure BIO-8**).

In summary, impacts to northern harriers potentially nesting and burrowing owls potentially using burrows in the Patterson Dam study area would be potentially significant. However, implementation of **Mitigation Measure BIO-7** would avoid, minimize, and/or mitigate for impacts to northern harrier, and **Mitigation Measure BIO-8** would avoid, minimize, and/or mitigate for impacts to burrowing owl; therefore, the Project would result in a **less-than-significant impact with mitigation incorporated**.

Mammals

The Project would occur in habitat for San Joaquin kit fox and American badger (*Taxidea taxus*). Wildlife surveys in 2021 did not detect either species in the Project site, although several burrows with American badger sign have been observed within the Clifton Court Forebay Dam and Patterson Dam study areas and game cameras recorded a single badger near the South Bay Aqueduct overchute approximately 0.4 miles south of Dyer Reservoir in April 2021. Future detection of kit fox during ongoing game camera surveys for DWR's Delta Field Division is unlikely due to the rarity of the species in this part of its range, but their potential presence cannot be discounted until the survey effort is finished. American badger presence within the Project site similarly cannot be discounted, especially during future burrow remediation activities, without additional field confirmation. The Project could therefore result in direct and indirect impacts on these species, if found during future surveys (Appendix B).

Clifton Court Forebay Dam

Habitat and burrows suitable for use by San Joaquin kit fox and American badger occur throughout the Project site at Clifton Court Forebay Dam within existing grassland habitats and along dam embankments and roadsides. Although these species are highly mobile and can avoid construction equipment, any individuals occupying dens at the time of construction—including kit fox pups in natal dens—could be injured or killed by construction activities (Appendix B). These impacts would be significant and protection measures would be required (**Mitigation Measures BIO-9** and **BIO-10**).

Potential indirect impacts on San Joaquin kit fox and American badger are effects from noise, vibration, increased human presence, and trash and food items. Noise, vibration, and increased human presence from construction could disturb these species when denning near construction areas, disrupt breeding activities where natal dens are present, and reduce reproductive success. Trash and food items at construction sites could attract San Joaquin kit foxes, thus exposing them to dangers such as increased risk of predation from other carnivores (e.g., coyotes) that may also be attracted by these items. These impacts would be significant and protection measures would be required (**Mitigation Measures BIO-9** and **BIO-10**).

Dyer Dam and Patterson Dam

Potential impacts on San Joaquin kit fox and American badger at Dyer Dam and Patterson Dam would be the same as those described above for Clifton Court Forebay Dam. The likelihood of indirect impacts on American badger is higher at Patterson Dam because of the presence of several burrows with badger sign within 100 feet of the Project boundary (Appendix B).

In summary, impacts to San Joaquin kit fox and American badger potentially denning in the study area at all three dams would be potentially significant. However, implementation of **Mitigation Measure BIO-9** would avoid, minimize, and/or mitigate for impacts to San Joaquin kit fox, and **Mitigation Measure BIO-10** would avoid, minimize, and/or mitigate for impacts to American badger; therefore, the Project would result in a **less-than-significant impact with mitigation incorporated**.

Mitigation Measures

The Project could have a substantial adverse effect on special-status species by removing special-status plant occurrences or causing mortality of special-status wildlife species that contributes to ongoing population declines; these impacts would be significant. **Mitigation Measures BIO-1 through BIO-10,** listed below, would reduce impacts on special-status species to below a level of significance. Impacts would be **less than significant with mitigation incorporated**.

BIO-1: **Avoid or Minimize Impacts on Native Plants and Wildlife.** To avoid or minimize impacts on plants and wildlife, the following general measures shall be implemented throughout the Project site:

- Approved Biologists. At least 15 days prior to start of Project activities, the California Department of Water Resources (DWR) shall submit the names and credentials of personnel seeking to act as approved biologists to the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) for review. Biologists shall have appropriate training and experience with the species for which they are seeking approval. All biologists shall be approved in writing by USFWS and CDFW prior to conducting proposed Project activities.
- Environmental Awareness Training. An approved biologist shall conduct environmental awareness training for all individuals working on the Project before work begins. The training shall cover the life history, habitat requirements, and conservation measures for potentially affected species. The training shall also include information on federal and state regulatory protections, restrictions, and guidelines that must be followed by crews to avoid and minimize impacts to threatened and endangered species and their habitat. Upon completion of training, crews shall sign a form stating that they attended the training and understand all conservation measures. If new personnel are added to the Project, the new personnel shall receive the training prior to starting work.
- Approved Biologist Authority. An approved biologist shall be available to inspect all Project activities to ensure compliance with avoidance and minimization measures and shall monitor all ground-disturbing activities. Approved biologists shall perform weekly surveys of the Project area to ensure appropriate application of all general and species measures. Approved biologists shall have the authority to stop work if a listed species is encountered within active work areas or activities may result in take of listed species.
- Speed Limits. Project-related vehicles shall observe a daytime speed limit of 15 mph, except on county roads and state and federal highways. Emergency vehicles are exempt from these restrictions in emergency situations. Any road mortality/injury of any animal that may be a listed species observed by workers shall be reported to an approved biologist who will inspect the remains and notify the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife within 24 hours if it is determined to be a listed species. At a minimum, the notification will include clear photographs that will aid in immediate identification.
- Off-Road Traffic Prohibition. Off-road traffic outside of designated Project areas shall be prohibited.

- Trash Abatement. All food-related trash items, such as wrappers, cans, bottles, and food scraps, shall be disposed of in a closed container and removed from the Project site daily.
- Spill Prevention. A Spill Prevention Control and Countermeasure Plan shall be prepared prior to Project implementation. All machinery shall be properly maintained and cleaned to prevent spills and leaks. Any spills or leaks from equipment shall be reported and cleaned up in accordance with applicable local, state, and/or federal regulations.
- Fire Prevention. A Fire Prevention and Suppression Plan shall be prepared prior to the start of Project activities.
- Reporting. A final report containing details of the construction activities and any observations of listed species shall be submitted to the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife within 30 days of Project completion. The report shall document the number of each species encountered, and type and amount of any known take, as defined by the federal Endangered Species Act and California Endangered Species Act

BIO-2: **Avoid, Minimize, and Mitigate Impacts to Special-Status Plants.**

Permanent and temporary impacts to long-styled sand-spurrey (California Rare Plant Rank [CRPR] 1B.2) individuals would result from implementation of the Project at Clifton Court Forebay Dam; these impacts are significant and require mitigation.

Compensatory mitigation for permanent impacts to long-styled sand-spurrey shall include the following:

a. The protection, through land acquisition or a conservation easement, of an occurrence of equal or greater size and health. Or,
b. If it is not feasible to acquire and preserve a known occurrence of a special-status plant to be impacted, suitable unoccupied habitat capable of supporting the species shall be acquired, and used to create a new population at a 1:1 ratio. For creation of an occurrence, the following considerations shall also be met:
    - A special-status plant mitigation plan shall be prepared by a qualified biologist and include (1) seed/propagule collection methods, (2) success criteria, (3) 5 years of maintenance and monitoring, (4) and adaptive management approaches. The special-status plant mitigation plan shall be implemented to document the success of creation of the new plant occurrence.
    - Prior to unavoidable and permanent disturbance to an occurrence of a special-status plant species, propagules shall be collected from the occurrence to be disturbed. This may include seed collection, cuttings, or seed-bearing topsoil salvage, and these propagules shall be used to establish a new population on suitable, unoccupied habitat as described above. Transplantation of whole plants may be attempted, but shall not be used as the primary means for creating a new occurrence.
    - Creation of new occurrences shall require identification of suitable locations and habitats, as well as conducting literature review to determine appropriate and viable propagation or planting techniques for the species, appropriate seed-collection techniques, and seeding rates.

For temporary impacts to long-styled sand-spurrey, compensatory mitigation for temporary impacts shall include restoration of the occurrence on site at a 1:1 ratio. A restoration plan, which may be

incorporated into the special-status plant mitigation plan, if applicable, shall be prepared. The restoration plan shall include (1) seed/propagule collection methods, (2) success criteria, and (3) 5 years of maintenance and monitoring.

Additionally, a qualified California Department of Water Resources (DWR) biologist (qualified biologist) shall be present prior to and during construction to ensure avoidance of impacts on special-status plant species and special-status natural communities by flagging the population or natural community areas and/or allowing adequate buffers.

BIO-3 **Avoid, Minimize, and Mitigate Impacts to Sensitive Natural Communities.** The Project would result in permanent and temporary impacts to sensitive vegetation communities at Clifton Court Forebay Dam and Dyer Dam; these impacts are significant and require mitigation.

All temporary impacts to sensitive vegetation communities shall be restored on site. Restoration shall include recontouring and seeding and/or planting with native plants that comprise the sensitive natural community impact. Prior to seeding and/or planting the temporary ground-disturbance areas, the approved biologist shall review the seeding/plant palette to ensure that seeding/planting does not contain non-native or invasive plant species, as identified in the most recent version of the California Invasive Plant Inventory for the region. The California Department of Water Resources (DWR) shall ensure recontouring and revegetation of disturbed portions of sensitive vegetation communities in areas temporarily affected by construction within 1 year of demobilization by the contractor during the appropriate seasonal period for revegetation.

Mitigation for permanent impacts to sensitive natural communities shall occur either at a mitigation bank, within an in-lieu fee program, or through on-site or off-site mitigation, and shall occur at a ratio no less than 1:1 for the impacts to sensitive natural communities. If a mitigation bank or in-lieu fee program is not utilized and DWR proceeds with on-site or off-site mitigation, a sensitive natural communities mitigation plan shall be prepared that outlines the mitigation. This mitigation plan shall include (1) mitigation site selection, (2) seeding and/or planting palette, (3) success criteria, and (3) 5-year maintenance and monitoring plan.

BIO-4: **Minimize Temporary Impacts on Potential Vernal Pool Fairy Shrimp Habitat.** Prior to constructing the temporary toe access road adjacent to potential vernal pool fairy shrimp habitat at Clifton Court Forebay (i.e., 5.36-acre wetland outboard of Stations 32 + 00 to 64 + 00), an approved biologist shall direct the placement of erosion control fencing along the downstream (southern) perimeter of the access road to avoid sedimentation of adjacent habitat. The biologist shall also direct the placement of rinsed gravel and covering with geotextile fabric over any depressions overlapping the road's footprint to minimize damage to the soils and protect existing contours. Erosion control fencing and temporary fill shall be removed within 72 hours of the completion of burrow remediation activities at this location.

BIO-5: **Avoid and Minimize Impacts to California Tiger Salamander and California Red-legged Frog**. This mitigation measure identifies two separate sets of requirements—one for Clifton Court Forebay Dam and the other for both Dyer Dam and Patterson Dam.

Clifton Court Forebay Dam: The following measure shall be implemented to avoid take of individual California tiger salamanders at Clifton Court Forebay Dam:

- California Tiger Salamander Take Avoidance. Within 30 days prior to clearing existing vegetation for staging areas south of the dam (i.e., between Skinner Fish Facility and intake channel), an approved biologist shall survey for the presence of potential underground refugia for California tiger salamander (i.e., small mammal burrows). If potential refugia are observed, they shall be covered with plywood to prevent collapse from temporary heavy equipment traffic. An approved biologist shall monitor and guide the placement of plywood over burrows.

  After the completion of burrow protection measures, temporary exclusion fencing shall be installed around the staging areas to prevent amphibians from entering. Exclusion fencing shall be a minimum of 2.5 feet tall and the bottom 6 inches shall be buried to prevent amphibians from crawling under the fence. During work hours, a portion of the fencing around upland staging areas may be removed to facilitate Project activities, but must be reinstalled at the end of the day and the bottom secured with sandbags or other heavy material. When sections are removed, the section shall be reviewed for resting or hiding species prior to removal. Exclusion fencing shall be removed within 72 hours of completion of work.

Dyer Dam and Patterson Dam: The following measures shall be implemented to avoid and minimize impacts on California tiger salamander and California red-legged frog at Dyer Dam and Patterson Dam:

- Work Window. The Project shall be performed during daylight hours, and any work in wetted areas shall occur between May 1 and October 31.
- Access Road Burrow Protection. Any burrows or large cracks in the ground that may be traversed by heavy equipment traffic over unimproved access roads shall be covered with minimum 5/8-inch-thick plywood to prevent burrow collapse.
- Morning Inspections. An approved biologist shall survey the work area for California red-legged frogs and California tiger salamanders each morning prior to Project activities. Any California red-legged frog or California tiger salamander found in the work area shall be captured, transported to a predetermined relocation site, and released. Only approved biologists shall capture and handle frogs or salamanders. The biologist shall monitor any relocated frog or salamander until such time that the animal is safe from any obvious or immediate hazard or danger.
- Amphibian Exclusion Fencing. Exclusion fencing shall be installed between work areas and adjacent habitat for California red-legged frog and California tiger salamander. The fence shall be a minimum of 2.5 feet tall and the bottom 6 inches shall be buried to prevent amphibians from crawling under the fence. Placement and installation of fencing around drainage work areas shall be coordinated with any sediment control fencing requirements of other resource agency permits. During work hours, a portion of the fencing around upland staging areas may be removed to facilitate Project activities, but must be reinstalled at the end of the day and the bottom secured with sandbags or other heavy material. When sections are removed, the section shall be reviewed for resting or hiding species prior to removal. The exclusion fencing shall be maintained until all construction activities are completed and removed within 72 hours of the completion of work.

- Vegetation Removal Inspections. Vegetation and sediment removed from drainages shall be carefully placed in the dump truck bed and examined for frogs and salamanders by approved biologists prior to disposal.
- Impacts on areas determined to be habitat for California tiger salamander and California red-legged frog shall be fully mitigated, in consultation with the U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife.

BIO-6: **Avoid and Minimize Impacts to Western Pond Turtle.** To minimize impacts on western pond turtles known to nest at the northeastern corner of Clifton Court Forebay, burrow remediation activities adjacent to the drainage along the toe access road (Stations 230+00 to 262+00, approximately) shall occur from May 1 to June 15 and September 1 to October 15 to avoid the peak nesting period (mid-June to August) and minimize mortality of hatchlings overwintering in nest sites (approximately November to April).

BIO-7: **Avoid and Minimize Impacts to Special-Status and Non-Special-Status Birds.** The following measures shall be implemented throughout the Project to avoid and minimize impacts to nesting birds, including special-status species:

- A qualified biologist shall conduct preconstruction surveys for nesting birds no more than 7 days prior to any construction activity involving vegetation removal (i.e., grubbing of herbaceous vegetation and grass, removal of trees or shrubs) during the nesting season (March 15 to August 31). Surveys shall cover the construction footprint and suitable habitat within 100 feet for all birds, 300 feet for raptors (including white-tailed kite and northern harrier) and tricolored blackbird, and 0.25 miles for Swainson's hawk. If the biologist does not find any nests but suitable habitat would be removed, the biologist shall conduct a final survey of such habitat within 48 hours of the activity to confirm the absence of nests (habitat outside the direct impact area would not need to be surveyed). If a lapse in Project-related activities of 15 days or longer occurs, another preconstruction survey shall be conducted. Any construction activity that occurs from September 1 to March 14, outside the nesting season, shall not require preconstruction nesting bird surveys.
- If nests are located during preconstruction surveys, impacts shall be minimized by establishing an appropriate nondisturbance buffer zone around active nests or vegetation patches supporting nesting birds. The size of the buffer shall be determined by the biologist based on the species' sensitivity to disturbance, time of year, and planned work activities in the vicinity. The buffer shall remain in effect until the nest is no longer active. Buffers for Swainson's hawk nests shall be based on the guidance in the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (SHTAC 2000).

BIO-8: **Avoid and Minimize Impacts to Burrowing Owl.** The following measures shall be implemented throughout the Project to avoid and minimize impacts to burrowing owl:

- A qualified biologist shall conduct a burrowing owl take avoidance survey no more than 14 days prior to the initiation of any construction activities within burrowing owl habitat areas as identified during 2021 field surveys (Appendix B). Surveys shall cover the construction footprint and suitable habitat within 250 feet.
- If an active burrow is found during the nesting season (March 15 to August 31), clear, visible markers will be placed on the roadways to clearly demarcate the burrow location so vehicles

traveling either direction on the road and workers at the project site will avoid disturbing the area. If the burrow is in a proposed work area and work cannot be postponed until after the nesting season, a no-activity zone will be established by a qualified biologist and will at a minimum be 250-feet radius from the occupied burrow, following recommendations in the CDFW Staff Report on Burrowing Owl Mitigation (CDFG 2012).

- If burrowing owls are present at the site during the non-breeding period, a qualified biologist will establish a no-activity zone of at least 160 feet.
- If an effective no-activity zone cannot be established in either case, a qualified biologist will develop a site-specific plan (i.e., a plan that considers the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the owls, and the dissimilarity of the proposed activity with background activities) to minimize the potential to affect the reproductive success of the owls.

BIO-9: **Avoid and Minimize Impacts to San Joaquin Kit Fox.** Any potential kit fox dens identified during 2021 field surveys (Appendix B) that are on California Department of Water Resources (DWR) property and located within 50 feet of the Project site shall be temporarily blocked with burlap bags or filled with soil (after three consecutive nights of tracking or game camera monitoring have confirmed that the den is not currently in use) to prevent access to these dens during Project activities. If a den is determined to be a natal den, then exclusion may not occur until the family has moved to another den location. A 100-foot exclusion zone shall be marked around any known kit fox dens within the survey area using lathe and flagging. The U.S. Fish and Wildlife Service (USFWS) Standardized Recommendations for the Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (January 2011) or the latest guidance from the USFWS shall be referenced when implementing this measure.

BIO-10: **Avoid and Minimize Impacts to American Badger.** Within 14 days prior to the initiation of Project activities within 100 feet of potential badger dens identified during 2021 field surveys (Appendix B) and concurrent with the take avoidance surveys for burrowing owl, a qualified biologist shall perform a survey to identify the presence of active or inactive American badger dens. If this species is not found, no further mitigation shall be required. If badger dens are identified within the construction footprint during the surveys or afterwards, dens shall be inspected and closed as follows:

- When unoccupied dens are encountered outside of work areas but within 100 feet of proposed activities, vacated dens shall be inspected to ensure they are empty and temporarily covered using plywood sheets or similar materials. If badger occupancy is determined at a given site within the work area, work activities at that site shall be halted. Depending on the den type, reasonable and prudent measures to avoid harming badgers shall be implemented and may include seasonal limitations on Project construction near the site (i.e., restricting the construction period to avoid spring–summer pupping season), and/or establishing a construction-exclusion zone around the identified site, or resurveying the den at a later time to determine species presence or absence.
- Badgers may be passively relocated using burrow exclusion (e.g., installing one-way doors on burrows) or similar California Department of Fish and Wildlife– (CDFW-) approved exclusion methods. In unique situations it might be necessary to actively relocate badgers (e.g., using

live traps) to protect individuals from potentially harmful situations. Such relocation shall be performed with advance CDFW coordination and concurrence.

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

The impacts to the vegetation community alliances and land covers within the Project site are shown on Figures 19A through 19J, 20, and 21.

Clifton Court Forebay Dam

Direct Impacts

The Project would result in the following permanent direct impacts to sensitive vegetation communities at Clifton Court Forebay Dam:

- 0.05 acres of the *Allenrolfea occidentalis/Distichlis spicata* Provisional Association
- 0.46 acres of the *Allenrolfea occidentalis* Association
- 0.03 acres of the *Alnus rubra/Salix lasiolepis/Rubus* spp. Association
- 0.06 acres of *Salix gooddingii* Association

The Project would result in the following temporary direct impacts to sensitive vegetation communities at Clifton Court Forebay Dam:

- 0.74 acres of *Allenrolfea occidentalis/Distichlis spicata* Provisional Association
- 1.52 acres of *Allenrolfea occidentalis* Association
- 0.01 acres of *Salix gooddingii* Association

Direct impacts to these sensitive natural communities would be significant and protection measures would be required (Mitigation Measure BIO-3).

Indirect Impacts

Construction-related indirect impacts could affect sensitive natural communities. Potential short-term or temporary indirect impacts to sensitive natural communities resulting from construction activities include the generation of fugitive dust; changes in hydrology resulting from construction, including sedimentation and erosion; the release of chemical pollutants; and adverse effects of invasive plant species. Potential short-term or temporary indirect impacts to sensitive natural communities would be significant and protection measures would be required (Mitigation Measure BIO-3).

Long-term indirect impacts to sensitive vegetation communities associated with O&M activities would not likely result in significant impacts. All O&M activities are temporary and occur within the existing disturbance footprint. The proposed O&M activities would be short in duration and would not result in substantial changes to the landscape once completed (e.g., there would be no change or very limited changes in human

activity, soil erosion, and hydrology). No significant long-term indirect impacts would occur to sensitive vegetation communities from O&M activities.

Dyer Dam

Direct Impacts

The Project at Dyer Dam would result in 3.43 acres of permanent impacts and 2.34 acres of temporary impacts to the needle grass–melic grass grassland (*Nassella* spp.–*Melica* spp.) Alliance, which is considered a sensitive vegetation community under CEQA. Direct impacts to these sensitive natural communities would be significant and protection measures would be required (**Mitigation Measure BIO-3**).

Indirect Impacts

Construction-related short-term and long-term operation-related indirect impacts to sensitive vegetation communities as a result of the Project at Dyer Dam would be the same as those at Clifton Court Forebay Dam. Potential short-term or temporary indirect impacts to sensitive natural communities would be significant and protection measures would be required (**Mitigation Measure BIO-3**).

Patterson Dam and Reservoir

Direct Impacts

The Project at Patterson Dam would not result in direct impacts to sensitive natural communities.

Indirect Impacts

Construction-related short-term and long-term operation-related indirect impacts to sensitive vegetation communities as a result of the Project at Patterson Dam would be the same as those at Clifton Court Forebay Dam. Potential short-term or temporary indirect impacts to sensitive natural communities would be significant and protection measures would be required (**Mitigation Measure BIO-3**).

Mitigation Measures

The Project could have a substantial adverse effect on sensitive natural communities; these impacts would be significant. **Mitigation Measure BIO-3**, listed in Section 3.4(a), would avoid, minimize, and/or mitigate for impacts to sensitive natural communities; therefore, impacts would be **less than significant with mitigation incorporated**.

c) Would the Project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Clifton Court Forebay Dam

Direct Impacts

Impacts to potentially jurisdictional waters within the Clifton Court Forebay Dam study area are shown on Figures 22A through 22J, 25A through 25J, and 28A through 28J.

U.S. Army Corps of Engineers

The Project at Clifton Court Forebay Dam would result in permanent regulated impacts to 0.17 acres of non-wetland waters of the United States under the jurisdiction of USACE, shown within Sub Area A of Figure 22D. These impacts would be significant and protection measures would be required (**Mitigation Measure BIO-11**).

The impacts proposed within the remainder of the study area (not including Sub Area A) depicted on Figures 22A through 22J would not be considered regulated activities by USACE. Section 404(f)(1)(B) of the Clean Water Act exempts from section 404 permit requirements the discharge of dredged or fill material into waters of the United States "for the purpose of maintenance, including emergency reconstruction of recently damaged parts, or currently serviceable structures such as dikes, dams, levees, groins, riprap, breakwaters, causeways, and bridge abutments or approaches, and transportation structures."

The impacts proposed within Sub Area A of Figure 22D are regulated by USACE under the purview of Section 10 of the Rivers and Harbors Act of 1899 and are not exempt from USACE permitting requirements.

Regional Water Quality Control Board

The Project at Clifton Court Forebay Dam would result in permanent regulated impacts to 0.17 acres of non-wetland waters of the state under the jurisdiction of RWQCB, shown within Sub Area A of Figure 25D. These impacts would be significant and protection measures would be required (**Mitigation Measure BIO-11**).

The impacts proposed within the remainder of the study area (not including Sub Area A) depicted on Figures 25A through 25J would not require section 401 water quality certification since the work is exempt from section 404 permit requirements and no federal permit from USACE is being sought.

California Department of Fish and Wildlife

The Project at Clifton Court Forebay Dam would result in permanent impacts to 0.03 acres of riparian habitat and 0.17 acres of streambed under the jurisdiction of CDFW. These impacts would be significant and protection measures would be required (**Mitigation Measure BIO-11**).

Indirect Impacts

Construction-related indirect impacts could affect state and federally jurisdictional waters of the United States/state. Potential short-term or temporary indirect impacts to jurisdictional waters resulting from construction activities include the generation of fugitive dust; changes in hydrology resulting from construction, including sedimentation and erosion; the release of chemical pollutants; and adverse effects of invasive plant species. Potential short-term or temporary indirect impacts to jurisdictional waters would be significant and protection measures would be required (**Mitigation Measure BIO-11**).

Long-term indirect impacts to jurisdictional waters associated with O&M activities would not likely result in significant impacts. All O&M activities are temporary and occur within the existing disturbance footprint. The proposed O&M activities would be short in duration and would not result in substantial changes to the landscape once completed (e.g., there would be no change or very limited changes in human activity, soil erosion, and hydrology). No significant long-term indirect impacts would occur to sensitive vegetation communities from O&M activities.

Dyer Dam

Impacts to jurisdictional waters from the Project at Dyer Dam are shown on Figures 23, 26, and 29.

Direct Impacts

U.S. Army Corps of Engineers

The Project at Dyer Dam would result in permanent impacts to 0.001 acres of non-wetland waters of the United States under the jurisdiction of USACE and temporary impacts to 0.01 acres of non-wetland waters of the United States under the jurisdiction of USACE. These impacts would be significant and protection measures would be required (**Mitigation Measure BIO-11**).

Regional Water Quality Control Board

The Project at Dyer Dam would result in permanent impacts to 0.02 acres of non-wetland waters of the state under the jurisdiction of RWQCB and temporary impacts to 0.07 acres of impacts to non-wetland waters of the state under the jurisdiction of RWQCB. These impacts would be significant and protection measures would be required (**Mitigation Measure BIO-11**).

California Department of Fish and Wildlife

The Project at Dyer Dam would result in permanent impacts to 0.02 acres of streambed under the jurisdiction of CDFW and temporary impacts to 0.07 of streambed under the jurisdiction of CDFW. These impacts would be significant and protection measures would be required (**Mitigation Measure BIO-11**).

Indirect Impacts

Construction-related short-term and long-term operation-related indirect impacts to jurisdictional waters as a result of the Project at Dyer Dam would be the same as those at Clifton Court Forebay Dam. Potential short-term or temporary indirect impacts to jurisdictional waters would be significant and protection measures would be required (**Mitigation Measure BIO-11**).

Patterson Dam

Impacts to jurisdictional waters from the Project at Patterson Dam are shown on Figures 24, 27, and 30.

Direct Impacts

U.S. Army Corps of Engineers

The Project at Patterson Dam would result in permanent impacts to 0.08 acres of wetlands and 0.03 acres of non-wetland waters of the United States under the jurisdiction of USACE and temporary impacts to 0.22 acres of wetlands under the jurisdiction of USACE. These impacts would be significant and protection measures would be required (**Mitigation Measure BIO-11**).

Regional Water Quality Control Board

The Project at Patterson Dam would result in permanent impacts to 0.08 acres of wetlands and 0.11 acres of non-wetland waters of the state under the jurisdiction of RWQCB and temporary impacts to 0.22 acres of wetlands and 0.02 acres of non-wetland waters of the state under the jurisdiction of RWQCB. These impacts would be significant and protection measures would be required (**Mitigation Measure BIO-11**).

California Department of Fish and Wildlife

The Project at Patterson Dam would result in permanent impacts to 0.08 acres of riparian habitat and 0.11 acres of streambed under the jurisdiction of CDFW and temporary impacts to 0.22 acres of riparian habitat and 0.02 acres of streambed under the jurisdiction of CDFW. These impacts would be significant and protection measures would be required (**Mitigation Measure BIO-11**).

Indirect Impacts

Construction-related short-term and long-term operation-related indirect impacts to jurisdictional waters as a result of the Project at Patterson Dam would be the same as those at Clifton Court Forebay Dam. Potential short-term or temporary indirect impacts to jurisdictional waters would be significant and protection measures would be required (**Mitigation Measure BIO-11**).

Mitigation Measures

The Project could have a substantial adverse effect on federally and state-protected wetlands; these impacts would be significant. **Mitigation Measure BIO-11**, listed below, would avoid, minimize, and/or mitigate for impacts to protected wetlands; therefore, impacts would be **less than significant with mitigation incorporated**.

BIO-11 **Avoid, Minimize, and Mitigate Impacts to Jurisdictional Waters.** All temporary impacts to jurisdictional waters of the United States/state shall be restored on site. Restoration shall include recontouring and erosion control with a native seed mix, where applicable. Prior to seeding temporary ground-disturbance areas, the approved biologist shall review the seeding palette to ensure that no seeding of non-native or invasive plant species, as identified in the most recent version of the California Invasive Plant Inventory for the region, will occur. The California Department of Water Resources (DWR) shall ensure recontouring and revegetation of disturbed portions of jurisdictional areas in areas temporarily affected by construction prior to demobilization by the contractor at the end of Project construction.

Compensatory mitigation for permanent impacts shall occur either at a mitigation bank, within an in-lieu fee program, or through on-site or off-site permittee-responsible mitigation, and shall occur at a ratio no less than 1:1 for the impacts to jurisdictional waters or at a ratio determined in the jurisdictional waters permits. If a mitigation bank or in-lieu fee program is not utilized and DWR proceeds with permittee-responsible mitigation, a waters mitigation and monitoring plan shall be prepared that outlines the compensatory mitigation in compliance with requirements from applicable regulatory agencies (i.e., U.S. Army Corps of Engineers [USACE], Regional Water Quality Control Board [RWQCB], and California Department of Fish and Wildlife [CDFW]). Suitable

mitigation lands provided for species and vegetation communities may be used for jurisdictional waters of the United States/state mitigation.

If required, the wetland mitigation and monitoring plan shall be developed in coordination with CDFW, USACE, and RWQCB and shall detail mitigation and monitoring obligations for impacts to wetlands and other waters as a result of construction activities. The plan shall quantify the total acreage affected; annual success criteria; mitigation sites; monitoring and reporting requirements; and site-specific plans to compensate for wetland or other waters losses resulting from the Project.

d) Would the Project 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?

Clifton Court Forebay Dam

Wildlife movement through and around the Project site at Clifton Court Forebay Dam is already constrained by the abundance of human-made water delivery features and associated infrastructure. The Project site is not located in any critical habitat linkages identified as regionally important for wildlife movement and habitat connectivity. The Project would not create any new barriers (e.g., roads, structures) that would permanently alter existing wildlife movement patterns. Any wildlife that currently move through the area are expected to have adapted to the moderate amount of human activity that already occurs on and adjacent to the Project site at Clifton Court Forebay Dam, and the Project would not significantly change this condition. Resident fish or wildlife that regularly move through the area while foraging and dispersing may temporarily alter their movement patterns to avoid increased noise, vibration, and human activity generated by the Project. Similarly, migratory wildlife (e.g., waterbirds) may avoid using areas exposed to increased disturbance activity as stopover habitat during activities conducted during a fall or spring migration period. Such impacts would be temporary, however, and both native and migratory wildlife are expected to resume normal movement patterns soon after Project construction is completed. Therefore, impacts from Project activities at Clifton Court Forebay Dam on wildlife movement would be **less than significant**.

Dyer Dam and Patterson Dam

The Project at Dyer Dam and Patterson Dam would occur in a critical habitat linkage identified as regionally important for wildlife movement and habitat connectivity (Penrod et al. 2013), but would not interfere substantially with wildlife movement through this linkage. The Project would not create any new barriers (e.g., roads, structures) that would permanently alter existing wildlife movement patterns. Resident fish or wildlife that regularly move through the area while foraging and dispersing may temporarily alter their movement patterns to avoid increased noise, vibration, and human activity generated by the Project. Similarly, migratory wildlife (e.g., waterbirds) may avoid using areas exposed to increased disturbance activity as stopover habitat during activities conducted during a fall or spring migration period. Such impacts would be temporary, however, and both native and migratory wildlife are expected to resume normal movement patterns soon after Project construction is completed. Therefore, impacts from Project activities at Dyer Dam and Patterson Dam on wildlife movement would be **less than significant**.

e) Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The Project does not conflict with the East County Area Plan (Alameda County 1994a), which is part of the Alameda County General Plan. The goal of the plan's Watershed section is to protect the watershed land from the direct and indirect effects of development. The goal of the plan's Biological Resources section is to preserve a variety of plant communities, wildlife habitat, and wetlands, and to maintain biological diversity. The Project would comply with the goals and objectives of the East County Area Plan.

Alameda County Ordinance No 0-2004-23 regulates tree removal within the county right-of-way; however, Project activities would only occur on state-owned land and not within the county right-of-way. The Project would therefore not conflict with any local policies or ordinances protecting biological resources and there would be **no impact**.

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

The Project site is not covered by an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

The East Alameda County Conservation Strategy (Conservation Strategy) is a voluntary conservation plan that was collaboratively developed by local and regulatory agencies between 2007 and 2009 (ICF 2010). The Conservation Strategy is not a formal habitat conservation plan or natural community conservation plan in that it does not have a corresponding programmatic incidental take permit from USFWS or CDFW. The primary goal of Conservation Strategy is to develop a coordinated and biologically sound approach to mitigation that will both support conservation and/or recovery of listed species and streamline state and federal permitting by providing guidance on avoidance, minimization, and mitigation for projects. The Project site at Dyer Dam and Patterson Dam is in the Conservation Strategy planning area and the Project is generally consistent with the strategy. However, since the Conservation Strategy is a non-binding document that has not been formally adopted by any local or regional agencies, any conflicts with the Conservation Strategy cannot be considered an impact under CEQA. Therefore, the Project would have **no impact** on any approved local, regional, or state habitat conservation plans.

3.5 Cultural Resources

	Potentially Significant Impact	Less-Than-Significant Impact 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 pursuant to §15064.5?	☐	☐	☒	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

Setting

Information presented here is summarized from the following technical reports:

- Archaeological Resources Inventory Report for the Delta Dams Rodent Burrow Remediation Project at Clifton Court Forebay, Contra Costa County, California (Confidential Appendix C1),
- Archaeological Resources Inventory Report for the Delta Dams Rodent Burrow Remediation Project at Dyer Reservoir and Dam and Patterson Reservoir and Dam, Alameda County, California (Confidential Appendix C2),
- Built Environment Inventory and Evaluation Report (BEIER) for the Delta Dams Rodent Burrow Remediation Project at Clifton Court Forebay, Contra Costa County, California (Appendix D1), and
- BEIER for the Delta Dams Rodent Burrow Remediation Project at Dyer Reservoir and Dam and Patterson Reservoir and Dam Alameda County, California (Appendix D2).

The archaeological inventory reports are confidential to protect the cultural resources discussed within them. They present additional information regarding methodology, environmental and cultural context for each of the sites, background research, and survey results.

Clifton Court Forebay is located in southeast Contra Costa County, on the west side of California's Central Valley at the southwestern edge of the Sacramento–San Joaquin River Delta (Delta), approximately 10 miles northwest of the City of Tracy and adjacent to Byron Road. Dyer Dam and Reservoir and Patterson Dam and Reservoir are located proximate to the City of Livermore in Alameda County, within the Coast Ranges foothills region at the edge of the western San Joaquin Valley.

Archaeological Setting

Various attempts to parse out information provided through recorded archaeological assemblages throughout California for the past 12,000 years have led to the development of numerous cultural chronologies. Some of these are based on geologic time, most are interpreted through temporal trends derived from archaeological assemblages, and others are interpretive reconstructions. California's archaeological assemblage composition is

generally accepted as falling within the following overarching patterns: Paleoindian Period, Archaic Period, Emergent/Prehistoric Period, and Ethnohistoric Period (Confidential Appendices C1 and C2).

The archaeology and prehistory of the Central Valley, and the eastern Coast Ranges foothills/San Joaquin Valley in particular, are not well understood. Early and widespread agricultural use of the valley floor has destroyed much of the bottomland archaeology, and siltation has most likely buried many resources well below the surface sediments. Much of the recovered archaeological material from the valley area is devoid of context, having been scavenged from the surface and placed in private collection. Cultural resources within the foothills are often covered by the thick grass of the created grazing landscaped. Despite these difficulties, a general chronological framework for the Central Valley and eastern Coast Ranges foothills/western San Joaquin Valley has been developed. Like the general California chronology, the archaeological record of the region can be divided into the Paleoindian Period (11,550 to 8550 calibrated years [cal] BC), Archaic Period (8550 cal BC to cal AD 1100), Emergent Period (cal AD 1100 to 1750), and Ethnohistoric Period (post-AD 1769). The Archaic Period is further subdivided into three phases—the Lower Archaic (8550 to 5550 cal BC), Middle Archaic (5550 to 550 cal BC), and Upper Archaic (550 cal BC to cal AD 1100)—based on climatic and cultural variations (Bennyhoff and Fredrickson 1994; Groza 2002; Rosenthal et al. 2007) (Confidential Appendices C1 and C2).

Built Environment Setting

The three Project facilities are components of DWR's SWP, which is a water storage and delivery system that consists of many reservoirs, aqueducts, power plants, and pumping plants. The California Aqueduct, which is a central feature of the SWP, begins at Clifton Court Forebay and extends over 400 miles to the south. The South Bay Aqueduct, another important SWP feature, begins at Bethany Reservoir, which is located south of Clifton Court Forebay, and carries water to communities in Alameda and Santa Clara Counties, passing through Dyer Reservoir and Patterson Reservoir (Figure 1).

The history associated with water management facilities in California is vast and complex. As discussed in detail in the BEIERs for this project (Appendices D1 and D2), the SWP was shaped by the successes and shortfalls of numerous water management policies and projects at the local, state, and national level over many decades. The BEIERs provide an overview of water development in California from the Spanish and Mexican periods, to the mining and agriculturally dominated water needs in the nineteenth century, to the engineered water reclamation solutions of the early twentieth century, and finally to the events and planning that led to the founding of DWR and implementation of the SWP. Important events through the latter part of the nineteenth century that contributed to the history of the SWP include the California gold rush and subsequent population growth, increases in irrigated agriculture activities, efforts by federal and state government to provide irrigation water to the San Joaquin Valley and flood control for the Sacramento Valley, and rapid growth of California cities.

At the turn of the twentieth century, California cities started to recognize that their water needs were outpacing what was readily available. The state and federal government also began making efforts to ensure water supplies and regulate water rights. The California legislature also took steps toward state-sponsored flood control when it created the State Reclamation Board in 1911 to assist in management of the San Joaquin and Sacramento Rivers.

Planning for a state water delivery system to complement the federal Central Valley Project and address some of its shortfalls began in 1945 with the State Water Resources Act. This authorized the State Water Resource Control Board, formerly the State Water Resource Board, to conduct investigations of the water resources of California, which led to development of the California Water Plan in 1957, envisioning that a combination of local projects and a major state project would be needed meet the state's ultimate water demand needs.

The development of Clifton Court Forebay began with early land reclamation efforts in the San Joaquin Delta wetlands. In 1898, the Old River Land and Reclamation Company set out to drain and convert 4,000 acres of company-owned land located west of Union Island and south of the Byron Tract, also both reclaimed lands, for use as farmland. This newly reclaimed area was surrounded on three sides by earthen levees and canals and was named the Clifton Court Tract (Appendix D1). Preliminary planning for Clifton Court Forebay was underway early in 1965, which sought to locate a low, 30-foot dam within the existing levees of the Clifton Court Tract (Appendix D1, Exhibit B). Construction of the 28,653-acre-foot reservoir began on December 12, 1967, and was completed during December 1969 (Appendix D1, Exhibits C and D). Clifton Court Forebay has served in its capacity as an important storage component of the SWP since the time of its construction to the present (Appendix D1).

The South Bay Aqueduct was developed, in part, in response to ongoing growth of cities in the South Bay and associated growth in water demand combined with growing concerns due to saltwater intrusion into the groundwater wells serving these communities. The South Bay Aqueduct was first conceptualized in the 1951 Feather River Project, which proposed a dam for the Feather River near Oroville, two powerplants, a Delta cross-channel, an electric transmission system, an aqueduct between the Delta and Santa Clara and Alameda Counties, and another aqueduct to Central and Southern California. The South Bay Aqueduct was included in the 1955 revisions to the Feather River Project and was authorized for construction in 1957 and funded for construction in 1959 (Appendix D2). Because the South Bay Aqueduct was designed before the California Aqueduct, a variety of water conveyance types were piloted at the South Bay Aqueduct before the open-air, trapezoidal, concrete-lined canal was adopted for the California Aqueduct. The South Bay Aqueduct was completed in phases, reach by reach, starting from Bethany Reservoir. In 1960, DWR took bids for Patterson Reservoir, the 2.4-mile-long Brushy Creek First-Stage Pipeline, the 2-mile-long Dyer Canal, the 2.3-mile-long Altamont Pipeline, and a 1.8-mile portion of the Livermore Canal, constituting the first reach of the South Bay Aqueduct from the Surge Tank to Patterson Reservoir. On May 10, 1962, Governor Brown dedicated the South Bay Aqueduct and celebrated the first water delivery, which was made from Patterson Reservoir to water contractor Alameda County Flood Control and Water Conservation District (Appendix D2).

Impact Analysis

a) Would the Project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

Clifton Court Forebay Dam

As noted above, Clifton Court Forebay is located in southeast Contra Costa County, on the west side of California's Central Valley and the southwestern edge of the Delta, approximately 10 miles northwest of the City of Tracy and adjacent to Byron Road. The forebay is surrounded on the northwest, north, and east sides by the Italian Slough, the Old River, and the West Canal. Water from the Delta enters the forebay through a gated intake control structure at the southeast end of the forebay. This structure connects the forebay to the West Canal. Other related SWP features nearby include the California Aqueduct intake channel, located along the southwest side of the forebay, the Skinner Fish Facility, and a control gate structure.

A records search of the Project site at Clifton Court Forebay Dam and a surrounding one-mile radius was completed by the California Historical Resources Information System (CHRIS) Central California Information Center (CCalC) and the Northwest Information Center (NWIC) staff on November 30, 2020, and December 23, 2020, respectively (Confidential Appendices C1 and C2). Dudek conducted an intensive, pedestrian-level cultural survey of the area of potential effect (APE) on January 13, 2021. One previously recorded

resource, Clifton Court Forebay (recorded in both P-07-003122 and P-07-004698), constructed between 1967 and 1969, was identified within the APE. Both of the previous records indicated that Clifton Court Forebay is eligible under National Register of Historic Places (NRHP)/California Register of Historical Resources (CRHR) Criteria A/1 and C/3 as a district contributor to two, separate proposed historic districts that were neither defined or formally recorded: the California Aqueduct (Ambacher 2013, p. 4) and the entirety of the SWP (Kim and Williams 2013, p. 2).

In the BEIER, Dudek disagrees with the previous approach and previous findings, and submits that Clifton Court Forebay is eligible as an individual property within its own right under NRHP/CRHR Criterion A/1 as a critical and planned element of the SWP and for its role in the development of the SWP and the California Aqueduct. It is also eligible individually under NRHP/CRHR Criterion C/3 for its design, as the critical infrastructure facilitating water flow from the Delta into the California Aqueduct.

As described in the BEIER for the Delta Dams Rodent Burrow Remediation Project at Clifton Court Forebay (Appendix D1), the proposed Project activities were analyzed in consideration of the adverse effect examples provided in Title 36, Part 800.5(a)(2) of the Code of Federal Regulations. The Project would have no adverse effect for the purposes of Section 106, or a significant impact for the purposes of CEQA on Clifton Court Forebay within the Project's APE. Although Clifton Court Forebay is an individually eligible property under NRHP Criteria A and C and CRHR Criteria 1 and 3, the proposed burrow remediation and associated maintenance activities would not result in significant impacts or changes to Clifton Court Forebay. Therefore, the Project would result in a **less-than-significant impact**.

Dyer Dam

As noted previously, Dyer Dam is located in the Altamont Hills in Alameda County, approximately 13 miles west of the City of Tracy and approximately seven miles northeast of Livermore. The reservoir receives water from Bethany Reservoir via the South Bay Aqueduct and the Brushy Creek Pipeline, and discharges water back to the South Bay Aqueduct via Dyer Canal. Additionally, there is a settling pond east of the northeast end of the reservoir. The South Bay Aqueduct conveys water to Alameda and Santa Clara Counties.

Dyer Dam and Reservoir was built between 2009 and 2012 and does not meet the 50-year age requirement for resources to be evaluated for potential historic significance under NRHP or CRHR. Dyer Dam and Reservoir also lacks the important historical associations or engineering merit to be considered under NRHP Criterion Consideration G. Dyer Dam and Reservoir does not meet the criteria to be eligible as a historic resource pursuant to Section 15064.5, therefore there would be **no impact** to a significant resource.

A records search of the Project site at Dyer Dam and a surrounding 1-mile radius was completed by the CHRIS NWIC staff on December 23, 2020. Dudek conducted an intensive, pedestrian-level cultural survey of the APE on January 5, 2021. One resource, the South Bay Aqueduct (P-01-011603), was identified within the Project APE at Dyer Dam. The previous South Bay Aqueduct record dates to 1994 and was created before the South Bay Aqueduct met the 50-year age threshold for consideration. Though the South Bay Aqueduct is recorded as "a conduit of considerable importance to the local economies of Alameda and Santa Clara Counties," and the first completed component of the SWP, it was recommended ineligible by the report author at the time due to not meeting the age threshold and not qualifying for Criterion Consideration G for exceptional significance.

In the BEIER for the Delta Dams Rodent Burrow Remediation Project at Dyer Reservoir and Dam and Patterson Reservoir and Dam, the South Bay Aqueduct was reevaluated and found to be eligible under NRHP Criterion A and CRHR Criterion 1 for the originally identified reasons from the 1994 record: its connection and role within the larger SWP system and its association with the historical event of the first water delivery in the SWP. Dudek also found that the South Bay Aqueduct is eligible under NRHP Criterion C and CRHR Criterion 3 for its role in the testing and application of conveyance system technology for the SWP before it was standardized and implemented elsewhere.

As described in the BEIER, the proposed Project activities were analyzed in consideration of the adverse effect examples provided in Title 36, Part 800.5(a)(2) of the Code of Federal Regulations. The Project would not result in an adverse effect for the purposes of Section 106, or a significant impact for the purposes of CEQA on the South Bay Aqueduct segments within the Dyer Dam APE (Appendix D2). Therefore, the Project would result in a **less-than-significant impact**.

Patterson Dam

As noted previously, Patterson Dam is located about four miles east of Livermore, California, on the east side of Livermore Valley. Patterson Reservoir is a 104-acre-foot off-stream storage facility along the South Bay Aqueduct at the terminus of the Livermore Valley Canal. This reservoir, which was constructed between 1960 and 1962, provides off-line storage for the Zone 7 Patterson Pass Water Treatment Plant. Water enters the reservoir by flowing over a 175-foot-long reinforced concrete ogee-crest weir from the adjoining South Bay Aqueduct. The facility also includes a settling basin located east of the reservoir. Downstream of Patterson Reservoir, the South Bay Aqueduct continues to deliver water to Lake Del Valle and to its terminus at the Santa Clara Terminal Reservoir in San Jose. Patterson Dam has compacted earth embankment on three sides; the fourth side is formed by the adjacent South Bay Aqueduct.

A records search of the Project site at Patterson Dam and a surrounding one-mile radius was completed by NWIC staff on December 23, 2020, and Dudek conducted an intensive, pedestrian-level cultural survey of the APE on January 5, 2021. One previously recorded resource, the South Bay Aqueduct (P-01-011603), was identified withing the Project APE at Patterson Dam (Appendix D2).

Two built environment historical resources required documentation as part of Dudek's BEIER for the Delta Dams Rodent Burrow Remediation Project at Patterson Dam (Appendix D2): another segment of the South Bay Aqueduct (P-01-011603), constructed between 1958 and 1969, which required an updated evaluation; and Patterson Reservoir, constructed between 1960 and 1962, which required a separate, new evaluation. The South Bay Aqueduct (P-01-011603) was reevaluated and is eligible under NRHP Criterion A and CRHR Criterion 1 for its connection and role within the larger SWP system and its association with the historical event of the first water delivery in the SWP. The South Bay Aqueduct is also eligible under NRHP Criterion C and CRHR Criterion 3 for its role in the testing and application of conveyance system technology for the SWP before it was standardized and implemented elsewhere. The period of significance for the South Bay Aqueduct is established as its period of construction, between 1958 and 1969. Patterson Reservoir had not been previously recorded, and Dudek's analysis found it eligible under NRHP Criterion A and CRHR Criterion 1 for its historically significant role as the location of the first SWP water delivery to a contractor. Because the SWP was meant to be self-sufficiently funded by its own water and power sales, the 1962 water deliveries made from Patterson Reservoir represent a significant event within the larger SWP context. Patterson Reservoir shares the period of significance for the South Bay Aqueduct, between 1958 and 1969 (Appendix D2).

As described in the BEIER for the Delta Dams Rodent Burrow Remediation Project at Dyer Reservoir and Dam and Patterson Reservoir and Dam, the proposed Project activities were analyzed in consideration of the adverse effect examples provided in Title 36, Part 800.5(a)(2) of the Code of Federal Regulations. No direct or indirect changes are proposed for the South Bay Aqueduct. Therefore, the Project would not result in an adverse effect for the purposes of Section 106, or a significant impact for the purposes of CEQA on the South Bay Aqueduct segments within the APE at Patterson Dam. Although Patterson Reservoir is eligible under the NRHP Criterion A and CRHR Criterion 1, the proposed burrow remediation and associated maintenance activities would not result in adverse effects or significant impacts to Patterson Dam and Reservoir (Appendix D2). Therefore, the Project would result in a **less-than-significant impact**.

b) Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Clifton Court Forebay Dam

A records search of the APE at Clifton Court Forebay Dam, including a one-mile buffer surrounding the facility, was completed by CCaIC and NWIC staff on November 30, 2020, and December 23, 2020, respectively (Confidential Appendix C1). The CCaIC and NWIC records indicate that 83 previous cultural resources technical investigations have been conducted within one mile of Clifton Court Forebay. Of these, 16 studies intersect the APE at Clifton Court Forebay Dam (Confidential Appendix C1).

Dudek consulted historic-era maps and aerial photographs to understand development of the Clifton Court Forebay Dam site and surrounding properties (NETR 2021). Historic aerial photographs, available from 1949 to 2016, and historic maps, available from 1914 to 2018, were inspected to observe previous development at Clifton Court Forebay. Historic mapping shows the presence of the West Canal and Italian Slough as early as 1914, in their current positions adjacent to Clifton Court Forebay. The remainder of the site remained under agricultural cultivation until the construction of Clifton Court Forebay in 1968. Topographic mapping from 1969 indicates that a windmill and minor roads were present within the footprint of the forebay prior to its development, but no other structures were depicted. Aerial imagery is consistent with the topographic mapping, showing the presence of the West Canal, Italian slough, and agricultural fields in the surrounding vicinity. These adjacent areas are still under agricultural land use today (Confidential Appendix C1).

Dudek archaeologist inspected all areas of the APE on January 13, 2021. Clifton Court Forebay is located in a flat, agricultural surrounding. The APE in the vicinity of Clifton Court Forebay encompasses only the dam surrounding the forebay. As such, the entirety of the APE at Clifton Court Forebay Dam shows high levels of disturbance and in many cases the APE is in artificially created landforms such as levies and dikes. The majority of the APE is on the dam embankment and the asphalt-paved road circumnavigating the forebay. The water of the forebay itself is held by this artificial linear embankment and road, which surround the forebay; the embankment is asphalted on the water side and exposed imported soil on the opposite side. Ground visibility was fair in the areas not paved, with approximately 50% of the ground visible. Several features of the forebay were observed in the APE, including boat ramps, intake/outtake pipes, and canal/aqueduct entrances and exits. No archaeological resources were observed.

The proposed Project, as currently designed, appears to have a very low potential for encountering intact archaeological deposits during ground-disturbing activities and would have no impact to known archaeological resources. Based on these negative findings and the observed conditions of the Clifton Court

Forebay Dam site, no additional cultural resources efforts, including archaeological monitoring, are recommended to be necessary beyond standard protection measures for unanticipated discoveries of cultural resources, as outlined below in **Mitigation Measure CUL-1**. Therefore, the Project would result in a **less-than-significant impact with mitigation incorporated**.

Dyer Dam

NWIC records indicate that 25 previous cultural resources technical investigations have been conducted within a 1-mile radius of Dyer Dam and Patterson Dam. Of these, 8 studies intersect the current Dyer Dam APE (Confidential Appendix C2).

Historic aerial photographs, available from 1949 to 2016, and historic maps, available from 1949 to 2016, were inspected to observe previous development at Dyer Dam. These maps and images show that the APE was largely undeveloped prior to construction of the South Bay Aqueduct in the 1960s, except for a road that ran through the center of the Dyer Dam and Reservoir site prior to the creation of the reservoir in 2010. No other structures or land use was observed (Confidential Appendix C2).

Dudek archaeologists inspected all areas of the APE on January 14, 2021. Dyer Dam is located in a hilly, pastoral surrounding. The APE at Dyer Dam consists of the earthen embankment around the perimeter of the reservoir and a triangular staging area directly to the east. The entirety of the APE at Dyer Dam shows high levels of disturbance with the exception of the staging area, which shows minor disturbances. The reservoir itself is cut out of a hillside on the east side and then captured by a constructed earthwork dam around the remaining perimeter. Within this portion of the APE, utility buildings, paved roads, and canal/aqueduct entrances and exits are present. Visibility of exposed earth ground surfaces is extremely limited in this portion of the APE due to asphalt paving. The triangular staging area of the APE is a flat, grass-covered field that contains no structures. One pile of excavated boulders, likely from the excavation of the nearby settling pond, is present in the western portion of this staging area. Visibility of native ground surfaces in the staging area was constrained to less than 20% of the overall area due to the presence of thick grasses. No archaeological resources were observed (Confidential Appendix C2).

Dyer Dam site conditions are highly disturbed from creation and maintenance of Dyer Dam and Reservoir. No newly identified archaeological resources were recorded during the pedestrian survey, and the NWIC records search identified no cultural resources within the Project vicinity at Dyer Dam. The proposed Project appears to have a very low potential for encountering intact archaeological deposits during ground-disturbing activities and would have no impact to known archaeological resources. Based on these negative findings found in the archaeological report, no additional cultural resources efforts, including archaeological monitoring, are recommended to be necessary beyond standard protection measures for unanticipated discoveries of cultural resources, as outlined below in **Mitigation Measure CUL-1**. Therefore, the Project would result in a **less-than-significant impact with mitigation incorporated**.

Patterson Dam

NWIC records indicate that 31 previous cultural resources technical investigations have been conducted within a 1-mile radius of Dyer Dam and Patterson Dam. Of these, 1 study intersects the current Patterson Dam APE (Confidential Appendix C2).

Historic aerial photographs, available from 1949 to 2016, and historic maps, available from 1907 to 2018, were inspected to observe previous development at Patterson Dam and Reservoir. These maps and images indicate minimal development of the land prior to the construction of Patterson Dam and Reservoir and the South Bay Aqueduct in the 1960s. From that point, no major changes within the area occur, only routine maintenance of the dam facilities (Confidential Appendix C2).

Dudek archaeologists inspected all areas of the APE on January 14, 2021. Patterson Dam is located in a hilly, pastoral surrounding. The APE in the vicinity of Patterson Dam includes the earthen embankment around the perimeter of the reservoir, a bank along the nearby canal, and several staging areas. The entirety of the APE at Patterson Dam shows high levels of disturbance from existing DWR infrastructure. The reservoir itself is cut out of a hillside on the northeast side and then captured by an artificial earthwork dam around the remaining perimeter. Within this portion of the APE, utility buildings, paved roads, and canal/aqueduct entrances and exits are present. Earthen ground surfaces in this portion of the APE are limited due to asphalt paving. The staging areas of the APE are less developed and are primarily comprised of flat, grass-covered terrain. Staging areas have been clearly excavated and are no longer at the native ground level. Visibility in the staging areas was poor, providing for less than 20% of the ground surface to be directly observed due to the presence of thick grasses. No archaeological resources were observed (Confidential Appendix C2).

Patterson Dam site conditions are highly disturbed from creation and maintenance of Patterson Reservoir. No newly identified archaeological resources were recorded during the pedestrian survey, and the NWIC records search identified no cultural resources within the Project vicinity. The proposed Project appears to have a very low potential for encountering intact archaeological deposits during ground-disturbing activities and would have no impact to known archaeological resources. Based on these negative findings found in the archaeological report, no additional cultural resources efforts, including archaeological monitoring, are recommended to be necessary beyond standard protection measures for unanticipated discoveries of cultural resources, as outlined below in **Mitigation Measure CUL-1**. Therefore, the Project would result in a **less-than-significant impact with mitigation incorporated**.

c) Would the Project disturb any human remains, including those interred outside of dedicated cemeteries?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

California law recognizes the need to protect interred human remains, particularly Native American burials and associated items of patrimony. The Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam sites have highly disturbed surface conditions. No evidence of human remains at the Project sites was found in documentary research and it is extremely unlikely that buried human remains are present. Furthermore, the Project activities do not require excavation at depths that would typically have the potential to unearth buried human remains. Nevertheless, it is possible that presently unknown prehistoric burials exist and could be uncovered during Project construction. Therefore, this impact would be potentially significant. However, with implementation of **Mitigation Measure CUL-2**, in the unlikely event that human remains are discovered during Project-related construction activities, this potential impact would be reduced to a less-than-significant level by ensuring compliance with Section 7050.5 of the California Health and Safety Code and ensuring protection of any Native American burials encountered during project implementation. Therefore, the Project would result in a **less-than-significant impact with mitigation incorporated**.

Mitigation Measures

CUL-1: **Unanticipated Archaeological Resources.** A Worker Environmental Awareness Training for cultural resources shall be prepared and provided to all construction workers prior to initiation of work. The training shall generally summarize the protocols provided below that must be followed in the event that there is an inadvertent discovery of cultural resources and/or potential tribal cultural resources. In the event that cultural resources (e.g., sites, features, or artifacts) are exposed during construction activities, all ground disturbing work occurring within 100 feet of the find shall immediately stop until a qualified specialist, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find and determine whether additional study is warranted. Prehistoric archaeological deposits may be indicated by the presence of discolored or dark soil, fire-affected material, concentrations of fragmented or whole freshwater bivalve shell, burned or complete bone, non-local lithic materials, or the characteristic observed to be atypical of the surrounding area. Common prehistoric artifacts may include modified or battered lithic materials; lithic or bone tools that appeared to have been used for chopping, drilling, or grinding; Projectile points; fired clay ceramics or non-functional items; and other items. Historic-age deposits are often indicated by the presence of glass bottles and shards, ceramic material, building or domestic refuse, ferrous metal, or old features such as concrete foundations or privies. Depending upon the significance of the find under the California Environmental Quality Act (CEQA) (14 CCR 15064.5[f]; California Public Resources Code, Section 21082), the archaeologist may simply record the find and allow work to continue. If the discovery proves significant under CEQA, additional work, such as preparation of an archaeological treatment plan, testing, or data recovery, may be warranted.

CUL-2: **Unanticipated Human Remains.** In accordance with Section 7050.5 of the California Health and Safety Code, if potential human remains are found, the county coroner shall be immediately notified of the discovery. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the county coroner has made their determination regarding the appropriate next steps to be taken. This determination must be completed within 2 working days of notification of the discovery. If the county coroner determines that the remains are, or are believed to be, Native American, he or she shall notify the Native American Heritage Commission in Sacramento within 24 hours. In accordance with California Public Resources Code, Section 5097.98, the Native American Heritage Commission must immediately notify those persons it believes to be the most likely descendant from the deceased Native American. The most likely descendant shall complete his or her inspection within 48 hours of being granted access to the site. The designated Native American representative would then determine, in consultation with the property owner, the disposition of the human remains.

3.6 Energy

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
VI. Energy – Would the Project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Setting

PG&E is the utility provider within the Project area. PG&E provides electric services to 5.4 million customers including 106,681 circuit miles of electric distribution lines and 18,466 circuit miles of interconnected transmission lines over a 70,000-square-mile service area in Northern and Central California (PG&E 2016). PG&E receives electric power from a variety of sources. According to the California Public Utilities Commission's 2018 Renewable Portfolio Standard Annual Report to the Legislature, 39% of PG&E's power came from eligible renewable energy sources in 2018, including biomass/waste, geothermal, small hydroelectric, solar, and wind sources (PG&E 2019).

The California Public Utilities Commission regulates natural gas utility service for customers who receive natural gas from PG&E. The California Public Utilities Commission also regulates independent storage operators Lodi Gas Storage, Wild Goose Storage, Central Valley Storage, and Gill Ranch Storage (CPUC 2017). PG&E provides natural gas service to most of Northern California, including the areas surrounding each of the three DWR facilities included in this Project.

There are more than 35 million registered vehicles in California, and those vehicles consume an estimated 16 billion gallons of fuel each year (CEC 2020; DMV 2019). Petroleum currently accounts for approximately 92% of California's transportation energy consumption (CEC 2020). However, technological advances, market trends, consumer behavior, and government policies could result in significant changes in fuel consumption by type and in total. At the federal and state levels, various policies, rules, and regulations have been enacted to improve vehicle fuel efficiency, promote the development and use of alternative fuels, reduce transportation-source air pollutants and GHG emissions, and reduce vehicle miles traveled.

Impact Analysis

a) Would the Project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Remediation treatment would involve the use of lightweight and heavy equipment to collapse and/or excavate and backfill burrowing holes. These activities would require the use of energy to fuel equipment and other vehicles. Energy usage on site would be temporary and limited to the duration of the maintenance effort. No permanent or long-term energy consumption is anticipated. Therefore, there would be a **less-than-significant impact**.

b) Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

As stated in Section 3.6(a), energy usage at the Project sites would be relatively small and would not result in permanent long-term energy consumption. The proposed Project would not conflict with a state or local plan for renewable energy or energy efficiency plan. Nonetheless, the Project would not entail inefficient, wasteful, and unnecessary consumption of energy and would not result in any irreversible or irretrievable commitments of energy. Thus, impacts would be **less than significant**.

3.7 Geology and Soils

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
VII. GEOLOGY AND SOILS – Would the Project:				
a) Directly or indirectly cause 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 Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
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?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

Setting

Clifton Court Forebay Dam

Clifton Court Forebay Dam is located at the southwestern margin of the Delta, where the physiographic regions of the flat Delta basin merge with the gentle slopes of the Coast Range geomorphic province. The area is underlain by flat-lying delta, alluvial, and alluvial fan deposits (DWR 2013a). The deltaic sediments consist of two units, a muck and peat series and the underlying fine-grained basin sediments. The basin sediments are underlain by a water-bearing silty sand layer that transitions into a dense to very dense fine sand layer at approximately 65 feet below the original ground layer (DWR 2013a). The nearest active fault to Clifton Court Forebay Dam is the Greenville fault, located approximately 9 miles to the southwest (USGS 2021a).

Dyer Dam

Dyer Dam is located in the northern Diablo Range of the Coast Range geomorphic province. The geology of the Diablo Range is dominated by the Franciscan Complex, a diverse group of metamorphosed igneous, sedimentary, and metamorphic rocks of Cretaceous to late Jurassic age (65 to 163 million years old). The reservoir is situated on the eastern margin of the Livermore Basin, which is a deep, structural, contractional, sedimentary basin that lies within the more extensive Mount Diablo fold-and-thrust belt. The nearest active fault to Dyer Dam is the Greenville fault, located approximately 2.5 miles to the southwest (USGS 2021b).

Patterson Dam

Patterson Dam is also located in the northern Diablo Range. Patterson Dam was constructed on both Quaternary (from 11,700 up to 2.6 million years old) alluvium and the Miocene (5.3 to 23 million years old) Cierbo Sandstone.

Exposures of Cierbo Sandstone in the reservoir foundation and adjacent Livermore Valley Canal channel were described during dam construction as very light gray to buff quartzose sandstone with lenses of weathered clay shale and minor conglomerate (DWR 2013b). The flat-lying alluvium exposed in the southern two thirds of the reservoir is comprised of unconsolidated dark brown and reddish-brown clay with minor silt, sand, and gravel (DWR 2013b). The nearest active fault to Patterson Dam is also the Greenville fault, which is mapped to show two strands that terminate just north of the reservoir. According to a 2005 fault investigation report, no active traces of the Greenville fault near Patterson Dam were found to extend into the footprint of the dam (DWR 2005a, as cited in DWR 2013b).

All Dam Sites – Seismicity

All three Project sites are located within a seismically active region that is dominated by the San Andreas fault system. The San Andreas fault represents the tectonic plate boundary of the Pacific Ocean and North American plates. According to mapping compiled by the California Emergency Management Agency, the northeast half of Patterson Reservoir is located within the boundary of an Alquist-Priolo Earthquake Fault Zone (area of required investigation) defined by the Holocene-active Greenville fault zone (CalEMA 2021). The Greenville fault zone is the easternmost component of the San Andreas fault system in the San Francisco Bay Region. Despite its location within the Greenville fault zone, no evidence of faulting (active or inactive) was recorded during the original design and construction of the existing Patterson Reservoir (DWR 1967, as cited in DWR, 2013b).

Impact Analysis

a) Would the Project directly or indirectly cause 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 Division of Mines and Geology Special Publication 42.

Clifton Court Forebay Dam

There are no active faults or associated Alquist-Priolo Earthquake Fault Zones that intersect the Clifton Court Forebay Dam site. The nearest active fault, the Greenville Fault, is approximately 9 miles to the southwest. As a result, there would be **no impact** related to fault rupture at the Clifton Court Forebay Dam site.

Dyer Dam

There are no active faults or associated Alquist-Priolo Earthquake Fault Zones that intersect the Dyer Dam site. The nearest active fault, the Greenville Fault, is approximately 2.5 miles to the southwest. As a result, there would be **no impact** related to fault rupture at the Dyer Dam site.

Patterson Dam

As noted above, the approximate northeast half of Patterson Reservoir is located within the Alquist-Priolo Earthquake Fault Zone associated with the Greenville Fault. According to the fault investigation effort conducted prior to construction of the reservoir, no evidence of active faulting was observed at the reservoir site. In addition, the proposed Project would not include the construction of any habitable structures and the proposed improvements would actually provide some level of increased seismic stability by backfilling

existing burrows, compacting the soil, and implementing measures to prevent future burrowing, all of which would strengthen the embankment overall. Therefore, the potential impact related to fault rupture at the Patterson Dam site would be **less than significant**.

ii) Strong seismic ground shaking?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

All three Project sites are located in a seismically active region where a seismic event on any of the regional active faults could produce strong ground shaking at any of the sites. The U.S. Geologic Survey estimates that there is a 63% chance that an earthquake with magnitude 6.7 or greater could occur by 2045 (USGS 2015). The amount of ground shaking and intensity would depend on a number of factors including distance to the epicenter, duration of shaking, and site-specific characteristics of underlying materials. As discussed in the Project Description, DSOD has identified the existing rodent burrowing as a potential threat to the structural integrity of the dams that could lead to failure modes for dams by promoting piping and internal erosion (erosion is also discussed below). This internal erosion could also lessen the dam's ability to withstand future ground shaking that would be expected to occur sometime in the future. DSOD classifies Dyer Dam and Patterson Dam as high hazard, indicating that their failure is likely to result in the loss of at least one human life. DSOD classifies Clifton Court Forebay Dam as a low-hazard dam because its failure is not expected to result in loss of human life, but would result in economic and environmental impacts. To address the hazards identified by DSOD at the three dams, the proposed Project would involve the use of various methods and approaches (e.g., use of compacted imported fill materials, heavy construction equipment to collapse and/or excavate holes, placement of cement-soil slurry, low-pressure grout, impervious native soil placement, placement of bedding materials, wire mesh, and other armoring materials) to restore the structural integrity of the dams and meet DSOD requirements. In addition, as discussed in Section 3A.3-6, following completion of the remediation activities, in the following years, DWR would undertake annual monitoring inspections and implement additional burrow treatment activities as warranted to ensure continued stability of the embankments.

Therefore, considering that all three dams have been identified through dam safety inspections by DSOD as safety concerns under existing conditions and that the proposed Project would involve collapse, fill, and/or restoration of the structural integrity of the dams in accordance with DSOD guidelines, the potential impact related to strong seismic ground shaking would be **less than significant**.

iii) Seismic-related ground failure, including liquefaction?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

As noted in Section 3.7(a.ii), the three dams have been adversely affected by rodent burrowing; under existing conditions, DSOD considers the dams to be safety concerns, largely due to the burrows and internal erosion that may ultimately lead to dam failure. The placement of fill, impervious fill, cement-soil slurry, and/or low-pressure grout that would occur under the proposed Project would not result in the potential increase for seismic-related ground failure or liquefaction. The restoration activities would actually increase the overall structural integrity of the dams, consistent with DSOD guidelines and inspection recommendations, such that the potential for adverse effects occurring from seismic-related ground failure or liquefaction would be reduced compared to existing conditions. Therefore, the potential impact from seismic-related ground failure, including liquefaction, would be **less than significant**.

iv) Landslides?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

In areas with dense burrowing, the proposed Project could involve use of heavy machinery and excavation to perform remediation activities. DWR has conducted surveys of the dams to rate the disturbed areas for severity of burrow activity, the influence of the burrow activity on dam integrity, and the potential consequences of dam failure. Remediation within high-priority and medium-priority areas would include collapsing and/or excavating burrows. If not conducted appropriately, excavation of burrowed areas at the toe of the embankment slopes could destabilize the embankment, causing slope failure or landslides. However, all remediation activities would be conducted under the direction of a California licensed geotechnical engineer to ensure that backfilling of the holes with impervious native soil, cementitious-soil slurry, low-pressure grout, and/or similar embankment material would occur such that the embankments are not destabilized. The fill materials would be compacted and smoothed to match the surrounding ground. Following compaction and smoothing, high-priority areas in the upper zones of the downstream face would receive permanent armoring using a combination of bedding material (sand and gravels), wire mesh, and/or rock. Controlled low-strength material–filled trenches would be installed in the high-density burrow areas to prevent rodent burrowing beyond the armoring measures at Clifton Court Forebay Dam and Patterson Dam. Once remediation activities are completed, the structural integrity of the embankments would be improved over existing conditions and the potential impact related to landslides would be **less than significant.**

b) Would the Project result in substantial soil erosion or the loss of topsoil?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

The burrowing activity at all three dam locations has caused and currently causes disturbances to the earthen embankments of the dams, as well as related embankments of associated drainage channels that expose soils to the effects of erosion. Burrowing not only loosens soil at the surface, but it creates pathways for internal erosion of the embankments. A burrow that intercepts the underlying water surface of the embankment can cause erodible material from the dam embankment to migrate and be carried away. However, the proposed Project would involve measures to collapse or fill existing burrows, compact materials, and provide improvements such as sand, gravel, wire mesh, and larger rock materials to deter any future burrowing activity. Therefore, the proposed Project would result in improved soil stability of the embankments and deterrents to future burrowing that would reduce the potential for soil erosion or loss of topsoil.

Soil disturbance during construction and remediation activities would involve earthwork that could potentially result in erosion and loss of topsoil. The dam embankments were originally created with imported fill materials, therefore the areas affected by the proposed Project are unlikely to encounter topsoil; however, erosion could still lead to adverse effects to the existing dam embankments and other improvements, such as drainage channels.

The Project would involve disturbance of more than 1 acre of land and thus would be subject to the SWRCB Construction General Permit. The Construction General Permit requires preparation and implementation of a SWPPP, which must include best management practices (BMPs) designed to reduce potential impacts to surface water quality throughout construction and operation of the Project that

would include erosion control measures. The Construction General Permit would require DWR to submit a Notice of Intent to the SWRCB for coverage by a National Pollutant Discharge Elimination System permit and prepare a SWPPP prior to the beginning of construction. Specifically, the SWPPP must identify the erosion control BMPs that would be implemented at each of the three DWR facilities included in the Project to avoid significant adverse effects from erosion and include routine inspection of all BMPs to monitor effectiveness of the SWPPP.

Therefore, with elimination of the existing burrows and placement of fill, cement-soil slurry, wire mesh, and other rodent deterrents along with implementation of the required SWPPP, the Project would result in **less-than-significant** impacts associated with erosion and loss of topsoil.

c) Would the Project 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?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

The proposed Project consists of providing remediation actions to address rodent burrowing within the existing embankments at the three identified dam locations. DSOD has already identified these dams as safety concerns due to the extent of burrowing and the potential for internal erosion that could lead to instability and dam failure. The proposed Project does not include construction of any new facilities, but would improve the overall stability of the affected areas through the various remediation approaches that are described above. All work, including the compaction of fill materials, use of cement-soil slurries, and placement of bedding materials, would be overseen by a California-licensed geotechnical engineer or engineering geologist such that implementation of the Project would not result in conditions that would make any geologic unit or soil unstable. The potential for landslides is discussed in Section 3.7(a.iv), lateral spreading (related to liquefaction) and liquefaction hazards are addressed in Section 3.7(a.iii). Therefore, because the proposed Project would result in increased stability to the existing embankments and the proposed remediation measures would be overseen by a California-licensed geotechnical engineer or engineering geologist, the potential impact would be **less than significant.**

d) Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Expansive soils are characterized by shrink-swell properties that over time can lead to cyclical volumetric changes that can damage improvements such as building foundations or roadways. The proposed Project does not include construction of any habitable structures or other improvements that would be considered susceptible to adverse effects from expansive soils. Therefore, the potential impact related to expansive soils would be **less than significant.**

e) Would the Project 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?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

The proposed Project does not include the use or installation of septic tanks or alternative wastewater disposal systems and thus there would be **no impact** related to this criterion.

f) Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Proposed Project activities would occur primarily on previously disturbed areas and constructed embankments. As discussed in more detail in Section 3.5, Cultural Resources, the proposed Project, as currently designed, appears to have a very low potential for encountering intact paleontological deposits during ground-disturbing activities and would have no impact to known paleontological resources. Further, due to the previously disturbed nature of most of the Project site, activities are not likely to encounter or disturb unique geologic features. Should unique paleontological and/or geologic features be encountered during Project activities, implementation of standard protection measures for unanticipated discoveries of paleontological resources during earthwork activities, as outlined **Mitigation Measure GEO-1** would reduce impacts to less than significant. Therefore, the Project would result in a **less-than-significant impact with mitigation incorporated**.

Mitigation Measures

GEO-1 **Unanticipated Paleontological Resources.** In the event that paleontological resources (e.g., fossils) are exposed during construction activities for the Project, all construction work occurring within 50 feet of the find shall immediately stop until a qualified paleontologist meeting the professional standards of the Society of Vertebrate Paleontology (SVP) can evaluate the significance of the find and determine whether additional study is warranted. If the discovery is clearly not significant, the paleontologist may document the find and allow work to continue. If the discovery may consist of or include unique paleontological resources as defined under the California Environmental Quality Act, a qualified paleontologist shall evaluate the resource and prepare a proposed mitigation plan in accordance with SVP guidelines (1995) sufficient to ensure that the project does not result in the direct or indirect destruction of any unique paleontological resources. The proposed mitigation plan may include a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings.

3.8 Greenhouse Gas Emissions

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
VIII. GREENHOUSE GAS EMISSIONS – Would the Project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Setting

Climate change refers to any significant change in measures of climate, such as temperature, precipitation, or wind, lasting for an extended period (decades or longer). Gases that trap heat in the atmosphere are often called greenhouse gases or GHGs. The greenhouse effect traps heat in the troposphere through the following threefold process: (1) short-wave radiation emitted by the Sun is absorbed by the Earth; (2) the Earth emits a portion of this energy in the form of long-wave radiation; and (3) GHGs in the upper atmosphere absorb this long-wave radiation and emit this long-wave radiation into space and back toward the Earth. This trapping of the long-wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect. Principal GHGs include carbon dioxide (CO_2), methane, nitrous oxide, O_3, and water vapor. Some GHGs—such as CO_2, methane, and nitrous oxide—occur naturally and are emitted to the atmosphere through natural processes and human activities. Of these gases, CO_2 and methane are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely byproducts of fossil-fuel combustion, whereas methane results mostly from off-gassing associated with agricultural practices and landfills. Manufactured GHGs, which have a much greater heat-absorption potential than CO_2, include fluorinated gases, such as hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride, which are associated with certain industrial products and processes (CAT 2006).The Intergovernmental Panel on Climate Change developed the Global Warming Potential concept to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The Global Warming Potential of a GHG is defined as the ratio of the time-integrated radiative forcing from the instantaneous release of 1 kilogram of a trace substance relative to that of 1 kilogram of a reference gas (IPCC 2014). The reference gas used is CO_2; therefore, Global Warming Potential-weighted emissions are measured in metric tons (MT) of CO_2 equivalent (CO_2e).

Regarding impacts from GHGs, both the BAAQMD and the California Air Pollution Control Officers Association consider GHG impacts to be exclusively cumulative impacts (BAAQMD 2017a; CAPCOA 2018); therefore, assessment of significance is based on a determination of whether the GHG emissions from a project represent a cumulatively considerable contribution to the global atmosphere. This analysis uses both a quantitative and a qualitative approach.

DWR GHG Reduction Plan

As the first phase of DWR's Climate Action Plan, DWR adopted a Greenhouse Gas Emissions Reduction Plan in 2012 (2012 Plan) to guide decision-making related to energy use and GHG emissions. Consistent with commitments made in the 2012 plan, DWR prepared the Greenhouse Gas Emissions Reduction Plan Update 2020 (Update 2020) (DWR 2020b) to review the GHG reductions achieved through implementation of the 2012 Plan and to update strategies for further reductions consistent with legislative changes adopted since adoption of the 2012 Plan (DWR 2020b). Through DWR's work on its Climate Action Plan, including the 2012 Plan and Update 2020, DWR has found that most of DWR's GHG emissions are associated with energy purchased to move water through the SWP. The 2012 Plan and Update 2020 also identify that construction and maintenance projects contribute to DWR's total GHG emissions inventory (DWR 2020b).

In the 2012 Plan, DWR established a near-term goal of reducing its GHG emissions to 50% below 1990 emissions level by 2020. DWR achieved this goal in 2015. Under Update 2020, DWR established a mid-term goal of reducing GHG emissions to at least 60% below the 1990 level by 2030 and a long-term goal of suppling 100% of its electricity load with zero-carbon resources and achieve carbon neutrality by 2045. Achievement of these goals would ensure that DWR complies with GHG reduction targets established by the State of California. Specifically, DWR's mid-term goal exceeds the statewide emissions reduction target of 40% below the 1990 level by 2030, which was established in Senate Bill 32 (adopted in 2016), and DWR's long-term goal is consistent with the emissions reduction goals and policies established in Senate Bill 100 (adopted in 2018) and Executive Order B-55-18. Further, Update 2020 states that "by achieving carbon neutrality by 2045, DWR will also exceed the statewide goal of reducing emissions by at least 80% below the 1990 level by 2050, which was established in Executive Order S-3-05 (2005)" (DWR 2020b).

The mid-term and long-term goals primarily relate to DWR operational activities, and Update 2020 includes specific implementation measures to help achieve these goals. Update 2020 also identifies GHG emission reduction applicable to construction and maintenance efforts.

Update 2020 also analyzes forecasted GHG emissions and GHG emissions reductions associated with most future DWR projects and activities, including emissions generated as a result of typical construction activities. Update 2020 defines construction projects as "construction, maintenance, or refurbishment work performed on DWR's facilities by an outside contractor."

Based on analysis conducted for the 2012 Plan, earthwork projects constitute approximately 25% of DWR's projects and more than 50% of emissions from construction activities. Pipeline and storage basin projects are estimated to contribute 10% and 11%, respectively, to DWR's construction emissions and involve substantial amounts of work with large earthwork equipment. Update 2020 assumes that these percentages have remained the same and that modest increases in the efficiency of earthwork equipment since 1990 have likely reduced the actual emissions from DWR construction activities, though the actual rate of reduction is not quantifiable with available data (DWR 2020b).

Prior to adopting the 2012 Plan, DWR prepared a CEQA IS that supported adoption of a Negative Declaration. In support of the Update 2020, DWR prepared an addendum to the Negative Declaration pursuant to CEQA Guidelines Sections 15162(b) and 15164(b). The addendum evaluated the changes that Update 2020 would make to the 2012 Plan and changes in surrounding circumstances (such as updates in legislative and regulatory requirements as well as changes in market conditions) and concluded that these changes would not cause any new significant environmental impacts that would require preparation of a subsequent negative declaration or an environmental impact report (DWR 2020b). DWR relies on this prior CEQA analysis of the 2012 Plan and Update 2020 in evaluating the potential GHG emissions impacts of subsequent DWR projects, including the proposed Project.

Thresholds of Significance

DWR Update 2020

The following steps must be completed to determine whether a subsequent project is consistent with Update 2020 and the cumulative impact analysis of DWR GHG emissions (DWR 2020b):

> 1. Identify, quantify, and analyze the GHG emissions from the proposed project and alternatives using a method consistent with that described in DWR internal guidance, "Guidance for Quantifying Greenhouse Gas Emissions and Determining the Significance of their Contribution to Global Climate Change for CEQA Purposes," as such guidance document may be revised.
>
> 2. Determine that construction emissions levels do not exceed the Extraordinary Construction Project threshold of either 25,000 MT CO_2e for the entire construction phase of the project or 12,500 MT CO_2e in any single year of construction.
>
> 3. Incorporate into the design or implementation plan for the project all project-level GHG emissions reduction measures listed in Chapter VI or explain why measures that have not been incorporated do not apply to the project.
>
> 4. Determine that the project does not conflict with DWR's ability to implement any of the specific project GHG emissions reduction measures listed in Chapter VI.
>
> 5. If implementation of the proposed project would result in additional energy demands on the SWP system of 15 GWh/year or greater, the project must obtain a written confirmation from the DWR SWP Power and Risk Office stating that the Renewable Power Procurement Plan will be updated to accommodate the additional load resulting from the proposed project at such time as the proposed project is ultimately implemented.

Additionally, Update 2020 found that all DWR typical construction operations in an average year emit a total of 25,000 MT CO_2e. Based on this, Update 2020 concludes that any project that would emit this amount of GHG emissions throughout the entirety of its construction and/or would emit 12,500 MT CO_2e in a single year would exceed the emissions estimates reflected in Update 2020 and thus would "represent construction activities exceeding the typical level of construction activity performed by DWR and, therefore, exceeding the level of cumulative effects analysis for construction-related emissions reflected in Update 2020."

BAAQMD

Separate thresholds of significance are established by the BAAQMD for operational emissions from stationary sources (e.g., generators, furnaces, and boilers) and nonstationary sources (e.g., on-road vehicles) (BAAQMD 2017a). The threshold for stationary sources is 10,000 MT CO_2e per year (i.e., emissions above this level may be considered significant). For nonstationary sources, the following three separate thresholds have been established:

- Compliance with a Qualified Greenhouse Gas Reduction Strategy (i.e., if a project is found to be out of compliance with a Qualified Greenhouse Gas Reduction Strategy, its GHG emissions may be considered significant)
- 1,100 MT CO_2e per year (i.e., emissions above this level may be considered significant)
- 4.6 MT CO_2e per service population per year (i.e., emissions above this level may be considered significant) (Service population is the sum of residents plus employees expected for a development project.)

Because the BAAQMD has not adopted a threshold for post-2020, this assessment uses a bright-line threshold of 660 MT of CO_2e per year, a 40% reduction of the BAAQMD's 1,100 MT CO_2e per year threshold based on California's 2030 GHG reduction target per Executive Order B-30-15. The bright-line threshold is applicable to the proposed Project because a qualified GHG reduction plan would not be applicable to the Project and the Project is not a residential or mixed-use project for which impacts would be more appropriately evaluated using a service population threshold to reflect per-person emission efficiency.

DWR Standard Contract Specifications

DWR requires contractors to follow standard specifications during project construction to protect environmental resources. These include meeting all state and federal statutes, rules, regulations, and policies enacted to protect the environmental resources and ensure that any significant environmental impacts of projects are identified and adequately mitigated. Contractors must implement these provisions by developing and submitting an Air Quality Control Plan, a Traffic and Noise Abatement Plan, and a Fire Prevention and Control Plan; by performing construction equipment maintenance in accordance with manufacturer's recommendations, ensuring the proper use of mufflers and filters, and defining and implementing maintenance schedules for each piece of construction equipment; and by implementing the following best available control technology measures: (1) install high-pressure injectors, (2) use renewable diesel fuel, (3) use Caterpillar pre-chamber diesel engines or equivalent, (4) replace fossil fuel-powered equipment with electric equipment, (5) replace gasoline or diesel-powered vehicle with electric vehicles, (6) replace gasoline-powered equipment with catalytic converters, and (7) reduce construction activities during Stage 2 alerts issued by local air pollution control districts where required (DWR 2020b).

Update 2020 Best Management Practices

In addition to the Standard Contract Specifications, Update 2020 identifies 15 BMPs that must be implemented during construction to reduce fuel consumption for construction equipment and transportation of construction materials, ensure use of renewable diesel that has zero GHG emission, reduce the amount of landfill material, and reduce emissions from the production of cement. Update 2020 found that implementation of these BMPs is estimated to reduce annual GHG emissions by 15,090 MT CO_2e by the year 2030 compared to the estimated emissions from 1990, resulting in estimated annual emissions from construction of 13,110 MT CO_2e (DWR 2020b). The required BMPs are as follows:

> BMP 1. Evaluate project characteristics, including location, project work flow, site conditions, and equipment performance requirements, to determine whether the specifications for 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 4. Evaluate the feasibility and efficacy of producing concrete on site and specify that batch plants be set up on site or as close to the site as possible.

BMP 5. Evaluate the performance requirements for concrete used on the project and specify concrete mix designs that minimize GHG emissions from cement production and curing while preserving all required performance characteristics.

BMP 6. Limit deliveries of materials and equipment to the site to off peak traffic congestion hours.

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 [13 CCR Section 2485]). 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 two 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 11. Reduce electricity use in temporary construction offices by using high efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors develop and implement procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of business.

BMP 12. For deliveries to project sites where the haul distance exceeds 100 miles and a heavy-duty class 7 or class 8 semi-truck or 53-foot or longer box type trailer is used for hauling, a SmartWay1 certified truck will be used to the maximum extent feasible.

BMP 13. Minimize the amount of cement in concrete by specifying higher levels of cementitious material alternatives, larger aggregate, longer final set times, or lower maximum strength where appropriate.

BMP 14. Develop a project specific construction debris recycling and diversion program to achieve a documented 50% diversion of construction waste.

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.

Impact Analysis

a) Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Construction of the proposed Project would result in GHG emissions, which are primarily associated with use of off-road construction equipment, vendor trucks, and worker vehicles. A detailed depiction of the construction schedule—including information regarding phasing, equipment utilized during each phase, trucks, and worker vehicles—is included in Appendix A and is based on the same scenario used in Section 3.3, Air Quality. The estimated Project-generated GHG emissions from construction activities are shown in Table 16.

Table 16. Estimated Annual Operational Greenhouse Gas Emissions

Year	CO_2	CH_4	N_2O	CO_2e
	Metric Tons			
2021	193.70	0.04	0.00	198.97
2022	545.80	0.10	0.00	561.08
			Total	760.05
			Amortized over 30 years	25.34

Notes: CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent.
See Appendix A for complete results.

The estimated GHG emissions are substantially below the maximum emission levels identified in Update 2020 of 25,000 MT CO_2e in total and/or 12,500 MT CO_2e annually. DWR anticipates retaining a contractor for Project implementation; the contractor would be required to meet DWR's Standard Contract Specifications and implement all the construction BMPs identified in Update 2020. The Project involves rodent burrow remediation and maintenance activities and would not alter operation of any of the three DWR facilities affected by the Project. Thus, the Project would not conflict with DWR's ability to implement any of the GHG emissions reduction measures listed in Update 2020 Chapter VI and would not result in any additional energy demands on the SWP system. Therefore, the Project's GHG emissions would be consistent with the assumptions and requirements under in Update 2020 and would result in a **less-than-significant impact.**

Additionally, the estimated construction emissions would remain well below BAAQMD standards. Because BAAQMD has not established construction-phase GHG thresholds, construction GHG emissions were amortized assuming a 30-year development life after completion of construction and were compared to the BAAQMD operational GHG threshold. As shown in Table 16, the estimated total GHG emissions during construction would be approximately 760 MT CO_2e over the construction period. Estimated Project-generated construction emissions amortized over 30 years would be approximately 25 MT CO_2e per year and would not exceed the applied threshold of 660 MT CO_2e per year. As with Project-generated construction criteria air pollutant emissions, GHG emissions generated during construction of the Project would be short term in nature, lasting only for the duration of the construction period each year, and would not represent a long-term source of GHG emissions. Therefore, the Project's GHG emissions would be **less than significant** and would not be cumulatively considerable.

b) Would the Project generate conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Remediation treatment would involve the use of lightweight and heavy equipment to collapse and/or excavate and backfill burrowing holes. These activities would not result in a substantial increase in GHG emissions. As discussed in response 3.8(a) above, the project would not conflict with Update 2020, which is DWR's GHG reduction plan, because the estimated GHG emissions would remain substantially below the maximum emission levels identified in Update 2020, the Project contractor would be required to meet DWR's Standard Contract Specifications and implement all Update 2020 construction BMPs, the Project would not conflict with DWR's ability to implement any of the operational GHG emissions reduction measures identified in Update 2020, and the Project would not result in any additional energy demands on the SWP system. Therefore, the Project's GHG emissions would be consistent with the assumptions and requirements in Update 2020 and would result in a **less-than-significant impact.**

3.9 Hazards and Hazardous Materials

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
IX. 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?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site that 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?	☐	☐	☐	☒

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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 or excessive noise for people residing or working in the Project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

Setting

Hazardous materials stored and used in the area surrounding the Project sites would likely be associated with common materials used in agricultural, commercial and recreational activities, such as paints, cleaning solvents, bonding agents, and small quantity petroleum fuels and lubricants, as well as herbicides and pesticides used for common weed and pest control applications. In addition, hazardous materials are used and stored at the Zone 7 Patterson Pass Water Treatment Plant, which is adjacent to Patterson Dam. A search of the state Geotracker and Envirostor databases determined that none of the three DWR facilities included in this Project are identified as being the site of a hazardous materials release. There are several leaking underground storage tank sites within 1 mile of Clifton Court Forebay Dam, but all have attained a "case closed" status. There is one closed "clean-up program" site located approximately 0.5 miles northwest of Dyer Dam. There is one open soil cleanup case proximate to Patterson Dam, located approximately 0.33 miles southwest of the reservoir (SWRCB 2021; DTSC 2021).

There are no schools within 0.25 miles of any of the three DWR facilities included in the Project. Byron Airport is located approximately 3 miles from Clifton Court Forebay Dam; there are no public or private airports or airstrips in the vicinity of Dyer Dam or Patterson Dam.

Clifton Court Forebay Dam is located in a local responsibility area for fire protection and there are no Moderate or High Fire Severity Zones within or adjacent to the DWR property associated with this facility. Dyer Dam and Patterson Dam are located in a state responsibility area and in Moderate to High Fire Severity Zones (CAL FIRE 2021).

Impact Analysis

a) Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Implementation of the proposed Project would not require extensive or ongoing use of acutely hazardous materials or substances. Project activities would involve limited transport, storage, use, and disposal of hazardous materials, including fueling and servicing construction equipment on-site, and the transport of 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, U.S. Environmental Protection Agency, California Environmental Protection Agency, and the Occupational Safety and Health Administration.

During ongoing maintenance, hazardous materials that may be needed for additional burrow remediation and dam restoration would be managed consistent with existing practices. All hazardous materials would be stored and used in accordance with applicable federal, state, and local regulations. In addition, proper spill management, including response plans and spill kits, would be implemented and maintained on site, as is currently required by DWR. None of the Project components would require new types or additional quantities of hazardous materials to be stored or used at each of the three DWR facilities included in this Project. Accordingly, impacts related to the routine use of hazardous materials would be **less than significant**.

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

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

As discussed in Section 3.9(a), hazardous materials that would be used for burrow remediation, dam restoration, and other Project activities would be managed consistent with existing practices. Following initial implementation of the Project activities, no new types or additional quantities of hazardous materials would be stored or used at each of the three DWR facilities included in this Project, and hazardous materials needed for burrow remediation and dam restoration would be managed consistent with existing practices. Therefore, implementation of the proposed Project would not increase the risk of the release of hazardous materials into the environment, and this impact would be **less than significant**.

c) Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

There are no existing or proposed schools within 0.25 miles of any of the three DWR facilities included in the proposed Project, thus there would be **no impact** associated with emitting or handling hazardous materials proximate to schools.

d) Would the Project be located on a site that 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?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

None of the three DWR facilities included in the Project are included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (SWRCB 2021; DTSC 2021), thus there would be **no impact** associated with Project activities occurring on a site known to be affected by hazardous materials.

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 or excessive noise for people residing or working in the Project area?

Clifton Court Forebay Dam

Clifton Court Forebay Dam is not located within 2 miles of a public airport or any private airstrips. The Contra Costa County Byron Airport is located over 3 miles north of Clifton Court Forebay Dam and the forebay is outside of the Byron Airport Land Use Compatibility Plan area. Implementation of the Project would not affect any airport operations and would not expose construction workers to excessive air traffic noise levels or safety hazards. Therefore, there would be **no impact** related to airport noise or hazards.

Dyer Dam and Patterson Dam

There are no public or private airports or airstrips in the vicinity of Dyer Dam or Patterson Dam. The proposed rodent burrow remediation and restoration work would not expose any people working in the Project site to excessive aircraft-related noise levels or safety hazards. Therefore, the Project would have **no impact.**

f) Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

The proposed Project activities would occur within DWR property. There are no residences or business within the Project site, thus there is no demand for emergency response or evacuation at the sites other than the recreational uses at Clifton Court Forebay. The Project would not result in the creation of any physical barriers to emergency response or evacuation activities at the Clifton Court Forebay recreational area or in the areas surrounding each of the three DWR facilities. Construction equipment and materials would be staged on site and would not impede traffic flows in the area. Thus, the Project would have **no impact** related to physical interference with emergency response or evacuation.

g) Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

The proposed Project would involve rodent burrow remediation and restoration measures to provide protection from dam failure, thereby increasing community safety. The Project sites contain limited trees and vegetation; thus, the remediation and restoration activities would not create a substantial risk of fire ignition. Additionally, equipment and materials would be stored at staging areas on site and would not impact daily traffic that could somehow impede evacuation efforts of local communities. If anything, fortifying these water bodies to ensure that they operate and store/convey water properly ensures that a reliable water supply is delivered to end users, including fire protection personnel, during wildfire events such as those that have occurred on a widespread scale in California over the last decade. Therefore, the Project would result in **less-than-significant impacts**.

3.10 Hydrology and Water Quality

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
X. HYDROLOGY AND WATER QUALITY – Would the Project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) result in substantial erosion or siltation on or off site;	☐	☐	☒	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site;	☐	☐	☒	☐
iii) 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; or	☐	☐	☒	☐

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
iv) impede or redirect flood flows?	☐	☐	☐	☒
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?	☐	☐	☒	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

Setting

The dams at Clifton Court Forebay, Dyer Reservoir, and Patterson Reservoir were designed as homogenous earthen embankment dams with internal drainage systems. Clifton Court Forebay provides storage for off-peak pumping and allows for regulation of flows into the Harvey O. Banks Pumping Plant. The pumping plant discharges to the California Aqueduct and to the Brushy Creek Pipeline, which discharges to Dyer Reservoir and the South Bay Aqueduct. Water leaves Dyer Reservoir through the Dyer Canal, which discharges to the South Bay Aqueduct. The South Bay Aqueduct feeds Patterson Reservoir through a 175-foot-long reinforced concrete ogee-crest weir. Flow into Patterson Reservoir is controlled by regulation of the canal water surface elevation with Check Structure No. 3. Water within Patterson Reservoir is conveyed to the adjacent Zone 7 Patterson Pass Water Treatment Plant to provide water supply for Livermore.

Impact Analysis

a) Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Soil disturbance during grading and construction could potentially result in erosion and sedimentation of downstream water bodies. Erosion and sedimentation affect water quality and interfere with photosynthesis; oxygen exchange; and the respiration, growth, and reproduction of aquatic species. In addition to sediment, other pollutants associated with construction activity could include heavy metals, oil/grease, fuels, debris/trash from construction-related materials, and concrete curing compounds. Sediment can also be a carrier for these pollutants if such pollutants impact on-site soils and are subsequently transported off site.

The Project could result in localized, short-term impacts to water quality due to excavation and other activities within drainage and intake channels. However, because the Project would result in the disturbance of more than 1 acre of land, it would be subject to the SWRCB General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit). The Construction General Permit requires preparation and implementation of a SWPPP, which must include best management practices designed to reduce potential impacts to surface water quality throughout construction and operation of a project. The Construction General Permit requires routine inspection of all best management practices to monitor effectiveness of the SWPPP. DWR would be required to submit a

Notice of Intent to the SWRCB to be covered by a National Pollutant Discharge Elimination System permit and prepare the SWPPP prior to beginning Project construction. Specifically, the SWPPP must identify the erosion control measures that would be implemented at each of the three DWR facilities included in this Project to protect water quality and avoid significant adverse effects from erosion, siltation, and introduction of water pollutants.

The activities included in this Project would affect more than 1 acre of land at each of the individual three DWR facilities affected by the Project, and thus a separate SWPPP could be prepared for each individual facility, or a single SWPPP could be prepared for the entire Project.

With implementation of the required SWPPP, the Project would result in **less-than-significant** impacts associated with potential violations of water quality standards or waste discharge requirements or other degradation of water quality.

b) Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

A significant impact could occur if the Project necessitated a volume of groundwater that could lead or contribute to overdraft and unsustainable conditions in a groundwater basin or if the Project would result in the creation of substantial new areas of impervious surfaces that reduce groundwater recharge such that attainment of an identified sustainable yield target would be impaired. Such outcomes would conflict with the California Sustainable Groundwater Management Act.

Proposed Project activities would not require any use or pumping of groundwater, and would not create substantial areas of new impervious surfaces that could reduce groundwater recharge. Therefore, the Project would result in **no impact** because it would not decrease groundwater supplies

c) Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

i) result in substantial erosion or siltation on or off site;

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

In the event drainage patterns were altered and/or increased impervious surfaces resulted in increased stormwater runoff onto existing natural slopes, on-site or off-site erosive scour could occur, which could lead to siltation of downstream water conveyance facilities. The proposed Project involves burrow remediation and dam restoration designed to improve the integrity of the earthen embankment dams at each of the three DWR facilities included in the Project. The Project would also entail improvements to and maintenance activities for drainage channels, intake channels, and drainage ditches. These activities are intended to reduce erosion and scouring.

As discussed in Section 3.10(a), all of the remediation and restoration would be subject to a SWPPP (either a Project-wide SWPPP or individual SWPPPs for each of the three DWR facilities included in the Project) that includes site-specific erosion control measures. The reservoirs associated with each of the dams are built

structures; each outlet connects to an aqueduct that is either channelized or piped and would therefore not be subject to erosion. The Project activities at Dyer Dam and at Patterson Dam involve vegetation removal, regrading, concrete lining, and vegetation planting within drainage ditches/stormwater control features (see Sections 3A.4-4, 3A.5-4, and 3A.5-5). While these activities are planned to reduce erosion within the ditches, there is a potential for the improvements to increase flow rates and volumes downstream of the affected sections, which could cause additional erosion. **Mitigation Measure HYD-1** identifies performance standards for the proposed drainage improvements to ensure that downstream erosion does not occur. Therefore, the Project would have a **less-than-significant impact with mitigation incorporated**.

ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site;

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

The rate and amount of surface runoff would be increased if a project increased the amount of impervious surfaces within the project site. The earthen dam embankments at each of the three DWR facilities included in the Project consist of engineered and compacted fill. The Project would involve remediation of rodent burrows at each site by excavating the burrows, backfilling the dam surface with native soil and cementitious material consistent with the existing dam surface materials, and compacting the materials to restore the embankment to the existing condition. The Project would not result in the creation of any areas of new impervious surfaces within the dam embankments.

The proposed Project includes construction of up to 10.6 acres of new permanent toe access roads at Clifton Court Forebay Dam, concrete lining within the north access road drainage ditch at Dyer Dam, and installation of one or more new culverts within an existing unlined drainage ditch at Patterson Dam. Surface drainage from the new roads at Clifton Court Forebay Dam would flow to the surrounding waterbodies – Old River, Italian Slough, and West Canal. Relative to the size of and existing flows in these waterbodies, the additional drainage from a maximum of 10.6 acres of roads would not cause a noticeable increase in flows and would not cause flooding on or off site.

The new concrete lining in the drainage ditch at Dyer Dam and new culverts at Patterson Dam would add impervious surfaces to the drainage ditches, which could result in slight increases in the rate at which water moves through the ditches, as discussed in Section 3.10(c)i; however, because the ditches are conveyance features for existing runoff from surfaces outside of the ditch, the additional impervious surfaces would not increase the volume of runoff. Therefore, the Project would have a **less-than-significant** impact to on- or off-site flooding.

iii) 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; or

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Where a project creates new impervious surfaces that increase the rate and/or volume of surface runoff and that runoff is conveyed into a stormwater drainage system, the increased runoff can exceed the capacity of the stormwater conveyance facilities. However, in the case of the proposed Project, runoff flows into the California Aqueduct or the South Bay Aqueduct and does not contribute flows to a stormwater drainage system. Further, the runoff does not pass over impervious surfaces associated with urban

development, where pollutants such as oil, particulates from vehicle exhaust, vehicle and tire wear, crank case drippings, and spills are present.

Further, as discussed in Sections 3.10(a) and 3.10(c)ii, the proposed Project would not result in the creation of substantial areas of new impervious surfaces and would not substantially alter the existing rate or amount of surface runoff. Thus, the amount of stormwater runoff at each of the three DWR facilities included in this Project would remain similar to existing conditions.

As discussed in Section 3.9, Hazards and Hazardous Materials, construction of the Project would involve temporary use of common hazardous materials used for construction purposes. However, continued implementation of standard DWR practices to manage hazardous materials through materials handling protocols and spill prevention measures would ensure that water quality would not be degraded by materials used during construction or inadvertent release of those materials. Following construction, the Project would not be expected to result in the release of pollutants into the storm drain system. As a result, the Project would not result in substantial alterations to the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts would be **less than significant**.

iv) impede or redirect flood flows?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

The proposed Project would involve implementation of a rodent burrow remediation and dam restoration plan at each of the three DWR facilities included in the proposed Project to improve the integrity of each dam and lessen the potential for dam failure that could result in flooding. The Project would not result in alterations to the size, slope, or configuration of the earthen dam embankments at each facility and thus would not increase or decrease reservoir capacity and the associated potential for flooding. The Project would result in **no impact** associated with the potential to impede or redirect flood flows.

Mitigation Measures

The Project could have a substantial adverse effect on drainage patterns by resulting in substantial erosion downstream of the proposed activities within the drainage ditches at Dyer Dam and Patterson Dam; these impacts would be significant. **Mitigation Measure HYD-1,** listed below, would reduce impacts related to erosion to below a level of significance. Impacts would be **less than significant with mitigation incorporated**.

HYD-1: **Avoid or Minimize Increased Erosion.** To avoid or minimize the potential for increased erosion downstream of the drainage ditch improvements at Dyer Dam and Patterson Dam, the California Department of Water Resources (DWR) shall complete a fluvial geomorphology study for each ditch that evaluates the physical shape of each ditch and the properties (e.g., velocity, volume, and flow resistance) of water and sediment transport through each ditch. The fluvial geomorphology study shall also provide design criteria for the proposed drainage ditch activities that will ensure the Project does not increase erosion within or downstream of the affected ditch segments.

d) In flood hazard, tsunami, or seiche zones, would the Project risk release of pollutants due to Project inundation?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Seiche and tsunami are short duration earthquake-generated water waves in large, enclosed bodies of water and the open ocean, respectively. The extent and severity of a seiche or tsunami would be dependent upon ground motions and fault offset from nearby active faults. No part of the Project would involve alterations to the behavior or direction of earthquake-induced seismic activity. However, implementation of the Project would fortify three existing dams by remediating burrowing rodent damage. Burrowing weakens the integrity of the dams, which could result in dam failure after a seismic event. Given that the purpose of the Project is to fortify three existing dams to ensure that dam integrity is maintained during and after a seismic event, the Project would result in a positive effect. Therefore, this impact would be **less than significant**.

e) Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

As discussed in Section 3.10(a), the Project would result in effects to more than 1 acre of land and therefore is required to prepare and implement a SWPPP to protect water quality. Further, the DWR facilities included in the Project contribute water to other DWR facilities or local water supply facilities and do not contribute water to natural drainage features. Thus the stormwater runoff from each of the DWR facilities included in this Project would not affect attainment of the water quality control plan goals and objectives for the local water basins.

As discussed in Sections 3.10(b) and 3.10(c), the proposed Project activities would not require any use or pumping of groundwater, and would not create substantial areas of new impervious surfaces that could reduce groundwater recharge. Therefore, the Project would result in **no impact** to the sustainable groundwater management plans adopted for the project area.

3.11 Land Use and Planning

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XI. LAND USE AND PLANNING – Would the Project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

Setting

Clifton Court Forebay Dam

The surrounding land use at Clifton Court Forebay Dam is agriculture and specifically viticulture, pasture grazing, and agricultural preserves. The Contra Costa County General Plan identifies Clifton Court Forebay as being located in the Primary Zone of the Delta and the larger Southeast County planning area, which is "almost exclusively planned for agricultural, watershed, or public purposes" (Contra Costa County 2005).

Contra Costa County General Plan Policy 3-54 states "All public and private management and development activities within the Primary Zone of the Delta shall be consistent with the goals, policies, and provisions of the 'Land Use and Resource Management Plan' for the Primary Zone of the Delta as adopted and as may be amended by the Delta Protection Commission" (Contra Costa County 2005).

Dyer Dam and Patterson Dam

Dyer Dam and Patterson Dam are located in the unincorporated area of Alameda County. Surrounding land use include large parcels for agricultural uses. There are residential and agricultural land uses to the west of Dyer Road. Additionally, the Zone 7 Patterson Pass Water Treatment Plant is located south of Patterson Dam.

Impact Analysis

a) Would the Project physically divide an established community?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

As shown in Figures 8, 13, and 18, all of the proposed Project activities would occur entirely within DWR property. The Project involves maintenance and remediation work for each of the three DWR facilities and would not alter the size or configuration of the earthen embankments or reservoirs at each facility. The Project would not involve altering the existing use of the site and would not divide an established community. There would be **no impact**.

b) Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

All Project activities would occur within DWR property. Implementation of the proposed Project would involve burrow remediation, restoration, and maintenance activities necessary to ensure the proper and safe operation of the individual DWR facilities. Implementation of the proposed Project would not alter or change the existing land use or water conveyance operations of DWR and would not directly cause or indirectly contribute to changes in land use or other environmental changes outside of DWR property. There are no approved habitat conservation plans or natural community conservation plans that cover the Project area. Thus, the proposed Project activities would not conflict with any land use policies or regulations, and **no impacts** would occur.

3.12 Mineral Resources

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XII. 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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Setting

The Project facilities are located in unincorporated areas of Alameda and Contra Costa Counties. The California Department of Conservation, California Geological Survey conducts Mineral Land Classification surveys that designate land areas, such as mineral resources zones or aggregate resources zones (DOC 2018). The California Geological Survey has mapped aggregate availability in the state, and no aggregate resources zones have been identified on or within the vicinity of the Project. None of the Project sites are located in an area of known or significant mineral resources.

Impact Analysis

a) Would the Project 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?

Clifton Court Forebay Dam

No known mineral resources, mineral recovery sites, or aggregate resource zones are located on the Project sites. According to Contra Costa County General Plan, Figure 8-4 Mineral Resources, there are no designated areas of mineral resource located on or nearby the Project site at Clifton Court Forebay Dam (Contra Costa County 2005). Furthermore, the proposed Project would not involve activities that would impact areas of known mineral resources or mineral recovery sites. The Project would result in **no impact** to mineral resources.

Dyer Dam and Patterson Dam

Alameda County contains high value sand and gravel resources in the Livermore–Amador Valley floor. According to Figure 8-3, Mineral Resources Sectors within the Planning Area, in the Open Space and Conservation Element of the City of Livermore's General Plan, Dyer Dam and Patterson Dam are not located in a known mineral resource area (City of Livermore 2004). Furthermore, the proposed Project would not involve activities that would impact areas of known mineral resources or mineral recovery sites. Therefore, implementation of the Project would result in **no impact** to mineral resources.

b) Would the Project 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?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

As stated in response Section 3.12(a), there are no known mineral resources at any of the Project facilities. The Project would not result in a loss of availability of locally important mineral resources recovery sites in Contra Costa County or Alameda County and there would be **no impact**. Significant mineral deposits are not known to be present at any of the three DWR facilities included in this Project and none of the DWR facilities are identified as containing important minerals by the applicable general plan. As there are no known mineral resources underlying the Project site, implementation of the Project would not result in a loss of availability of any known mineral resource. The proposed Project would result in no loss of availability of any locally important mineral resources delineated on a local general plan or other land use plan; the Project would have **no impact.**

3.13 Noise

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XIII. NOISE – Would the Project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or 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?	☐	☐	☐	☒

Setting

Clifton Court Forebay Dam is located in Contra Costa County, and Dyer Dam and Patterson Dam are located in Alameda County. Existing noise sources in the Project area include distant traffic, agricultural operations, wildlife vocalizations, wind, and moving water within Clifton Court Forebay, Dyer Reservoir, and Patterson Reservoir.

The Contra Costa County General Plan Policy 11-2 establishes a standard for maximum outdoor noise levels in residential areas of 60 decibels (dB) and a conditionally allowable noise level of 70 dB (Contra Costa County 2005). However, construction noise is exempt from Contra Costa County ordinances as long as work is performed after

7:00 a.m. and before 7:00 p.m. on any day, except Saturday or Sunday on which work shall not take place before 8:00 a.m. and after 5:00 p.m. Similarly, the Alameda County East County Area Plan, Policy 289 states that new noise-sensitive development should include mitigation to avoid being exposed to noise levels that exceed 60 dB and the Alameda County Code defines allowable noise exposure levels for noise-sensitive receptors ranging from 50 dB to 70 dB during daytime hours (7:00 a.m. to 10:00 p.m.) (Alameda County 1994a). The Alameda County Code provides exemptions from these standards for noise from "Public Health, Welfare and Safety Activities," which include "construction or maintenance and repair operations conducted by public agencies and/or utility companies or their contractors which are deemed necessary to serve the best interests of the public and to protect the public health, welfare and safety" and for construction activities that occur between 7:00 a.m. and 7:00 p.m. on weekdays and between 8:00 a.m. and 5:00 p.m. on Saturdays and Sundays (Alameda County 2021b).

Residences and schools are considered noise-sensitive receptors because ordinary use and enjoyment of these properties and facilities can be impaired by excessive noise levels. The nearest noise-sensitive receptors are a small residential subdivision with the closest home being approximately 275 feet north of the northeast corner of Clifton Court Forebay Dam; the residential–agricultural properties located west of Dyer Dam, with the residence nearest to the Project work area being approximately 0.2 miles away; and a residential property located south of Patterson Pass Road and east of the South Bay Aqueduct, approximately 0.28 miles from Patterson Dam.

Impact Analysis

a) Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Construction noise levels would fluctuate depending on the type, number, and duration of usage of the varying equipment. The effects of noise largely depend on the type of maintenance 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. On-site maintenance equipment used during site preparation would include excavators, dozers, backhoes, and trucks.

Noise from construction equipment generally exhibits point source acoustical characteristics. Sound from a point source is attenuated (reduced) at a rate of 6 dB per doubling of distance from the source for "hard site" (e.g., paved, urban environments) conditions and at 7.5 dB per doubling of distance for "soft site" (e.g., unpaved, agricultural or natural lands) conditions. Thus, a noise level of 85 dB at 50 feet from the source would decrease to 79 dB or 77.5 dB at 100 feet, 73 dB or 70 dB at 200 feet, and 67 dB or 62.5 dB at 400 feet.

The range of maximum noise levels for various types of construction equipment is depicted in Table 17. These levels reflect a single piece of equipment operating at maximum power. Actual noise levels from a given piece of equipment usually fluctuate because typical operating cycles for construction equipment often involves 2 minutes of full power, followed by 3 or 4 minutes at lower levels. The noise levels shown in Table 17 are based on surveys conducted by the U.S. Environmental Protection Agency in 1971. In the time since 1971, regulations have been adopted to reduce noise generated by certain types of equipment to meet worker noise exposure standards. Also, because of stringent air quality emissions standards,

newer, cleaner, and quieter equipment is used on most construction projects in California. Thus, the construction equipment noise levels indicated in Table 17 represent "worst-case" conditions.

Table 17. Construction Equipment Noise Emission Levels

Equipment	Typical Maximum Sound Level (dB) at 50 feet from Source
All other equipment > 5 horsepower	85
Auger drill rig	84
Backhoe	78
Compressor (air)	78
Concrete pump truck	81
Crane	81
Dozer	82
Dump truck	76
Excavator	81
Flatbed truck	74
Front end loader	79
Generator	81
Generator (<25 KVA, variable message signs)	73
Man Lift	75
Pickup truck	75
Pneumatic tools	85
Pumps	81
Roller	80
Sand blasting (single nozzle)	96
Scraper	84
Welder/Torch	74

Source: FHWA 2008.
Notes: dB = decibels; KVA = kilovolt-amps.

During implementation of the Project, the nearest residential receptor may be exposed to periodic and temporary increases in noise levels. The nearest sensitive receptors to any of the DWR facilities included in the Project are the residences north of Clifton Court Forebay Dam. These residences are approximately 275 feet from the nearest construction activity, and thus would be exposed to maximum noise levels of between 63 and 70 dB. Noise exposure for the nearest residences to Dyer Dam and Patterson Dam would be substantially lower because they are at least 1,000 feet away from Project activities. Thus noise levels for residents near Dyer Dam and Patterson Dam would remain below Alameda County's maximum acceptable noise exposure level while residents nearest to Clifton Court Forebay Dam could experience temporary noise levels that exceed the Contra Costa County noise standard of 60 dB, but within the conditionally acceptable noise level of 70 dB. However, the Contra Costa County Code exempts construction noise that occurs during daytime hours (between 7:00 a.m. and 7:00 p.m. weekdays and between 8:00 a.m. and 5:00 p.m. weekends) from its noise exposure standards.

Additionally, the construction period would be of limited duration, with Project implementation occurring at all three of the project facilities for up to 6 months per year between 2022 and 2026. Further, construction

activities would move around the perimeter of each dam throughout the construction periods, thus noise level exposure at any single noise-sensitive receptor would fluctuate throughout the construction period.

After completion of the initial burrow remediation, restoration, and other Project implementation activities, temporary noise generation would be limited to ongoing monitoring aimed at identifying new rodent burrows that require remediation. Noise levels during these isolated remediation events would be similar to those during the initial remediation and restoration activities.

Because construction noise levels would be within Alameda County's and Contra Costa County's conditionally acceptable ranges, the maximum noise levels would be temporary, and there would be minimal periods of noise throughout ongoing monitoring and maintenance, this impact would be **less than significant**.

b) Would the Project result in generation of excessive groundborne vibration or groundborne noise levels?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Construction activities in the Project area may result in varying degrees of temporary ground vibration, depending on the specific construction equipment used and operations involved. However, excavation would be limited to a maximum of 18 inches in depth and would occur within existing dam embankments and drainage channels. The Project would not require blasting or pile driving. Thus, the potential for groundborne vibration is limited.

Further, groundborne vibration and noise results in impacts when it could cause damage to structures that are proximate to the construction area. Due to the distance to the nearest structure and the minor nature of the ground disturbance associated with the Project, groundborne noise impacts would be **less than significant**.

c) For a project located within the vicinity of a private airstrip or 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?

Clifton Court Forebay Dam

Clifton Court Forebay Dam is not located within 2 miles of a public airport. The Contra Costa County Byron Airport is located over 3 miles north of Clifton Court Forebay Dam and is outside of the Byron Airport Land Use Compatibility Plan area. The Project would not result in effects to any airport operations and proposed Project activities would not expose people on- or off-site to excessive noise levels. Therefore, there would be **no impact** related to airport noise. No private airstrips are in the vicinity of the Project site at Clifton Court Forebay Dam, and the Project would not affect any airstrip operations. Therefore, the proposed Project would not result in exposing people on- or off-site to excessive noise levels and would have **no impact** to private airstrip noise.

Dyer Dam and Patterson Dam

There are no public or private airports or airstrips in the vicinity of Dyer Dam or Patterson Dam. The proposed rodent burrow remediation and restoration work would not expose any people working on the

Project site at Dyer Dam or Patterson Dam to excessive aircraft-related noise levels and the Project would have **no impact.**

3.14 Population and Housing

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XIV. POPULATION AND HOUSING – Would the Project:				
a) Induce substantial unplanned 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)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Setting

Clifton Court Forebay Dam

Surrounding land uses at Clifton Court Forebay Dam include agricultural, viticulture, pasture grazing, and agricultural preserves. Surrounding lands are designated for agricultural use.

Dyer Dam and Patterson Dam

Surrounding land use at Dyer Dam and Patterson Dam include large parcels for agricultural uses. Residential/Agriculture properties are located west of Dyer Road. The Zone 7 Patterson Pass Water Treatment Plant is located south of Patterson Dam.

Impact Analysis

a) Would the Project induce substantial unplanned 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)?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Proposed Project activities include rodent burrow remediation and restoration measures for the downstream faces of the Patterson, Dyer, and Clifton Court Forebay Dams to prevent the ongoing deterioration of the dam embankments. Project activities also include associated improvements to drainage channels, intake channels, and ditches to reduce erosion and improve water flow. The proposed

Project would not involve constructing any housing or land uses that could create significant new employment opportunities and thus would not directly or indirectly increase population in the Project area.

The remediation and maintenance work for the Project would not consume water, change the existing storage capacity of any of the three DWR facilities included in the Project, or extend water supply infrastructure. Thus, implementation of the Project would not result in increased water consumption, require development of new sources of water, or make water supply available to properties that are not currently served. Accordingly, the proposed Project would not induce population growth in the area, and there would be **no impact**.

b) Would the Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

All Project activities would occur within DWR property and the Project sites do not contain any residences. The proposed Project would not result in displacement of any existing housing. Furthermore, the purpose of the Project is to reduce the risk of dam failure, thus providing a greater protection to residences within the Project vicinity of each facility. Therefore, the proposed Project would not result in impacts to housing or necessitate the construction of replacement housing. In addition, the proposed Project would not displace any people, or result in the need for replacement housing. **No impact** would occur.

3.15 Public Services

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XV. PUBLIC SERVICES				
a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, 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?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☐	☒

Setting

Fire protection and police protection services in the unincorporated areas of Alameda County are provided by the Alameda County Fire Department and the Alameda County Sheriff's Department, respectively. Similarly, Contra Costa County's sheriff and fire departments serve the unincorporated areas of Contra Costa County.

At Clifton Court Forebay, the northern peninsula extending from Clifton Court Road provides access for boating and fishing. The Lazy M Marina is located adjacent to Clifton Court Road, west of Italian Slough. Additionally, members of the public occasionally use the dam crest for walking and bicycling, although the crest is not a public trail and Clifton Court Forebay is not identified in the Contra Costa General Plan as a public recreation area. Dyer Dam and Patterson Dam are not accessible for public recreation.

The Project sites are outside city limits and there are no schools or parks located in the Project vicinity.

Impact Analysis

a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, 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?

Clifton Court Forebay Dam

The Project site at Clifton Court Forebay Dam would continue to be served by the Contra Costa County Fire Department. The closest fire station, East Contra Costa Fire Protection, located at 1685 Bixler Road, Brentwood, California is approximately 7.7 miles north of the Project site.

The burrow remediation and restoration work would include use of construction equipment, which could cause a spark or other source of fire ignition. However, the work areas would be cleared of vegetation at the beginning of each construction phase, which would reduce the potential for a fire to be ignited. The annual maintenance activities included in the proposed Project would involve inspection and limited ongoing burrow remediation work similar to existing routine maintenance activities at this site. Thus, the proposed burrow remediation and restoration program would not increase the demand for fire protection or emergency response services. Additionally, construction equipment and vehicles would be staged on site and Project activity would not impede traffic flow on local roadways. Traffic associated with the Project would not increase fire department response times to nearby properties.

The Project would not involve the construction of any new land uses that could increase permanent or temporary population in the area, and thus would not increase demand for fire protection and emergency response services for residential, commercial, or industrial areas. The Project would not result in an increase in the recreational uses of Clifton Court Forebay, and therefore it would not result in a higher level of human activity that could increase demand for fire protection or emergency response services associated with the existing recreation use at this facility. **No impacts** related to fire protection services would occur as a result of the proposed Project.

Dyer Dam and Patterson Dam

The Project site at Dyer Dam and Patterson Dam would continue to be served by the Alameda County Fire Department. The closest fire station, Station 20, located at 7000 East Avenue, Livermore, California is approximately 6 miles southwest of Dyer Dam and 1.9 miles from Patterson Dam.

The burrow remediation and restoration work would include use of construction equipment, which could cause a spark or other source of fire ignition. However, the work areas would be cleared of vegetation at the beginning of each construction phase, which would reduce the potential for a fire to be ignited. The annual maintenance activities included in the proposed Project would involve inspection and limited ongoing burrow remediation work similar to existing routine maintenance activities at this site. Thus, the proposed burrow remediation and restoration program would not increase the demand for fire protection or emergency response services. Additionally, construction equipment and vehicles would be staged on site and Project activity would not impede traffic flow on local roadways. Traffic associated with the Project would not increase fire department response times to nearby properties. The Project would not involve the construction of any new land uses that could increase permanent or temporary population in the area, and thus would not increase demand for fire protection and emergency response services for residential, commercial, or industrial areas. Therefore, **no impacts** related to fire protection services would occur as a result of the proposed Project.

Police protection?

Clifton Court Forebay Dam

The Contra Costa County Sheriff Department provides law enforcement and emergency response in unincorporated areas of Contra Costa County, including the area around Clifton Court Forebay.

The burrow remediation and restoration work would not increase the potential for illegal activity to occur at the Project site and would not increase demand for law enforcement or emergency response services. The Project would not result in increased recreational uses of Clifton Court Forebay, thus it would not result in a higher level of human activity that could increase demand for law enforcement or emergency response services associated with the existing recreation use at this facility. Construction equipment and vehicles would be staged on site and Project activity would not impede traffic flow on local roadways. Traffic associated with the Project would not increase law enforcement response times to nearby properties. The Project would not involve the construction of any new land uses that could increase permanent or temporary population in the area, and thus would not increase demand for police protection services for residential, commercial, or industrial areas. Therefore, **no impacts** related to police protection services would occur as a result of the proposed Project.

Dyer Dam and Patterson Dam

The Alameda County Sheriff's Patrol Division provides uniformed law enforcement services to residents in the unincorporated areas of Alameda County, including the area around Dyer Dam and Patterson Dam.

The burrow remediation and restoration work would not increase the potential for illegal activity to occur at the Project site and would not increase demand for law enforcement or emergency response services. Construction equipment and vehicles would be staged on site and Project activity would not impede traffic flow on local roadways. Traffic associated with the Project would not increase law enforcement response times to nearby properties. The Project would not involve the construction of any new land uses that could increase permanent or temporary population in the area, and thus would not increase demand for police protection services for residential, commercial, or industrial areas. Therefore, **no impacts** related to police protection services would occur as a result of the proposed Project.

Schools?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

The proposed Project would include two seasons of burrow remediation and restoration as well as ongoing maintenance activities around each of the DWR facilities. The Project would not involve creating new housing or a large number of employment opportunities. Therefore, implementation of the proposed Project would not generate new students or increase the demand on local school systems, and **no impact** to school services would occur.

Parks?

Clifton Court Forebay Dam

As noted above, at Clifton Court Forebay, the northern peninsula extending from Clifton Court Road provides access for boating and fishing. Proposed Project activities would generally affect the downstream faces of the dam embankment and adjacent channels. As shown in Figure 8, no Project activities are proposed on the northern peninsula. Public access to the boating and fishing area at Clifton Court Forebay would not be affected by the proposed Project. The Project would not result in the creation of any new recreational areas or parks. The Project would have **no impact** on parks and recreation.

Dyer Dam and Patterson Dam

Dyer Dam and Patterson Dam are not accessible for public recreation. This Project would not involve creating new recreational areas or parks. It also would not increase population in the area and thus would not increase demand for parks and recreation facilities. The Project would have **no impact** on parks and recreation.

Other public facilities?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

No other public facilities exist in the Project area that would be affected by the Project activities. The Project would not involve the construction of any new land uses or infrastructure and would not result in increased population in the Project region. Thus, implementation of the proposed Project would not create demands for use or maintenance of other public facilities. There would be **no impact** to other public facilities.

3.16 Recreation

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XVI. RECREATION				
a) Would the Project 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?	☐	☐	☐	☒
b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Setting

The Contra Costa County Public Works Department operates and maintains a variety of parks throughout the county. There are a number of regional park districts within Contra Costa County, including the East Bay Regional Park District. Livermore offers several public parks maintained by the Livermore Area Recreation and Park District. Park lands in Alameda County are maintained by the East Bay Regional Park District.

Impact Analysis

a) Would the Project 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?

Clifton Court Forebay Dam

The Clifton Court Forebay provides limited public access for boating and fishing recreation uses. As discussed in Section 3.15, Public Services, implementation of the Project would have no effect on the recreation facilities at the site. The proposed Project would not entail construction of any new land uses that could increase permanent or temporary population in the area and thus would not increase use of any existing neighborhood parks, regional parks, or other recreational facilities. The Project would have **no impact** due to physical deterioration of any recreational facilities.

Dyer Dam and Patterson Dam

Dyer Dam and Patterson Dam are not available to the public for recreational uses. The proposed Project would not entail construction of any new land uses that could increase permanent or temporary population in the area and thus would not increase use of any existing neighborhood parks, regional parks, or other recreational facilities. The Project would have **no impact** due to physical deterioration of any recreational facilities.

b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

As discussed in Section 3.14, Population and Housing, and Section 3.15, Public Services, implementation of the Project would not directly or indirectly lead to population growth in the region, and thus would not require construction or expansion of recreational facilities. As discussed in Section 3.15, implementation of the proposed Project would not adversely affect the existing recreational activities at Clifton Court Forebay Implementation of the Project would not require construction or expansion of recreational facilities and therefore would result in **no impact**.

3.17 Transportation

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XVII. TRANSPORTATION – Would the Project:				
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☐	☒
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☐	☒
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d) Result in inadequate emergency access?	☐	☐	☐	☒

Setting

Clifton Court Forebay Dam

As shown in Figure 6, Clifton Court Forebay Access, the primary access to the dam is via Byron Highway to Clifton Court Road and a secondary access is provided from Byron Highway via the Skinner Fish Facility entrance. The primary access point provides access to the west, north, and east dam segments. Typical access to the south dam segment is also from Clifton Court Road, but this access point is subject to load restrictions because it passes over the intake control structure bridge. Thus, the additional access point through the Skinner Fish Facility entrance would provide access to the southern dam embankment and intake channel for heavy haul trucks or equipment. There is a potential alternative access point from Byron Highway via Herdlyn Road, but this alternative would require access through private farmland and would only be used if access through the Skinner Fish Facility would interfere with ongoing O&M operations. Additionally, this alternative would require a temporary entry permit for evaluation of the existing farm road if needed as site access for construction. Additionally, new temporary and permanent toe

access roads covering up to 5.75 and 10.64 acres, respectively, may be necessary for construction and long-term operations and maintenance.

Dyer Dam

Dyer Dam is located in Altamont Hills, north of Altamont Pass Road. As shown in Figure 11, Dyer Reservoir Access, this site can be accessed from Dyer Road via the existing entrance road serving the reservoir facility. Access to the entire toe of the dam and the dam facility is provided by an existing gravel road, which provides access to a paved roadway atop the crest of the dam via ramps on the north and south side of the reservoir. Existing gravel access roads and the paved crest road would provide access to the western embankment slope while the eastern embankment slope would be accessed from the paved crest road and from the upper settling pond maintenance road. Construction of a temporary construction road connected to the existing maintenance road near the spillway may be necessary due to heavy use of the north access road. Construction of this temporary access road would minimize impacts to existing traffic on the north access road. The temporary construction road would be 20 feet wide and 0.25 miles long, with a gravel surface.

Patterson Dam

As shown in Figure 16, Patterson Reservoir Access, the site is accessed from Patterson Pass Road. Approximately 1 mile to the west, Patterson Pass Road intersects with Greenville Road, which then provides access to I-580. Existing paved and gravel access roads within the Patterson Dam facility would provide access to most of the construction areas within this site. As shown in Figure 16, a temporary construction access area would be constructed north of the proposed staging area and existing settling pond on the east side of the reservoir, and a second temporary construction access area would be provided through the existing maintenance yard.

Impact Analysis

a) Would the Project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Proposed Project activities include rodent burrow remediation and restoration measures for the downstream faces of the earthen embankment dams at Clifton Court Forebay, Dyer Dam, and Patterson Dam to prevent the ongoing deterioration of the dam embankments. Activities also include associated improvements to drainage channels, intake channels, and ditches to reduce erosion and improve water flow.

During the remediation and restoration efforts between 2022 and 2026, construction traffic would include trucks delivering equipment and materials to be staged at each of the three DWR facilities, trucks importing materials to the Project site, and construction workers commuting to and from each facility. All Project traffic would use existing roadways to access the DWR facilities. The only new permanent and temporary roadways would be constructed within DWR property. The Project would result in **no impact** related to creating roadways that could conflict with the existing or planned circulation system, including transit, roadway, bicycle, and pedestrian modes of travel.

After the initial construction seasons, ongoing monitoring and maintenance would require the use of a periodic passenger vehicle for monitoring activities and truck traffic for localized remediation and

restoration work. Implementation of the Project would not generate daily traffic that could interfere with the operation of transit, roadway, bicycle, or pedestrian facilities outside of the affected DWR properties.

As discussed in Section 3.15, Public Services, and Section 3.16, none of the DWR facilities included in this Project include public bicycle or pedestrian trails or facilities. Thus, implementation of the Project would have **no impact** to bicycle and pedestrian transportation.

b) Would the Project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

CEQA Guidelines Section 15064.3(b) stipulates that CEQA analyses for land development projects may not rely on measures of roadway congestion to identify environmental effects and that "generally, vehicle miles traveled is the most appropriate measure of transportation impacts." The California Governor's Office of Planning and Research Technical Advisory on Evaluating Transportation Impacts Under CEQA (Technical Advisory) (OPR 2018) provides guidance on how to incorporate analysis of vehicle miles traveled in a CEQA analysis. The Technical Advisory states that achieving the state's long-term climate goals will require that California reduce per capita vehicle miles traveled, particularly because half of California's GHG emissions come from the transportation sector. The Technical Advisory also notes that CEQA Guidelines Section 15064.3 defines vehicle miles traveled as "the amount and distance of automobile travel attributable to a project," and further that the term automobile refers to on-road passenger vehicles, specifically cars and light trucks while excluding heavy equipment (OPR 2018).

Proposed Project activities include rodent burrow remediation and restoration measures for the downstream faces of the earthen embankment dams at Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam to prevent the ongoing deterioration of the dam embankments. Activities also include associated improvements to drainage channels, intake channels, and ditches to reduce erosion and improve water flow. During the remediation and restoration efforts between 2022 and 2026, construction traffic would include trucks delivering equipment and materials to be staged at each of the three DWR facilities, trucks importing materials to the Project site, and construction workers commuting to and from each facility. After the initial construction seasons, ongoing monitoring and maintenance would require periodic passenger vehicle travel for monitoring activities and truck traffic for localized remediation and restoration work. The monitoring activities would be consistent with the existing DWR maintenance activities for each dam and thus would not generate daily traffic trips and would not substantially increase annual vehicle miles traveled associated with dam monitoring and maintenance.

Implementation of the Project would not generate new traffic trips and vehicle miles traveled because it would not involve the construction any new land uses, would not increase the recreational facilities at Clifton Court Forebay, and would not directly or indirectly increase population in the Project region. Therefore, **no impact** would occur.

c) Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

The Project would not involve the construction of any new permanent roads or modification to existing roads; thus it would not create any hazards due to a geometric design feature. Implementation of the

Project would require transport of heavy equipment and materials to each of the three DWR facilities at the start of each construction season. However, the transport of this equipment and materials would not change or reconstruct existing roadways, and thus would not create any impediments to existing emergency access in the area. Therefore, **no impact** would occur.

d) Would the Project result in inadequate emergency access?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Access to the Project site would be maintained via the existing roadways. Staging would occur on site and would not block emergency vehicle access to any of the three DWR facilities included in this Project or to any surrounding properties. Implementation of the Project would not change or reconstruct existing roadways, and thus would not create any impediments to existing emergency access in the area. Implementation of the Project would therefore result in **no impacts** to emergency vehicle or resource access.

3.18 Tribal Cultural Resources

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XVIII. TRIBAL CULTURAL RESOURCES				
Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	☐	☒	☐	☐

Setting

As stated in Section 3.5, Cultural Resources, the archaeology and prehistory of the Central Valley, and San Joaquin Valley in particular, are not well understood. Early and widespread agricultural use of the valley floor has destroyed much of the bottomland archaeology, siltation has most likely buried many resources well below the surface

sediments, and archaeological material that has been recovered from the valley area is devoid of context because it was scavenged from the surface and placed in private collection. Despite these difficulties, a general chronological framework for the Central Valley has been developed. Like the general California chronology, the archaeological record of the Central Valley can be divided into the Paleoindian Period (11,550 to 8550 calibrated years [cal] BC), Archaic Period (8550 cal BC to cal AD 1100), Emergent Period (cal AD 1100 to 1750), and Ethnohistoric Period (post-AD 1769). The Archaic Period is further subdivided into three phases—the Lower Archaic (8550 to 5550 cal BC), Middle Archaic (5550 to 550 cal BC), and Upper Archaic (550 cal BC to cal AD 1100)—based on climatic and cultural variations (Bennyhoff and Fredrickson 1994; Groza 2002; Rosenthal et al. 2007) (Confidential Appendices C1 and C2).

The Project is subject to compliance with AB 52 (California Public Resources Code, Section 21074), which requires consideration of impacts to "tribal cultural resources" as part of the CEQA process and requires the CEQA lead agency to notify any California Native American groups (who have requested notification) of a proposed project who are traditionally or culturally affiliated with the geographic area in which the project takes place. On February 24, 2021, DWR sent a notification letter to the Ione Band of Miwok Indians, pursuant to AB 52. DWR then followed up with an email on March 3, 2021. DWR has not received any response to the AB 52 notification. DWR considers the period of AB 52 consultation to be closed.

Additionally, in accordance with DWR's established Tribal Engagement Policy, DWR contacted Native American tribes as recommended by the Native American Heritage Commission, independent of AB 52 outreach. Under DWR's Tribal Engagement Policy, notifications regarding the Project were sent to the following tribes in May 2021:

- Amah Matsun Tribal Band of Mission San Juan Bautista
- The Confederated Villages of Lisjan
- Costanoan Rumsen Carmel Tribe
- Indian Canyon Matsun Band of Costanoan
- Muwekma Ohlone Indian Tribe of the San Francisco Bay Area
- North Valley Yokuts Tribe
- The Ohlone Indian Tribe
- Tule River Indian Tribe
- Wilton Rancheria

DWR, having reviewed all information provided, considers the Project unlikely to impact tribal cultural resources and/or cultural resources and the period of tribal engagement to be closed.

Impact Analysis

a) Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

As discussed in Section 3.5, the NWIC records search and the archaeological survey completed for the Project did not identify evidence of Native American archaeological deposits or ancestral remains. Implementation of the proposed Project would not impact known tribal cultural resources that are listed or eligible for listing in the CRHR or a local register of historical resources, nor has a tribal cultural resource been identified at the Project site. As noted in Section 3.5, implementation of Mitigation Measures CUL-1 and CUL-2 would ensure that potential impacts related to previously undiscovered historic or archaeological resources and human remains, including tribal resources, would be less than significant. The Project would result in a **less-than-significant impact with mitigation incorporated**.

ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Implementation of Mitigation Measures CUL-1 and CUL-2 would ensure that potential impacts related to previously undiscovered historic or archaeological resources and human remains, including tribal resources would be less than significant. The Project would result in a **less-than-significant impact with mitigation incorporated**.

3.19 Utilities and Service Systems

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XIX. UTILITIES AND SERVICE SYSTEMS – Would the Project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☒
b) Have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☐	☒
c) Result in a determination by the wastewater treatment provider, which 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?	☐	☐	☐	☒
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

Setting

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam do not currently generate wastewater or require the use of a wastewater treatment facility. None of the Project activities would require consumption of potable water or generate wastewater.

Impact Analysis

a) Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Implementation of the proposed Project would involve use of existing water supplies, would not generate wastewater, and would not require new water supplies. Additionally, implementation of the proposed Project

would not require new or expanded sources of storm drainages, electric power, natural gas, or telecommunication facilities. Therefore, there would be **no impact** from construction or relocation of utilities.

b) Would the Project have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

The Project would involve rodent burrow remediation (burrow collapse, excavation, compaction, and backfilling), erosion prevention measures, ongoing monitoring, and permanent measures to prevent future burrowing where warranted. After completion of burrow remediation, DWR would undertake ongoing monitoring and maintenance, as described in the Rodent Burrow Maintenance and Monitoring Plan (DWR 2021), to prevent formation of new habitat capable of supporting special-status wildlife species. Project activities would use existing water supplies and would not increase the current water use at the Project sites. Therefore, there would be **no impact** to future water supplies as a result of the Project.

c) Would the Project result in a determination by the wastewater treatment provider, which 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?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

As noted in Section 3.19(a), proposed Project activities would involve the use of existing water supplies and would not generate wastewater. Implementation of the proposed Project would not require new water supplies and would not construct any new restroom facilities. As such, no increase in wastewater generation or increases in discharge from wastewater treatment facilities would occur. Therefore, **no impacts** would occur.

d) Would the Project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

Implementation of the proposed Project would require removal of vegetation and sediment from the Project sites. Vegetation and sediment removal would be transported via dump truck to a nearby green waste facility and designated spoil sites. The amount of green waste generated by Project activities would not cause a green waste facility to exceed capacity. Therefore, the Project would result in a **less-than-significant impact**.

e) Would the Project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam

As stated in Section 3.19(d), implementation of the proposed Project would generate solid waste in the form of vegetation and sediment. Vegetation and sediment would be disposed via dump trucks to a nearby green waste facility and designated spoil sites. The proposed Project would comply with all applicable federal, state, and local regulations and **no impacts** are anticipated.

3.20 Wildfire

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XX. WILDFIRE – If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

Setting

The Project sites are entirely located in unincorporated areas of Alameda County and Contra Costa County. The California Department of Forestry and Fire Protection (CAL FIRE) adopted Fire Hazard Severity Zones Maps, which includes maps for state responsibility areas, as well as recommended maps for local responsibility areas. Fire protection services are provided by each county's fire department.

Impact Analysis

a) Would the Project substantially impair an adopted emergency response plan or emergency evacuation plan?

Clifton Court Forebay Dam

The Project site at Clifton Court Forebay Dam is located in a local responsibility area and therefore is not located within a CAL FIRE designated Very High Fire Hazard Severity Area Zone (CAL FIRE 2021). The Project site at Clifton Court Forebay Dam would continue to be served by the Contra Costa County Fire Department. The proposed Project would not result in permanent increases in vehicle traffic or any changes to existing roadways and thus would not interfere with emergency response or evacuation. The Project would have **no impact** due to impairing implementation of emergency response or evacuation plans at Clifton Court Forebay Dam.

Dyer Dam and Patterson Dam

According to CAL FIRE's Fire Hazard Severity Zones Maps, Dyer Dam and Patterson Dam are located in a state responsibility area and are within CAL FIRE–designated Moderate Fire Hazard Severity Zones (CAL FIRE 2021). Fire protection for the Project sites at Dyer Dam and Patterson Dam is provided by CAL FIRE. The closest station is CAL FIRE Station 21, located on Corral Hollow Road, approximately 13.5 miles east of Patterson Dam. The nearest Alameda County Fire Department station is Station 20, located at 7000 East Avenue, approximately 2.5 miles west of Patterson Dam. The proposed Project would not result in permanent increases in vehicle traffic or any changes to existing roadways and thus would not interfere with emergency response or evacuation. The Project would have **no impact** due to impairing implementation of emergency response or evacuation plans at Dyer Dam and Patterson Dam.

b) Would the Project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Clifton Court Forebay Dam

The Project site at Clifton Court Forebay Dam is not located within a Very High Fire Hazard Severity Area Zone, as mapped by CAL FIRE (CAL FIRE 2021). While the dam itself contains sections with moderate to steep slopes, the surrounding areas are relatively flat agricultural lands. Canals and other waterways are present on three sides of the dam, and the site contains limited trees and vegetation. Therefore the dam is not in an area of substantial wildfire risk. The proposed Project would involve rodent burrow remediation and restoration measures to provide protection from dam failure. During implementation, the use of heavy equipment could cause sparks that may be a source of fire ignition. However, given the limited extent of vegetation, this would not create a substantial risk of wildfire. Thus, the Project would not result in an exacerbated fire risk. Further, the Project does not include any residential or commercial land uses that would introduce human population or activities to the project area and the Project would result in **no impact** associated with exposing individuals to pollutant concentrations or uncontrolled spread of a wildfire at Clifton Court Forebay Dam.

Dyer Dam and Patterson Dam

Dyer Dam and Patterson Dam are located in a state responsibility area and designated as Moderate to High Severity Zones (CAL FIRE 2021). The proposed Project sites are generally flat, contain limited trees and vegetation, and are surrounded by agricultural lands. The purpose of the proposed Project is to provide dam remediation and maintenance to decrease the risk of dam failure due to hazards created by rodent burrows. During implementation, the use of heavy equipment could cause sparks that may be a source of fire ignition. However, given the limited extent of vegetation within the Project site, this would not create a substantial risk of wildfire. Thus, the Project would not result in an exacerbated fire risk. Further, the Project does not include any residential or commercial land uses that would introduce human population or activities to the project area and the Project would result in **no impact** associated with exposing individuals to pollutant concentrations or uncontrolled spread of a wildfire at Dyer Dam and Patterson Dam.

c) Would the Project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Clifton Court Forebay Dam

The Project site at Clifton Court Forebay Dam is not located within a Very High Fire Hazard Severity Area Zone, as mapped by CAL FIRE (CAL FIRE 2021). The Project would involve rodent burrow remediation and restoration measures to arrest ongoing deterioration of the dam embankments and prevent future burrowing. Access to the site would rely on existing roadways and the Project would not involve the installation of roads, fuel breaks, emergency water sources, power lines, or other utilities that would otherwise exacerbate fire risk. Therefore, there would be **no impact**.

Dyer Dam and Patterson Dam

The proposed Project would involve rodent burrow remediation and restoration measures to arrest ongoing deterioration of the dam embankments and prevent future burrowing. Access to the Dyer Dam and Patterson Dam sites would rely on existing roadways and the Project would not involve the installation of roads, fuel breaks, emergency water sources, power lines, or other utilities that would otherwise exacerbate fire risk. Therefore, there would be **no impact**.

d) Would the Project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Clifton Court Forebay Dam

While Clifton Court Forebay Dam contains sections with moderate to steep slopes, the surrounding areas are relatively flat agricultural lands. Canals and other waterways are present on three sides of the dam, and the site contains limited trees and vegetation. Therefore, the dam is not in an area of substantial wildfire risk. Further, once implementation of the proposed rodent burrow remediation and restoration measures is complete, the Project would not increase the potential for the dam to be affected by wildfire and the Project would not alter the potential for post-fire hazards, such as flooding, landslides, slope instability, or drainage changes, to occur in the Project vicinity. Thus, the Project at Clifton Court Forebay Dam would have **no impact.**

Dyer Dam and Patterson Dam

The Project sites at Dyer Dam and Patterson Dam are located entirely on DWR lands that are predominantly flat. Areas of rolling topography are present in the vicinity but are not immediately adjacent to the sites. Once implementation of the proposed rodent burrow remediation and restoration measures is complete, the Project would not increase the potential for the dam to be affected by wildfire. Further, the Project would not alter the potential for post-fire hazards, such as flooding, landslides, slope instability, or drainage changes, to occur in the project vicinity. Thus, the Project at Dyer Dam and Patterson Dam would have **no impact.**

3.21 Mandatory Findings of Significance

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XXI. 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, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
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)?	☐	☒	☐	☐
c) Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

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, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

As discussed in Section 3.4, the Project has the potential to result in significant impacts to special-status plant and wildlife species, riparian habitat and other sensitive natural communities, state and federally protected wetlands, and wildlife movement. Implementation of Mitigation Measures BIO-1 through BIO-11 would ensure that these impacts would be avoided and/or minimized, and compensation would be provided where impact avoidance is infeasible, such that the Project impacts would be reduced to **less-than-significant** levels.

As discussed in Section 3.5, no known cultural resources would be affected by the Project, though known resources exist within 0.5 miles of the Project site. Implementation of **Mitigation Measure CUL-1** would ensure that appropriate measures are implemented to ensure that impacts to any inadvertent discovery of cultural resources during ground-disturbing activities remains less than significant. **Mitigation Measure CUL-2** would ensure compliance with applicable regulations and appropriate protocol should human remains be unearthed during Project construction. With implementation of mitigation measures, impacts would be **less than significant**.

As discussed in Section 3.10, Project activities within drainage ditches at Dyer Dam and Patterson Dam could result in erosion, which could contribute to impacts to fish and wildlife species. **Mitigation Measure HYD-1** would ensure that Project activities are appropriately designed and implemented to avoid this potential impact. Thus, with implantation of this mitigation measure, impacts would be **less than significant.**

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)?

The direct activities of the Project would occur solely within the footprint of the Project site of the existing dams. Impact analyses included in this IS take into account nearby projects and consider the Project within the context of local and regional planning guidance. While ongoing land use development throughout Alameda and Contra Costa Counites could lead to significant cumulative impacts to air quality, biological and cultural resources, hydrology and water quality, public services, and transportation, the proposed Project would not make a cumulatively considerable contribution to these impacts with implementation of the mitigation measures identified throughout this IS.

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

The Project would be consistent with applicable local ordinances and policies related to aesthetics, air quality, GHG, management of potential hazards, land use, noise, and protection of natural resources and the environment, as disclosed by this IS. The analyses of impacts provided throughout this IS evaluate direct and indirect impacts that could result from the Project. Impacts within all resource categories evaluated would be less than significant with implementation of mitigation measures identified throughout this document and thus the Project would not result in direct or indirect substantial adverse effects on human beings. Further, the purpose of the proposed Project is to remediate existing rodent burrows to improve the integrity of each dam. Thus, implementation of the Project would reduce the potential for dam failure that could result in flooding that would adversely affect people residing or working in areas or within the potential inundation zones associated with Clifton Court Forebay Dam, Dyer Dam, and Patterson Dam, and reduce the potential for dam failure that could disrupt water supplies to urban and agricultural land uses.

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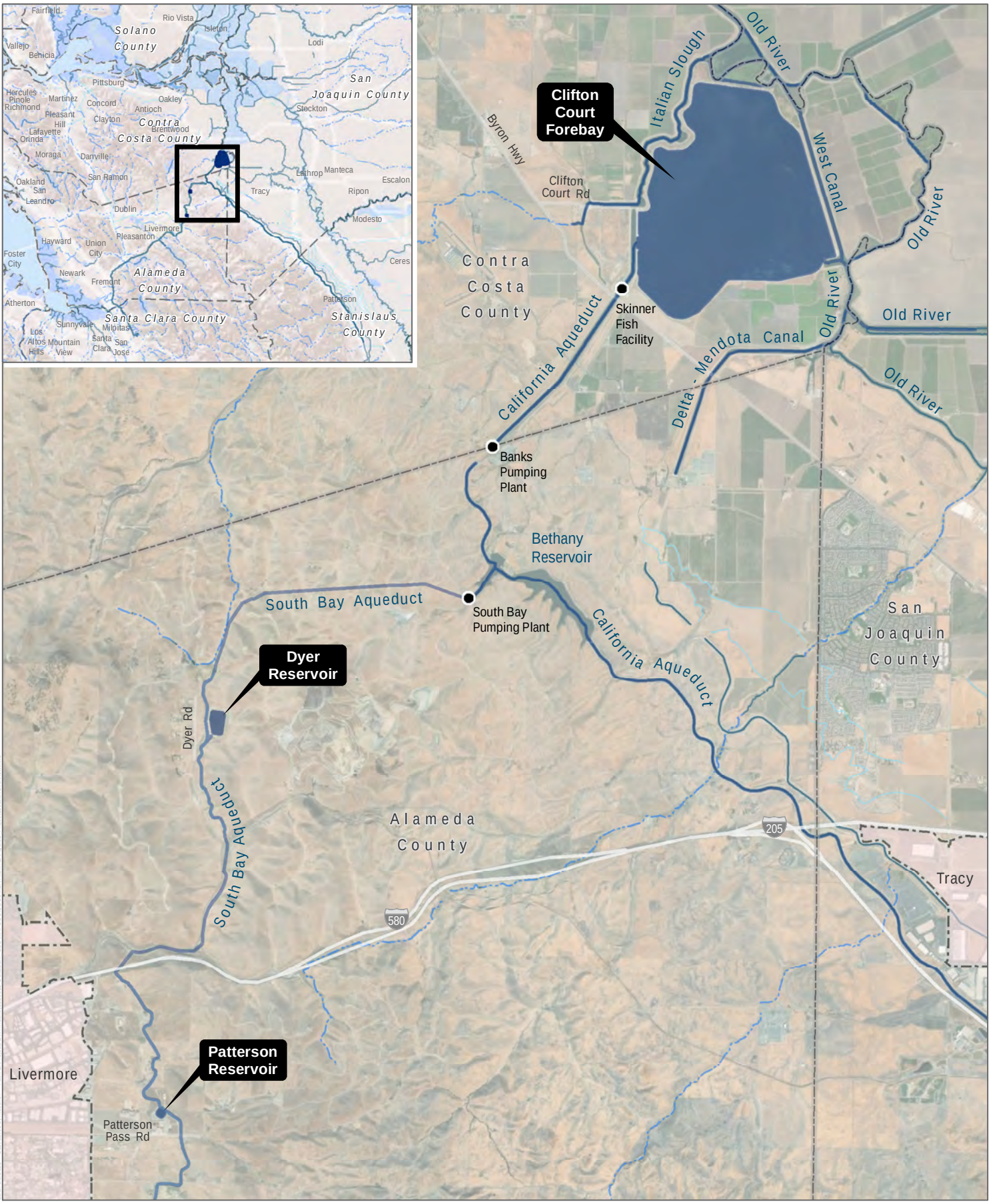

BASEMAP SOURCE: DWR 2020; USGS 2020; ESRI World Imagery

DUDEK

0 1 2 Miles

FIGURE 1

Project Location Overview

Delta Dams Rodent Burrow Remediation

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At Clifton Court Forebay Dam: Rodent burrows, slumping, and erosion due to animal burrowing, November 2019.

At Patterson Dam: Burrow holes and associated embankment surface slope failures on downstream dam embankment, November 2019.

At Dyer Dam: Existing Burrows, November 2019.

SOURCE: DWR 2020

DUDEK

FIGURE 2

Existing Burrow and Erosion Conditions

Delta Dams Rodent Burrow Remediation

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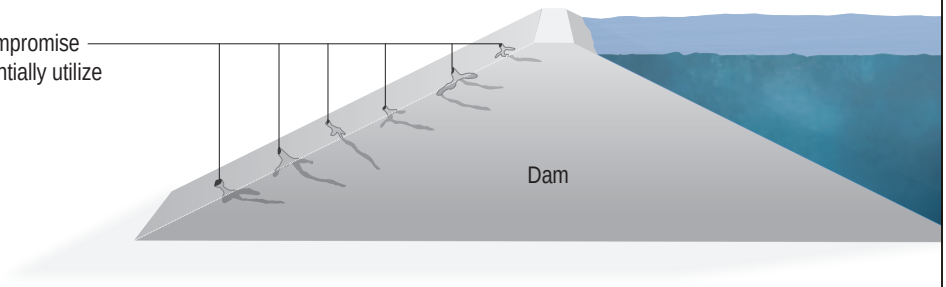
Burrow Remediation Step by Step

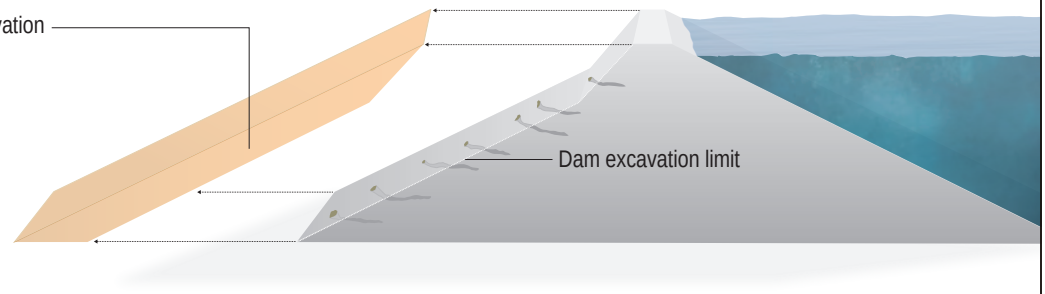
Existing Conditions

Rodents make burrows in earthen dams that could compromise structural integrity. Special-status wildlife species potentially utilize the burrows, complicating maintenance efforts



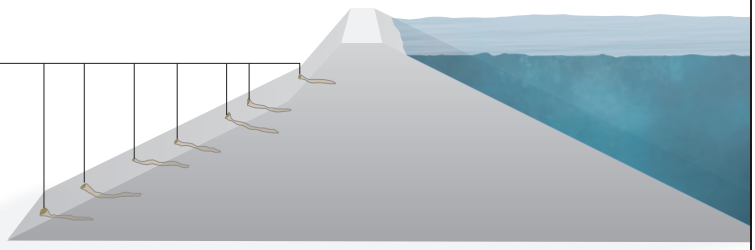
1 Excavation

Dam surface excavated, depth of excavation varies based on site-specific conditions



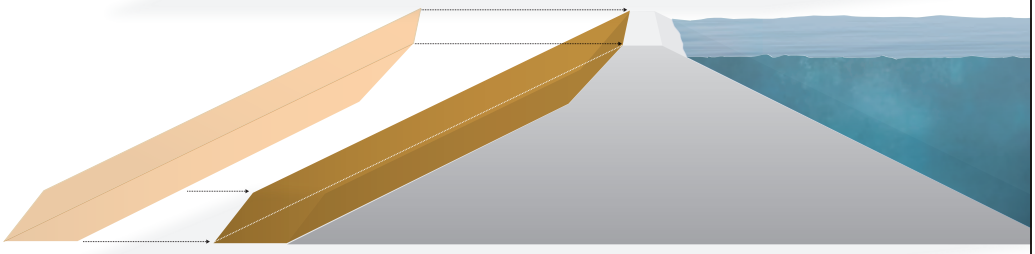
2 Backfill

Remnants of burrows are backfilled with varying materials based on site conditions



3 Compaction

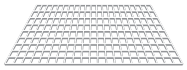
Excavated areas filled-in/compacted



4 Bedding Rock/Armored Rock

Layers of rock and wire mesh help prevent new burrows

Top Layer:
Armoring rock layer where warranted based on site-specific conditions and monitoring data; depth varies to a maximum of 18”



Middle Layer:
PVC-coated steel wire mesh

Bottom Layer:
Bedding rock layer; depth varies based on site-specific conditions to a maximum of 12”

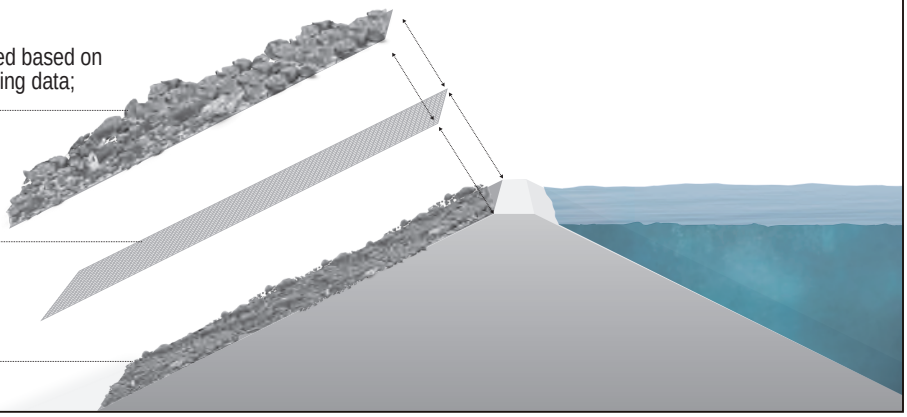


Diagram is not to scale.

FIGURE 3

Burrow Remediation Process Overview

Delta Dams Rodent Burrow Remediation

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SOURCE: DWR 1/8/2021; ESRI World Imagery

DUDEK

0 1,600 3,200 Feet

FIGURE 4

Clifton Court Forebay Overview

Delta Dams Rodent Burrow Remediation

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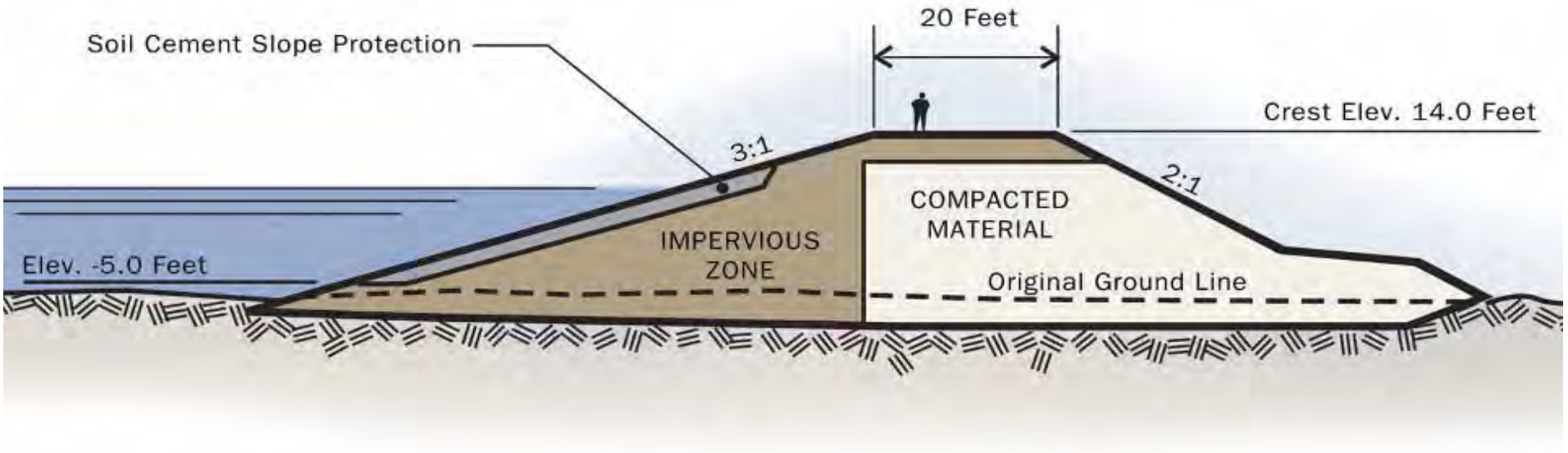

SOURCE: DWR 2020

FIGURE 5

Clifton Court Forebay Dam Typical Section

Delta Dams Rodent Burrow Remediation Project

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SOURCE: DWR 1/8/2021; ESRI World Imagery

DUDEK

0 1,000 2,000 Feet

FIGURE 6

Clifton Court Forebay Access

Delta Dams Rodent Burrow Remediation

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SOURCE: DWR 1/8/2021; ESRI World Imagery

DUDEK

0 1,000 2,000 Feet

FIGURE 7

Clifton Court Forebay Rodent Burrow Damage Severity

Delta Dams Rodent Burrow Remediation

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SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 900 1,800 Feet

FIGURE 8

Clifton Court Forebay Proposed Activities

Delta Dams Rodent Burrow Remediation Project

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SOURCE: DWR 12/28/2020; ESRI World Imagery

DUDEK

0 200 400 Feet

FIGURE 9

Dyer Reservoir Overview

Delta Dams Rodent Burrow Remediation

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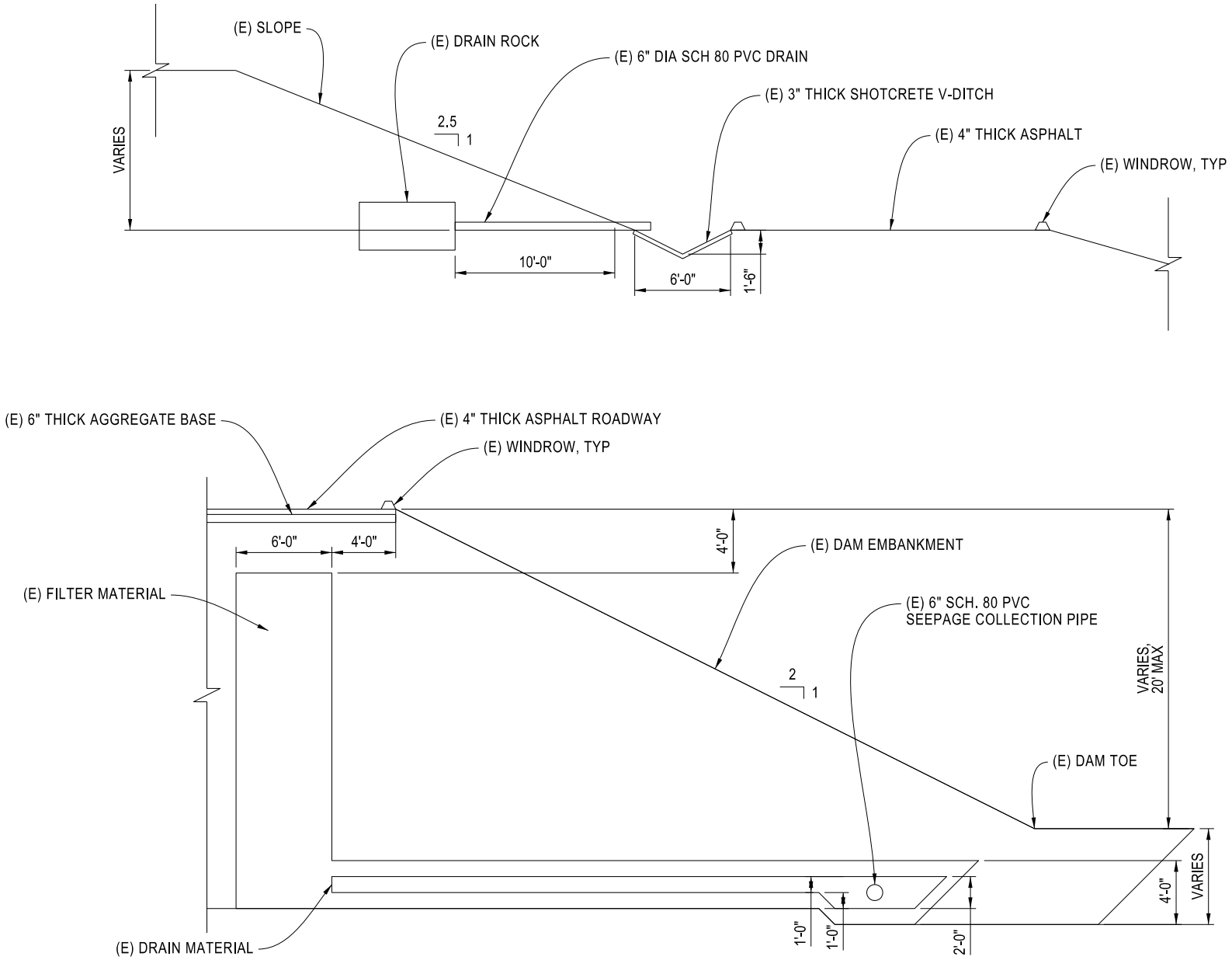

SOURCE: DWR 2020

DUDEK

FIGURE 10

Dyer Dam Typical Sections

Delta Dams Rodent Burrow Remediation

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SOURCE: DWR 12/28/2020; ESRI World Imagery

DUDEK

0 200 400 Feet

FIGURE 11

Dyer Dam Access

Delta Dams Rodent Burrow Remediation

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SOURCE: DWR 12/28/2020; ESRI World Imagery

DUDEK

0 200 400 Feet

FIGURE 12

Dyer Dam Rodent Burrow Damage Severity

Delta Dams Rodent Burrow Remediation

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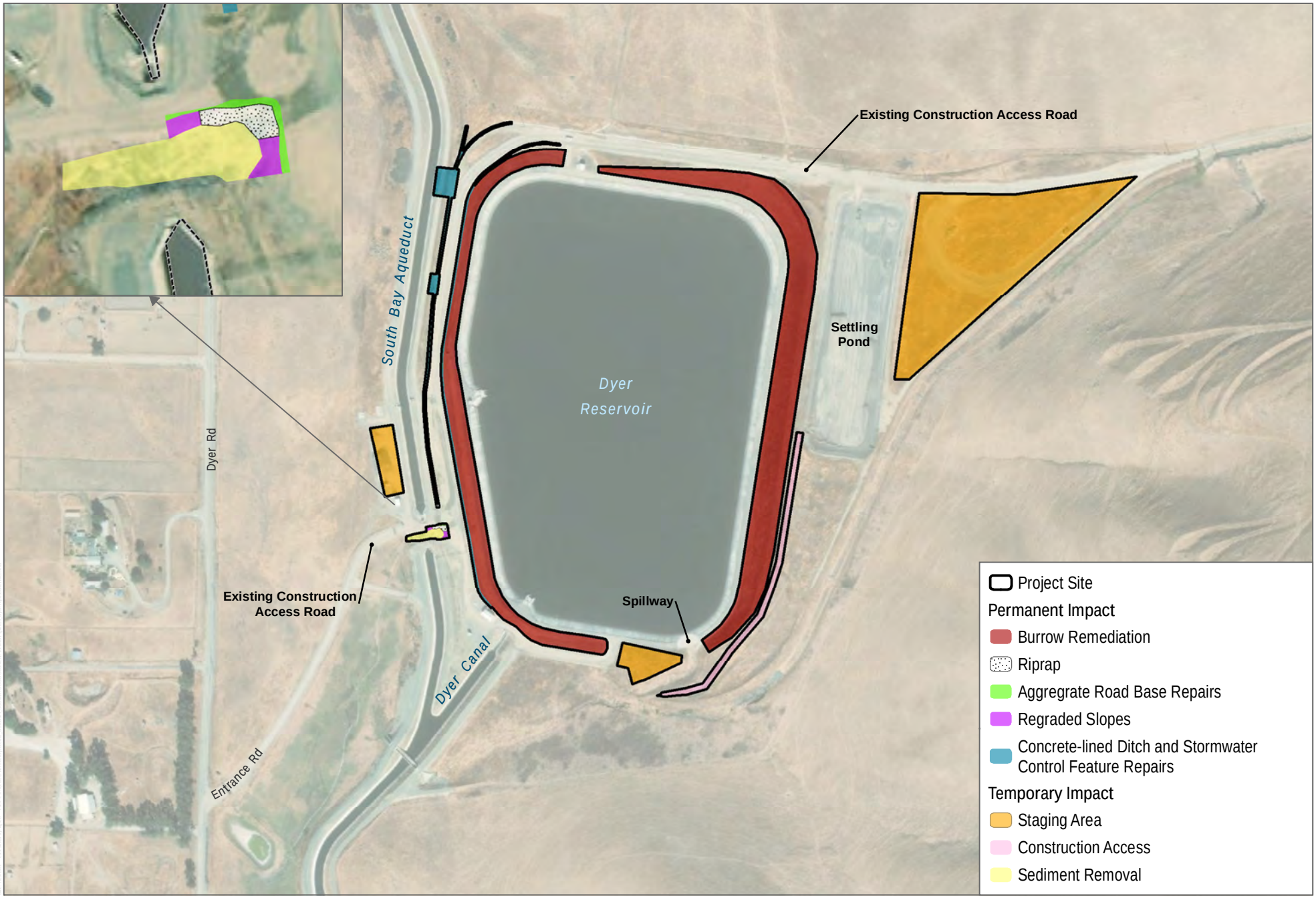

SOURCE: DWR 05/17/2021; ESRI World Imagery

DUDEK

0 200 400 Feet

FIGURE 13

Dyer Reservoir Proposed Activities

Delta Dams Rodent Burrow Remediation

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SOURCE: DWR 12/11/2020; ESRI World Imagery

DUDEK

0 200 400 Feet

FIGURE 14

Patterson Reservoir Overview

Delta Dams Rodent Burrow Remediation

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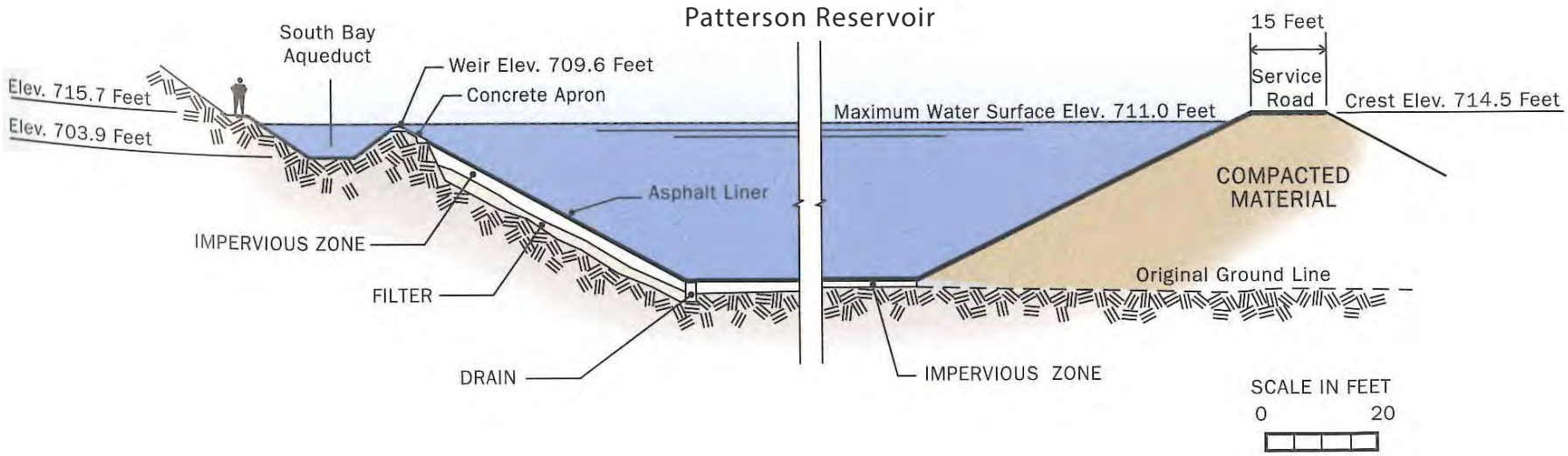

SOURCE: DWR 2020

FIGURE 15

Patterson Dam Typical Section

Delta Dams Rodent Burrow Remediation

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SOURCE: DWR 12/11/2020; ESRI World Imagery

DUDEK

0 200 400 Feet

FIGURE 16

Patterson Dam Access

Delta Dams Rodent Burrow Remediation

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SOURCE: DWR 12/11/2020; ESRI World Imagery

DUDEK

0 200 400 Feet

FIGURE 17

Patterson Dam Rodent Burrow Damage Severity

Delta Dams Rodent Burrow Remediation

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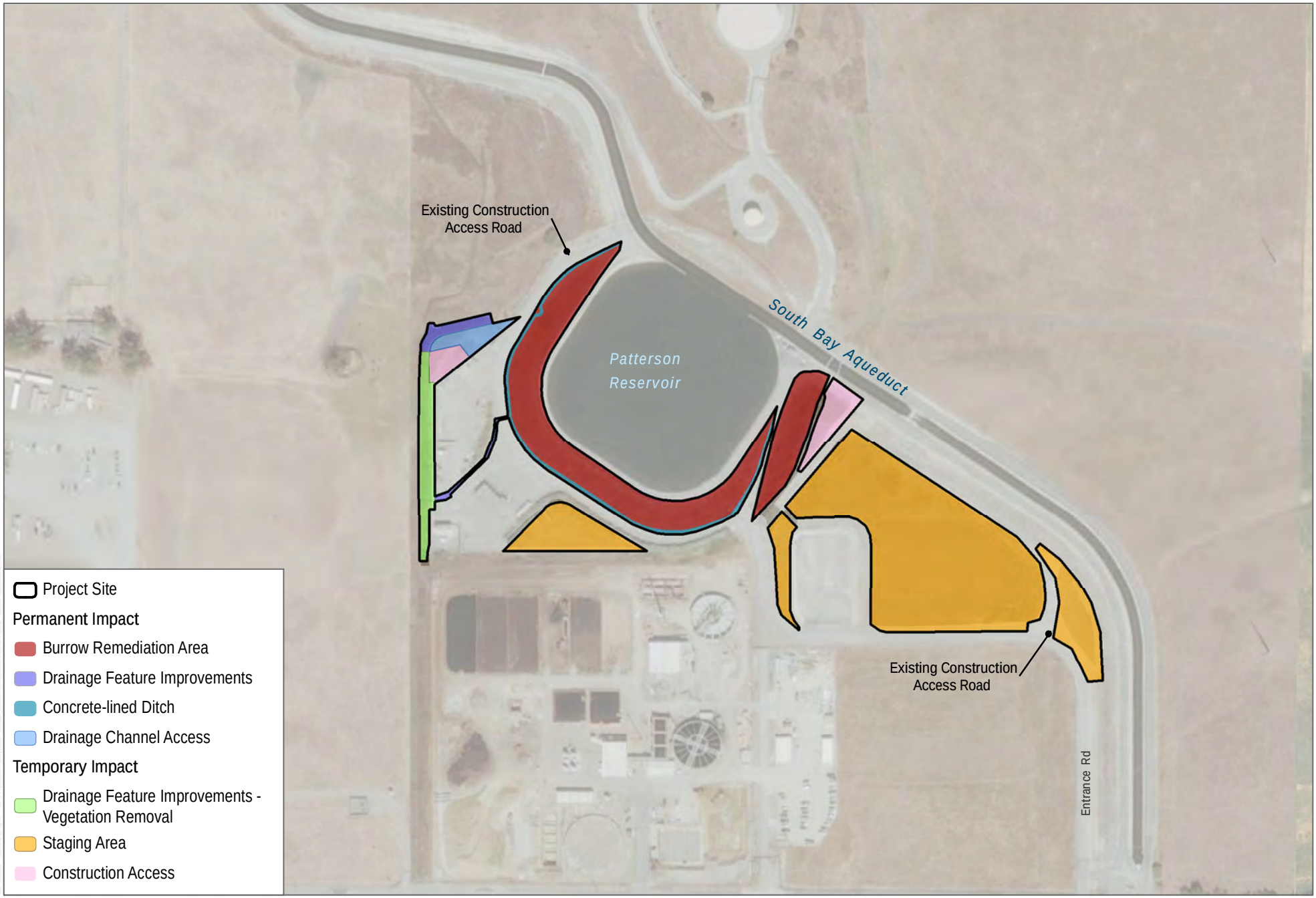

SOURCE: DWR 05/5/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 18

Patterson Reservoir Proposed Activities

Delta Dams Rodent Burrow Remediation

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Study Area

Impacts

Permanent

Temporary

Vegetation Communities

<u>Bog and Marsh</u>

Allenrolfea occidentalis / Distichlis spicata Provisional Association*

Allenrolfea occidentalis Association*

Atriplex lentiformis Association

Distichlis spicata Association

Schoenoplectus acutus Association*

<u>Grass and Herb Dominated</u>

Lolium perenne - Hordeum marinum - Ranunculus californicus Semi-natural Association

Wild oats and annual brome grasslands (*Avena spp. - Bromus spp.*) Semi-Natural Alliance

<u>Disturbed and Developed</u>

Open water

Disturbed Habitat

Urban/Developed

* Sensitive Vegetation Community

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 19A

Impacts to Vegetation Communities - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

Temporary

Vegetation Communities

Bog and Marsh

Allenrolfea occidentalis / Distichlis spicata Provisional Association*

Allenrolfea occidentalis Association*

Atriplex lentiformis Association

Juncus arcticus var. balticus - (var. mexicanus) Association

Grass and Herb Dominated

Brassica nigra Semi-natural Association

Wild oats and annual brome grasslands (*Avena spp. - Bromus spp.*) Semi-Natural Alliance

Disturbed and Developed

General Agriculture

Disturbed Habitat

Urban/Developed

* Sensitive Vegetation Community

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 19B

Impacts to Vegetation Communities - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

Vegetation Communities

Bog and Marsh

Atriplex lentiformis Association

Distichlis spicata Association

Grass and Herb Dominated

Brassica nigra Semi-natural Association

Conium maculatum Semi-natural Association

Lolium perenne - Hordeum marinum - Ranunculus californicus Semi-natural Association

Wild oats and annual brome grasslands (*Avena spp. - Bromus spp.*) Semi-Natural Alliance

Disturbed and Developed

General Agriculture

Open water

Disturbed Habitat

Urban/Developed

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 19C

Impacts to Vegetation Communities - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

Temporary

Vegetation Communities

Bog and Marsh

Arundo donax Semi-natural Association

Lepidium latifolium Semi-natural Association

Riparian

<ita>Alnus rubra / Salix lasiolepis / Rubus spp.(/ita> Association*

Rubus armeniacus Semi-natural Association

Grass and Herb Dominated

Brassica nigra Semi-natural Association

Conium maculatum Semi-natural Association

Lolium perenne - Hordeum marinum - Ranunculus californicus Semi-natural Association

Wild oats and annual brome grasslands (*Avena spp. - Bromus spp.*) Semi-Natural Alliance

Disturbed and Developed

Open water

Urban/Developed

* Sensitive Vegetation Community

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 19D

Impacts to Vegetation Communities - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

Temporary

Vegetation Communities

Bog and Marsh

Lepidium latifolium Semi-natural Association

Riparian

Rubus armeniacus Semi-natural Association

Grass and Herb Dominated

Lolium perenne - Hordeum marinum - Ranunculus californicus Semi-natural Association

Disturbed and Developed

Open water

Urban/Developed

West Canal

Toe Road

DAM ACCESS RD

Burrow Remediation Area

Clifton Court Forebay

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 19E

Impacts to Vegetation Communities - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

Temporary

Vegetation Communities

<u>Bog and Marsh</u>

Lepidium latifolium Semi-natural Association

Polygonum (amphibium, lapathifolium) Association

Schoenoplectus americanus Association*

<u>Riparian</u>

Juglans hindsii Semi-natural Association*

Rubus armeniacus Semi-natural Association

Salix gooddingii Association*

<u>Grass and Herb Dominated</u>

Elymus glaucus Association*

Lolium perenne - Hordeum marinum - Ranunculus californicus Semi-natural Association

Wild oats and annual brome grasslands (*Avena spp. - Bromus spp.*) Semi-Natural Alliance

<u>Disturbed and Developed</u>

Open water

Disturbed Habitat

Urban/Developed

* Sensitive Vegetation Community

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 19F

Impacts to Vegetation Communities - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

Temporary

Vegetation Communities

Bog and Marsh

Arundo donax Semi-natural Association

Frankenia salina Association*

Polygonum (amphibium, lapathifolium) Association

Schoenoplectus americanus Association*

Riparian

Rubus armeniacus Semi-natural Association

Salix gooddingii Association*

Grass and Herb Dominated

Brassica nigra Semi-natural Association

Conium maculatum Semi-natural Association

Elymus glaucus Association*

Lolium perenne - Hordeum marinum - Ranunculus californicus Semi-natural Association

Dune

Carpobrotus (edulis) Semi-natural Association

Disturbed and Developed

Open water

Disturbed Habitat

Urban/Developed

* Sensitive Vegetation Community

Old River

Old River

Old River

Old River

Toe Road

DAM ACCESS RD

Burrow Remediation Area

Staging Area

Burrow Remediation Area

Clifton Court Forebay

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 19G

Impacts to Vegetation Communities - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

Temporary

Vegetation Communities

<u>Bog and Marsh</u>

Lepidium latifolium Semi-natural Association

Schoenoplectus americanus Association*

<u>Riparian</u>

Cephalanthus occidentalis Association*

Rubus armeniacus Semi-natural Association

Salix gooddingii Association*

<u>Scrub</u>

Baccharis pilularis / Annual grass - herb Association

<u>Grass and Herb Dominated</u>

Brassica nigra Semi-natural Association

Conium maculatum Semi-natural Association

Lolium perenne - Hordeum marinum - Ranunculus californicus Semi-natural Association

Wild oats and annual brome grasslands (*Avena spp. - Bromus spp.*) Semi-Natural Alliance

<u>Disturbed and Developed</u>

Open water

Disturbed Habitat

Urban/Developed

* Sensitive Vegetation Community

Toe Road

Italian Slough

Sump 4
Tree Removal

Staging Area

Burrow Remediation Area

Toe Road

Burrow Remediation Area

Clifton Court
Forebay

Staging Area

DAM ACCESS RD

Old River

Old River

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 19H

Impacts to Vegetation Communities - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

Temporary

Vegetation Communities

Bog and Marsh

Lepidium latifolium Semi-natural Association

Schoenoplectus americanus Association*

Riparian

Cephalanthus occidentalis Association*

Grass and Herb Dominated

Brassica nigra Semi-natural Association

Conium maculatum Semi-natural Association

Lolium perenne - Hordeum marinum - Ranunculus californicus Semi-natural Association

Disturbed and Developed

Open water

Disturbed Habitat

Urban/Developed

* Sensitive Vegetation Community

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 19I

Impacts to Vegetation Communities - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

Temporary

Vegetation Communities

Bog and Marsh

Allenrolfea occidentalis Association*

Arundo donax Semi-natural Association

Grass and Herb Dominated

Brassica nigra Semi-natural Association

Lolium perenne - Hordeum marinum - Ranunculus californicus Semi-natural Association

Wild oats and annual brome grasslands (*Avena spp. - Bromus spp.*) Semi-Natural Alliance

Disturbed and Developed

Open water

Disturbed Habitat

Urban/Developed

* Sensitive Vegetation Community

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

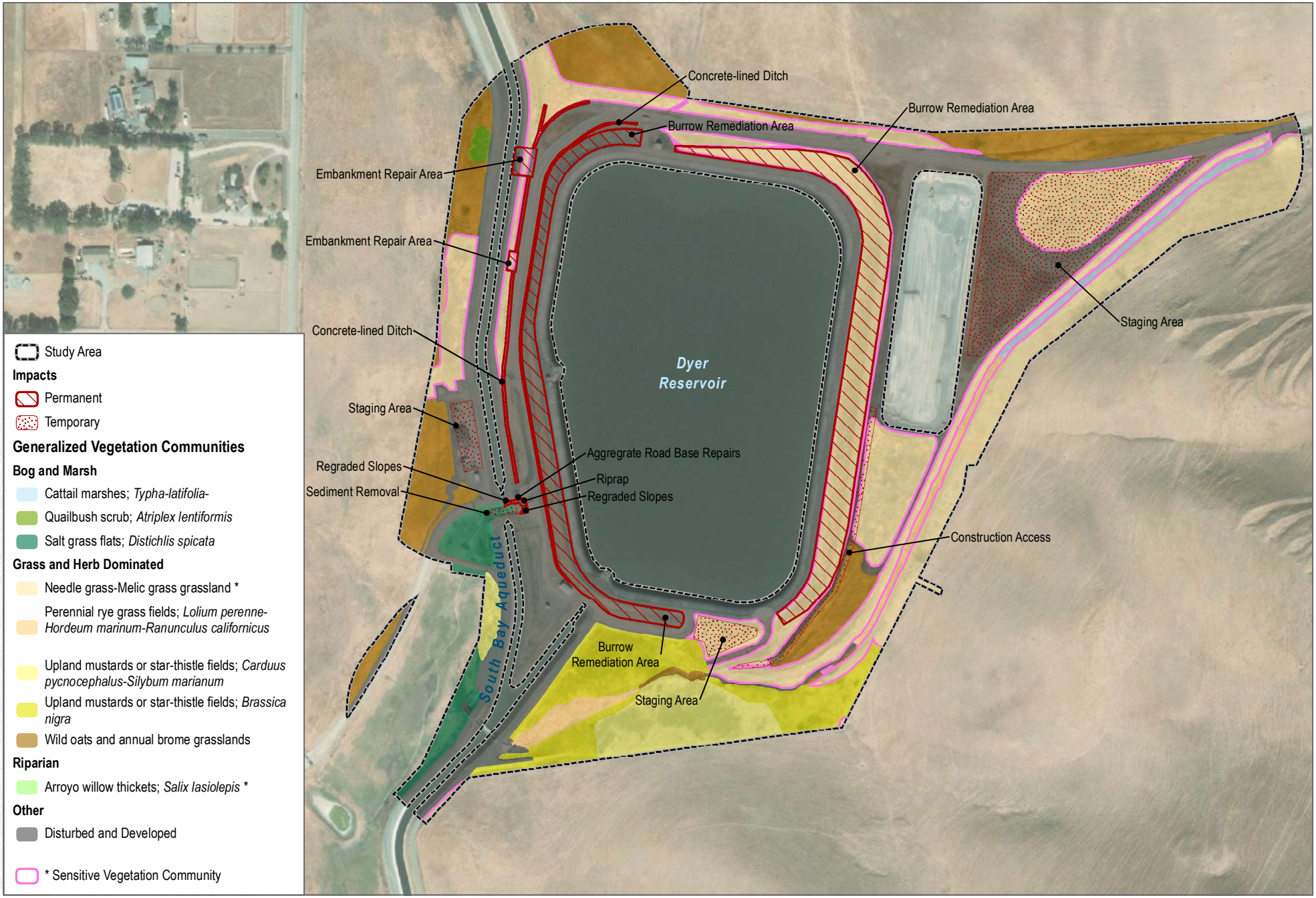
0 150 300 Feet

FIGURE 19J

Impacts to Vegetation Communities - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project

INTENTIONALLY LEFT BLANK



SOURCE: DWR 05/25/2021; ESRI Imagery

DUDEK

0 200 400 Feet

FIGURE 20

Impacts to Vegetation Communities - Dyer Dam

Delta Dams Rodent Burrow Remediation Project

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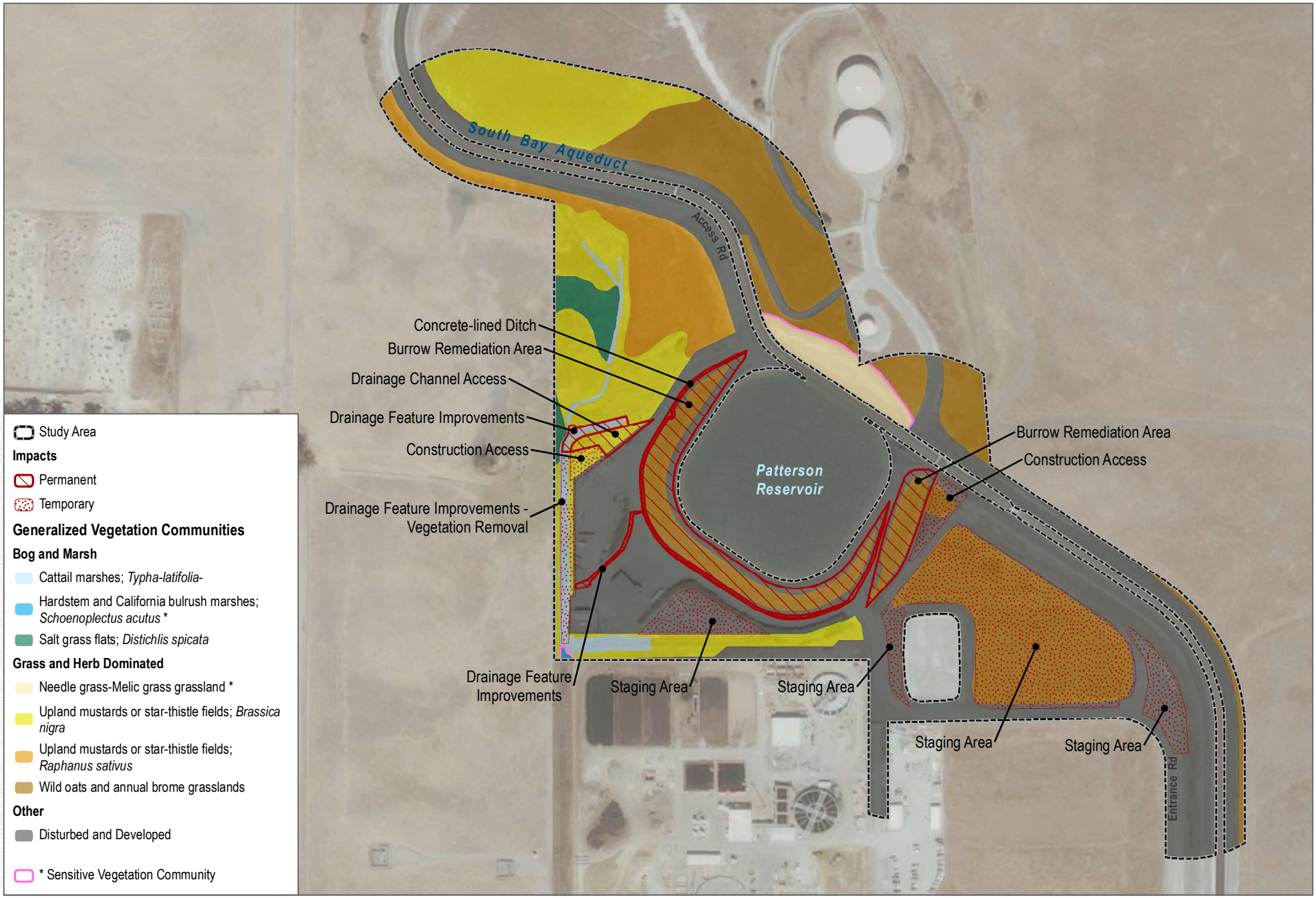

SOURCE: DWR 5/5/2021; ESRI Imagery

DUDEK

0 200 400 Feet

FIGURE 21

Impacts to Vegetation Communities - Patterson Dam

Delta Dams Rodent Burrow Remediation Project

INTENTIONALLY LEFT BLANK

Study Area

Proposed Exempt (Maintenance) Impacts

Permanent

Temporary

Delineated Aquatic Resources

Non-wetland Waters

Wetland

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 22A

USACE - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 22B

USACE - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 22C

USACE - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 22D

USACE - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

Study Area

Proposed Exempt (Maintenance) Impacts

Permanent

Temporary

Delineated Aquatic Resources

Non-wetland Waters

Wetland

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 22E

USACE - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 22F

USACE - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 22G

USACE - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 22H

USACE - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 22I

USACE - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

Study Area

Proposed Exempt (Maintenance) Impacts

Permanent

Temporary

Delineated Aquatic Resources

Non-wetland Waters

Wetland

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 22J

USACE - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

SOURCE: DWR 05/25/2021; ESRI Imagery

DUDEK

0 200 400 Feet

FIGURE 23

Impacts to USACE-Jurisdictional Areas - Dyer Dam

Delta Dams Rodent Burrow Remediation Project

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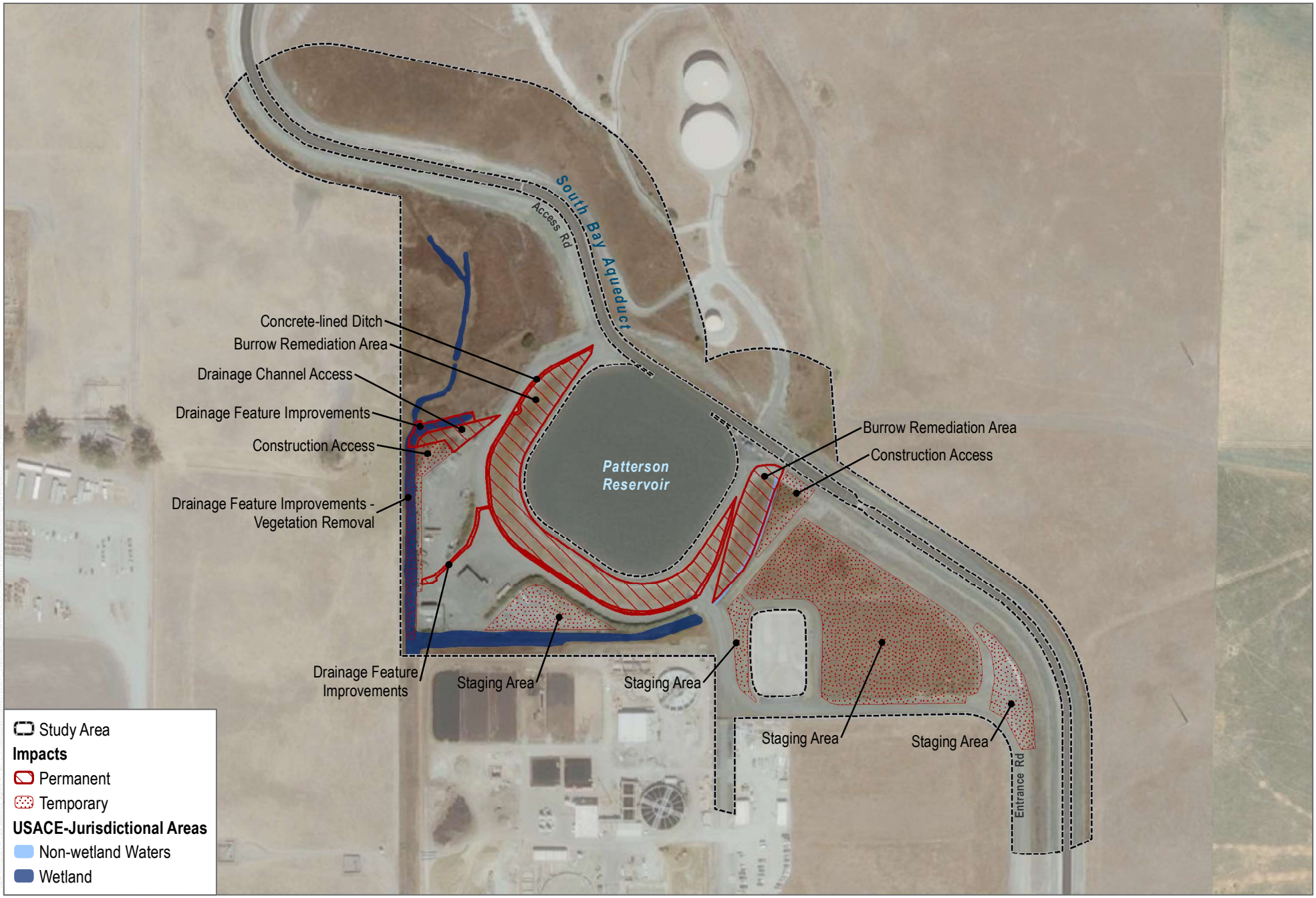

SOURCE: DWR 5/5/2021; ESRI Imagery

DUDEK

0 200 400 Feet

FIGURE 24

Impacts to USACE-Jurisdictional Areas - Patterson Dam

Delta Dams Rodent Burrow Remediation Project

INTENTIONALLY LEFT BLANK

Study Area

Proposed Exempt (Maintenance) Impacts

Permanent

Temporary

Delineated Aquatic Resources

Non-wetland Waters

Wetland

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 25A

RWQCB - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 25B

RWQCB - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 25C

RWQCB - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

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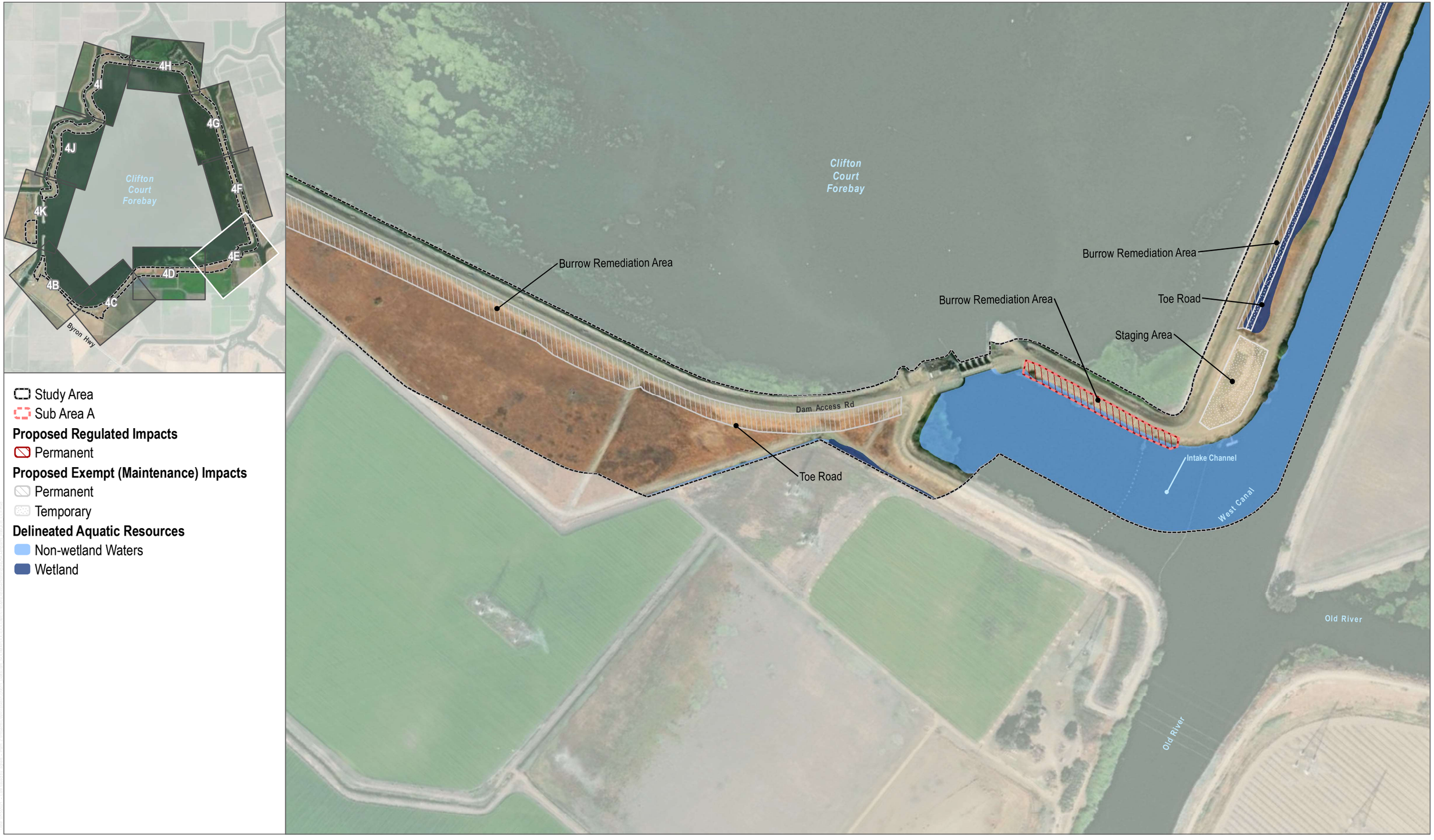

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 25D

RWQCB - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

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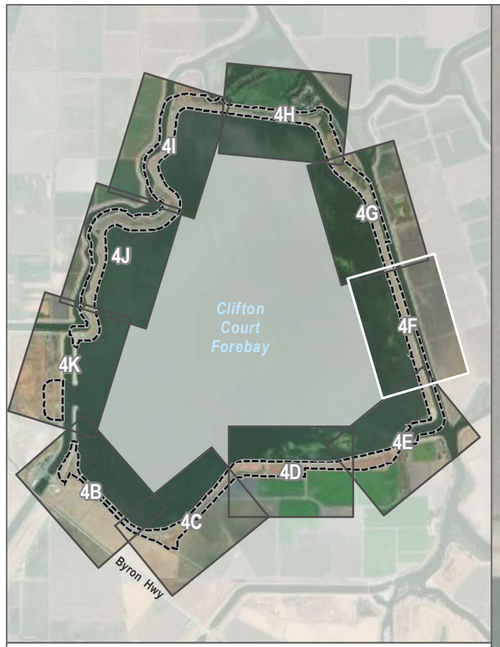

Study Area

Proposed Exempt (Maintenance) Impacts

Permanent

Temporary

Delineated Aquatic Resources

Non-wetland Waters

Wetland

West Canal

Toe Road

Dam Access Rd

Burrow Remediation Area

Clifton
Court
Forebay

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 25E

RWQCB - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 25F

RWQCB - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

Study Area

Proposed Exempt (Maintenance) Impacts

Permanent

Temporary

Delineated Aquatic Resources

Non-wetland Waters

Wetland

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 25G

RWQCB - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 25H

RWQCB - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

INTENTIONALLY LEFT BLANK

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 25I

RWQCB - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

SOURCE: DWR 2021-05-12; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 25J

RWQCB - Impacts to Delineated Aquatic Resources - Clifton Court Forebay

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

SOURCE: DWR 05/25/2021; ESRI Imagery

DUDEK

0 200 400 Feet

FIGURE 26

Impacts to RWQCB-Jurisdictional Areas - Dyer Dam

Delta Dams Rodent Burrow Remediation Project

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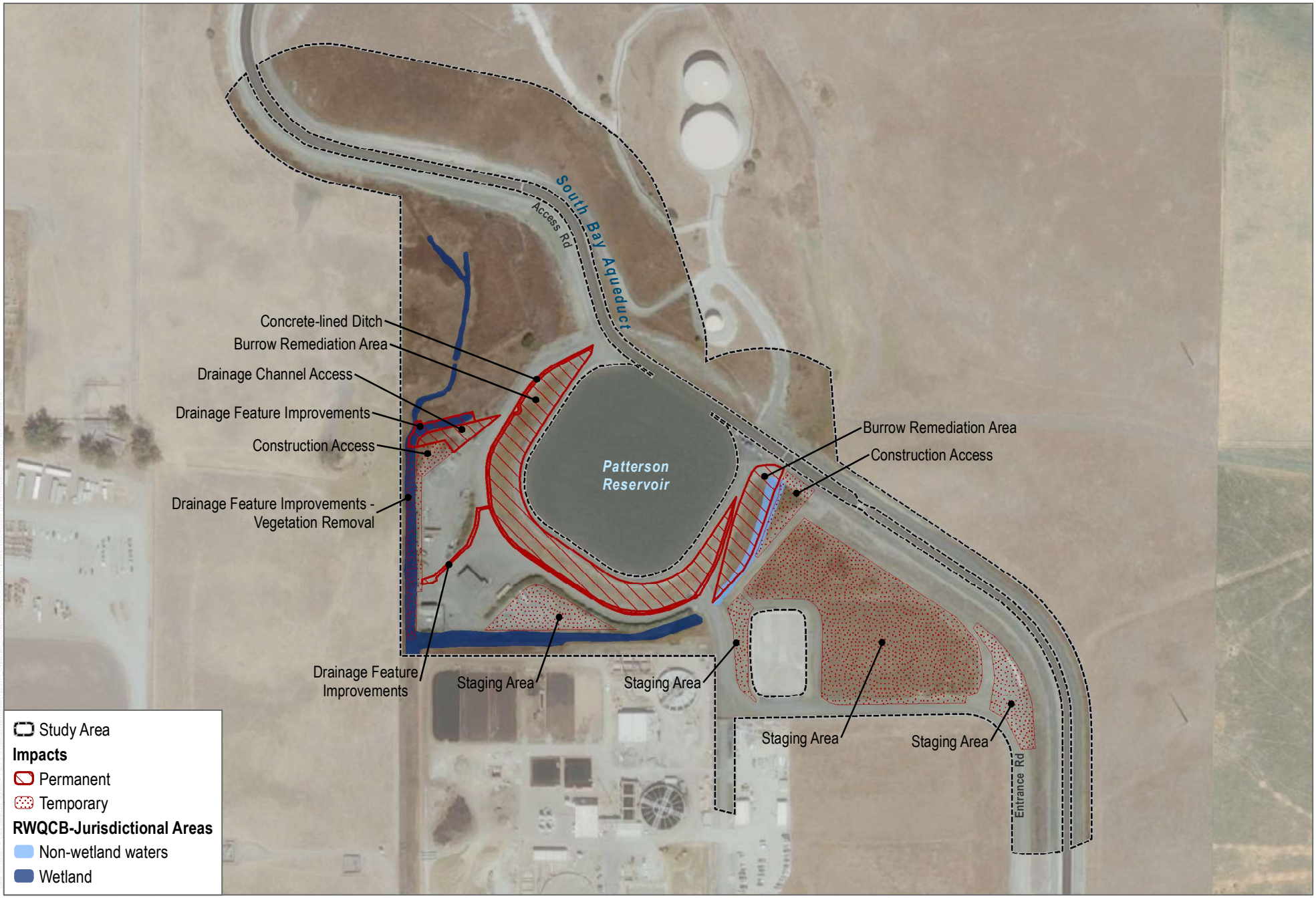

SOURCE: DWR 5/5/2021; ESRI Imagery

DUDEK

0 200 400 Feet

FIGURE 27

Impacts to RWQCB-Jurisdictional Areas - Patterson Dam

Delta Dams Rodent Burrow Remediation Project

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

Temporary

CDFW-Jurisdictional Areas

Streambed

Riparian

Clifton Court Forebay

California Aqueduct

Burrow Remediation Area

Burrow Remediation Area

Toe Road

Toe Road

Staging Area

DAM ACCESS RD

BYRON HWY

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 28A

Impacts to CDFW-Jurisdictional Areas - Clifton Court Forebay Dam

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

Temporary

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 28B

Impacts to CDFW-Jurisdictional Areas - Clifton Court Forebay Dam

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 28C

Impacts to CDFW-Jurisdictional Areas - Clifton Court Forebay Dam

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

Temporary

CDFW-Jurisdictional Areas

Streambed

Riparian

Clifton Court Forebay

Burrow Remediation Area

Burrow Remediation Area

Burrow Remediation Area

Toe Road

Staging Area

DAM ACCESS RD

Toe Road

Intake Channel

West Canal

Old River

Old River

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 28D

Impacts to CDFW-Jurisdictional Areas - Clifton Court Forebay Dam

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

Temporary

CDFW-Jurisdictional Areas

Streambed

Riparian

West Canal

Toe Road

DAM ACCESS RD

Burrow Remediation Area

Clifton Court Forebay

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 28E

Impacts to CDFW-Jurisdictional Areas - Clifton Court Forebay Dam

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

Temporary

CDFW-Jurisdictional Areas

Streambed

Riparian

Old River

West Canal

Staging Area

Toe Road

DAM ACCESS RD

Toe Road

Burrow Remediation Area

Staging Area

Burrow Remediation Area

Clifton Court Forebay

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 28F

Impacts to CDFW-Jurisdictional Areas - Clifton Court Forebay Dam

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

Temporary

CDFW-Jurisdictional Areas

Streambed

Old River

Old River

Old River

Old River

Toe Road

DAM ACCESS RD

Staging Area

Burrow Remediation Area

Burrow Remediation Area

Clifton Court Forebay

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 28G

Impacts to CDFW-Jurisdictional Areas - Clifton Court Forebay Dam

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

Temporary

CDFW-Jurisdictional Areas

Streambed

Toe Road

Italian Slough

Sump 4
Tree Removal

Staging Area

Burrow Remediation Area

Toe Road

Burrow Remediation Area

Clifton Court
Forebay

DAM ACCESS RD

Staging Area

Old River

Old River

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 28H

Impacts to CDFW-Jurisdictional Areas - Clifton Court Forebay Dam

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

Temporary

CDFW-Jurisdictional Areas

Streambed

Italian Slough

Staging Area

Toe Road

DAM ACCESS RD

Burrow Remediation Area

Burrow Remediation Area

Toe Road

Clifton Court
Forebay

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 28I

Impacts to CDFW-Jurisdictional Areas - Clifton Court Forebay Dam

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

Study Area

Impacts

Permanent

Temporary

CDFW-Jurisdictional Areas

Streambed

CLIFTON COURT RD

Toe Road

Italian Slough

DAM ACCESS RD

Burrow Remediation Area

Staging Area

California Aqueduct

Clifton Court Forebay

SOURCE: DWR 05/12/2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 28J

Impacts to CDFW-Jurisdictional Areas - Clifton Court Forebay Dam

Delta Dams Rodent Burrow Remediation Project - Aquatic Resources Delineation Report

INTENTIONALLY LEFT BLANK

SOURCE: DWR 05/25/2021; ESRI Imagery

DUDEK

0 200 400 Feet

FIGURE 29

Impacts to CDFW-Jurisdictional Areas - Dyer Dam

Delta Dams Rodent Burrow Remediation Project

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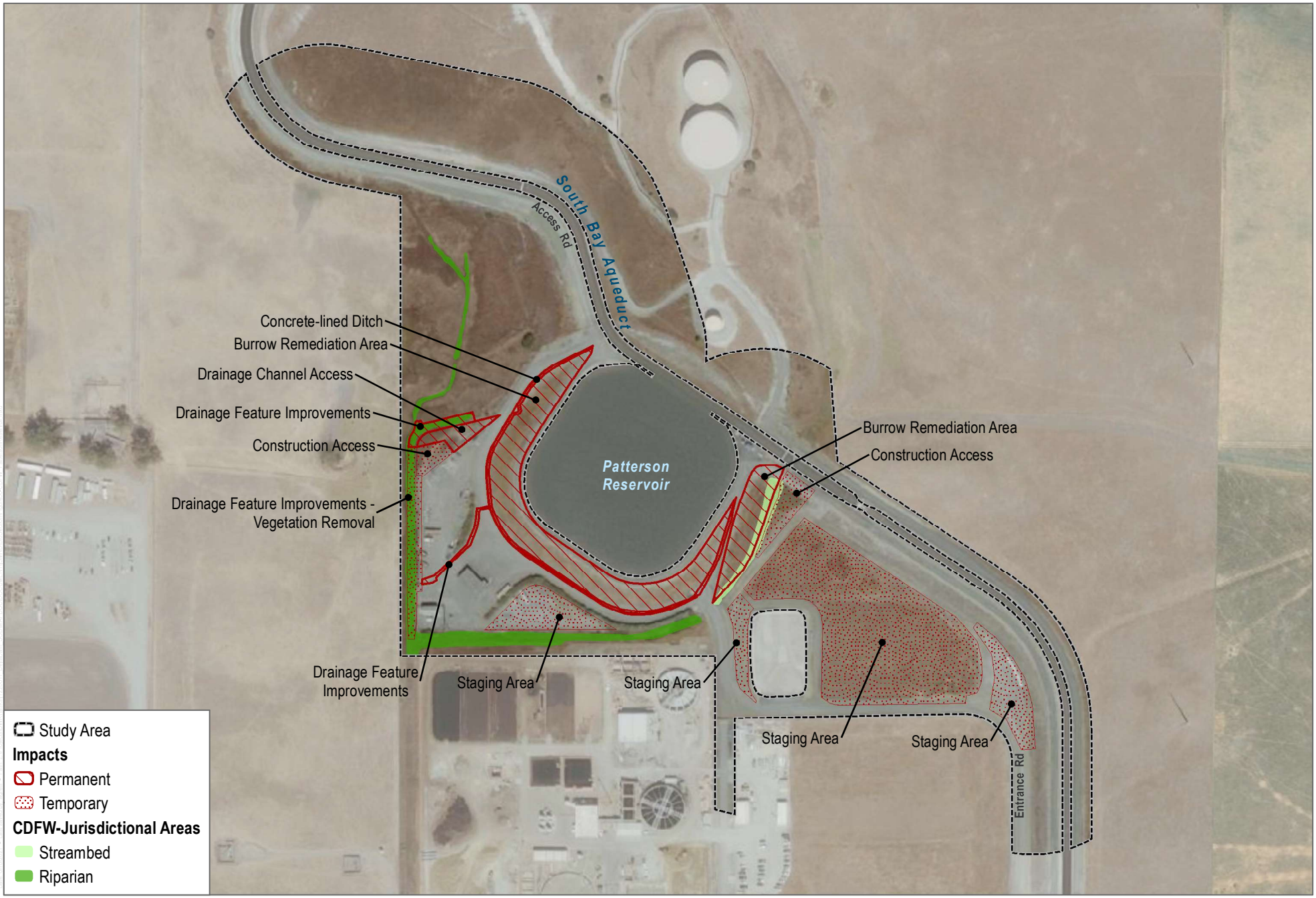

SOURCE: DWR 5/5/2021; ESRI Imagery

DUDEK

0 200 400 Feet

FIGURE 30

Impacts to CDFW-Jurisdictional Areas - Patterson Dam

Delta Dams Rodent Burrow Remediation Project

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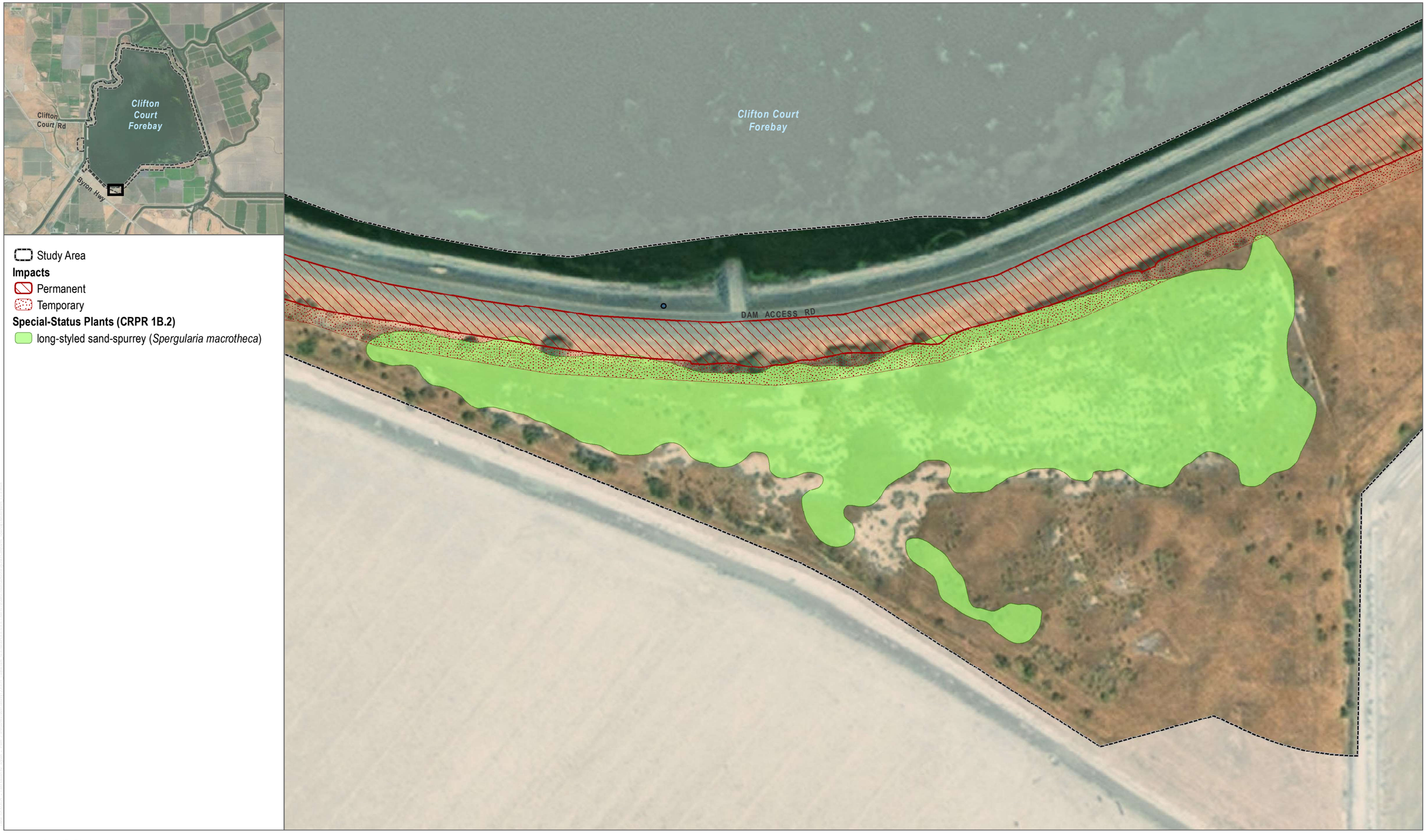


SOURCE: DWR 05/17/2021; ESRI World Imagery

DUDEK

0 50 100 Feet

FIGURE 31

Impacts to Special-Status Plants - Clifton Court Forebay Dam

Delta Dams Rodent Burrow Remediation Project

INTENTIONALLY LEFT BLANK

Study Area

Non-jurisdictional Aquatic Resources

Impacts

Permanent

Temporary

Proposed Activities

Burrow Remediation Area

Staging Area

Toe Road

CNDDB Occurrence

Vernal pool fairy shrimp

SOURCE: DWR 2021-05-12; CDFW 2021; ESRI World Imagery

DUDEK

0 150 300 Feet

FIGURE 32

Temporary Impacts on Vernal Pool Fairy Shrimp Habitat

Delta Dams Rodent Burrow Remediation Project

INTENTIONALLY LEFT BLANK

SOURCE: DWR 2021-05-15; ESRI World Imagery

DUDEK

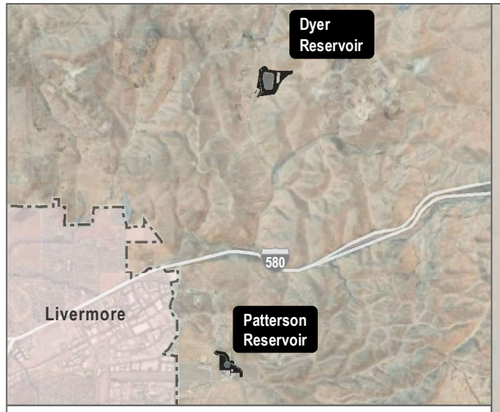
0 200 400 Feet

FIGURE 33

Impacts on California Red-legged Frog and California Tiger Salamander Habitat at Dyer Dam

Delta Dams Rodent Burrow Remediation Project

INTENTIONALLY LEFT BLANK



Study Area

Impacts

Permanent

Temporary

California Red-legged Frog and California Tiger Salamander Habitat

Aquatic Habitat

Upland and Dispersal Habitat

SOURCE: DWR 2021-04-22; ESRI World Imagery

DUDEK

0 100 200 Feet

FIGURE 34

Impacts on California Red-Legged Frog and California Tiger Salamander at Patterson Dam

Delta Dams Rodent Burrow Remediation Project

INTENTIONALLY LEFT BLANK