CEQA STATUTORY EXEMPTION FOR RESTORATION PROJECTS (SERP) CONCURRENCE REQUEST

Completion and submission of this form is voluntary. This form may be submitted to request concurrence from the Director of Fish and Wildlife pursuant to Public Resources Code section 21080.56.

The Lead Agency may submit this signed form (pdf) and all attachments via the Department's Environmental Permit Information Management System (EPIMS) Document Repository or via email at restorationpermitting@wildlife.ca.gov.

1. LEAD AGENCY

Lead Agency Name:	San Francisco Planning Department
Contact Person's Name:	Joy Navarrete
Street Address:	49 South Van Ness Avenue, Suite 1400
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Contact Person's Telephone:	628-652-7561
Contact Person's E-mail:	joy.navarrete@sfgov.org

2. PROJECT PROPONENT ☐ Check Box and Skip to Number 3 if Same as Lead Agency

Business/Agency/Organization:	California Trout Inc.
Contact Person's Name:	Claire Buchanan
Street Address:	435 Pacific Ave, Suite #200
City, State, Zip:	San Francisco, CA, 94133
Contact Person's Telephone:	(916) 834-2129
Contact Person's E-mail:	cbuchanan@caltrout.org

3. PROJECT INFORMATION

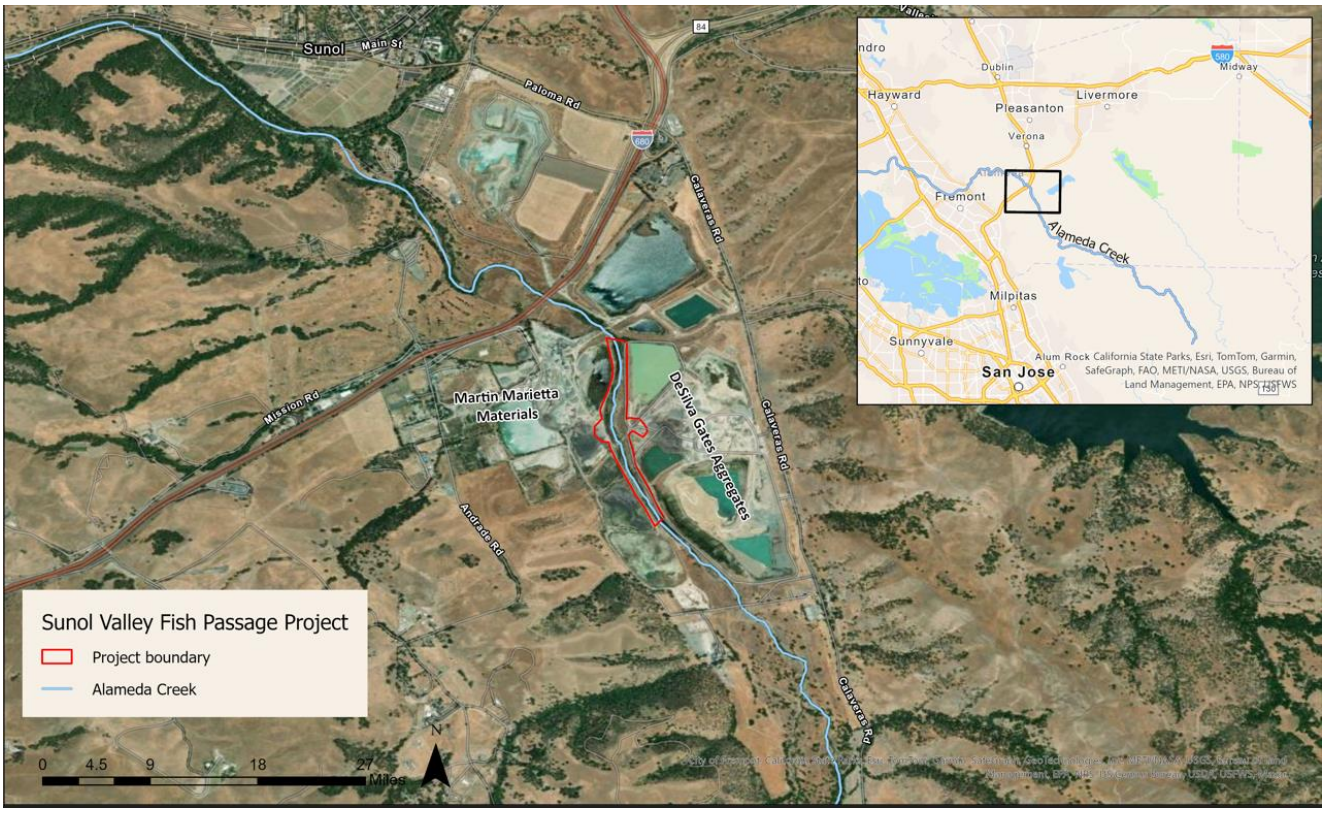
A. Project Name:	Sunol Valley Fish Passage Project
B. County or Counties:	Alameda
C. Lat./Long. Coordinates:	37.569014, -121.872864
D. Estimated Project Start/End Dates:	May 1, 2025 - December 31, 2035

E. Provide a brief description of the future discretionary Project approval the Lead Agency is considering (see CEQA Guidelines sections 15352 and 15378) and an approximate date range for when the Lead Agency may make that approval if the Lead Agency obtains a SERP concurrence from CDFW.

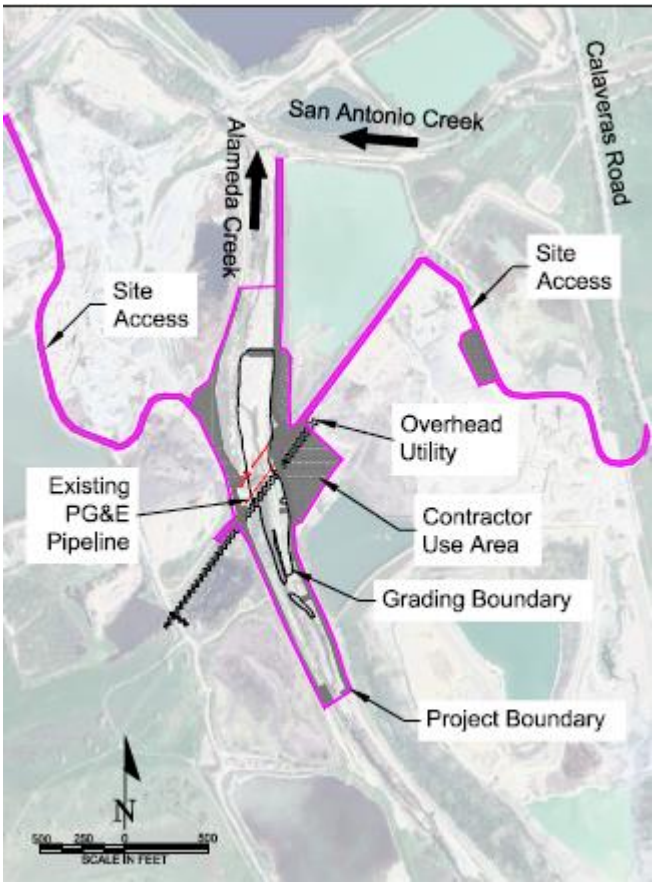
The San Francisco Planning Department (SF Planning), under the direction of the Planning Commission, as the Lead Agency is considering issuance of a license agreement and/or a lease. The license agreement and lease revision approvals may occur in fall 2024 or winter 2025.

F. Provide a brief description of the Project location, size, and funding sources. Please cite and attach any supporting documents.

This fish passage project is located in Alameda County on Alameda Creek between the San Antonio Creek confluence and Calaveras Dam in Sunol, California. It is just upstream (south) of Highway 680 and parallel to Calaveras Road. Alameda Creek is critical habitat for Central California Coast (CCC) steelhead trout (Oncorhynchus mykiss), federally listed as threatened under the Endangered Species Act, as well as Chinook salmon (Oncorhynchus tshawytscha), multiple species of lamprey, and other native fishes. The project is within San Francisco Public Utilities Commission (SFPUC) property boundaries. The right bank of the project site is leased to the DeSilva Gates Aggregates (DeSilva) quarry and the opposite bank of the creek at the project site is leased by Martin Marietta Materials, another private quarry. Please see the Project Map below.



The project footprint is approximately 35 acres, including access, staging and work areas as well as 2,000 linear feet of stream. A concrete erosion control mat (Er-Con Mat) that is 15,400 square feet will be removed from where it crosses Alameda Creek to restore fish passage. Please see the attached 65% Design Planset and 90% Pipeline Designs



Currently, the funding sources that have been secured are from Pacific Gas and Electric Company for a total of $10,500,000 and from the National Atmospheric and Oceanic Administration Fish Passage Program for a total of $4,280,000.

G. Provide a brief Project description, including any post-restoration work, operation and maintenance, or other related activities. Summarize the Project's expected environmental benefits (e.g., acres or stream-miles restored/enhanced, species benefitted, etc.). Please cite and attach any supporting documents.

Currently in Sunol Valley, a concrete erosion control mat (Er-Con Mat) protects a 36-inch pipeline, L-303, owned and operated by Pacific Gas and Electric Company (PG&E). The Er-Con Mat blocks fish passage on mainstem Alameda Creek between the San Antonio Creek confluence and Calaveras Dam. The Er-Con Mat is approximately 200 feet long and 70 feet wide, totaling approximately 0.03 acres. The Er-Con Mat creates an approximately 7-foot drop in the thalweg of Alameda Creek and has been identified as a priority fish passage barrier in the 2002 Draft Steelhead Restoration Action Plan for the Alameda Creek Watershed, prepared for the Alameda Creek Fisheries Restoration Workgroup. The Action Plan indicated that the Er-Con Mat is a complete barrier at low flows due to shallow sheeting flows and likely a barrier at high flows due to high velocity. The shallow sheeting flows render the Er-Con Mat impassable for juvenile salmonids at all flows. This Workgroup consensus is affirmed by studies done by Gunther et al. in 2000 and URS & HDR in 2010. Removal of the Er-Con Mat is included as a key recovery action in the 2016 National Marine Fisheries Service (NMFS) Coastal Multispecies Recovery Plan for the California Central Coast Steelhead, a threatened species (http://www.westcoast.fisheries.noaa.gov/protected_species/salmon_steelhead/salmon_and_stee lhead.html pg. 658).

The Project will remove the Er-Con Mat, which will restore fish passage upon completion. To remove the Er-Con Mat and restore fish passage, the Er-Con Mat will be removed, and the existing L-303 pipeline will be removed and will be replaced with a new pipeline buried about 18 feet below the existing Alameda Creek grade to eliminate any need for an erosion control structure in the creek bed that limits fish migration. The new pipeline will be located approximately 114 feet north (downstream) of the existing pipeline to allow for an open trench with shallow side slopes to account for soil stability during the construction excavation. The new pipeline will tie into the existing pipeline outside of the creek banks, on both the east and west sides, at the same locations that the old line was cut out. Please also see the attached 65% Design Planset and the 90% Pipeline Design Planset.

Once the old pipeline and Er-Con Mat are removed and the new pipeline is connected and buried, the Project will regrade the Alameda Creek channel several hundred feet upstream and downstream of the pipeline crossing. The grading includes creating new pools and meanders, promoting channel diversity, and creating a low flow channel to allow passage opportunities even during low flows. Excess soil will be placed against berms within the Alameda Creek channel, within FP-3 (Sheet C-4). No spoils will be trucked off-site. The only expected change to hydrology or flooding regimes that will result from the restoration activities will be a slight reduction in the flood elevations. The Project will create a reduction in the amount of erosion that otherwise would have occurred due to the 7-foot drop after Er-Con Mat removal. There is no evidence of any contamination of sediments upstream of the fish passage barrier. Sediment currently passes over the Er-Con Mat in large flow events.

After replacement of the pipeline and regrading of the creek channel, revegetation will occur. All grading, staging, and access areas that are not active gravel quarry staging or roads will be revegetated or seeded. The revegetation plan has been developed in collaboration with the landowner, SFPUC, and focuses on native plants including sycamore, buckeye, and shrubs from cuttings, acorns, nuts, and seeds to drastically reduce soil pathogen contamination possibilities. The Project will be monitored for 10 years to ensure revegetation cover success and fish passage success, and additional modification to grading or replanting will be done as necessary based on monitoring results. In addition, antennas will be placed upstream of the project site on mainstem Alameda Creek to detect migrating steelhead tagged by partners to determine efficacy of fish passage past the project site for at least ten years post-implementation.

California Trout (CalTrout), along with PG&E and contractors; McBain Associates Applied River Sciences (McBain; civil and revegetation design), Hanford ARC (regrading and revegetation implementation), Stantec (cultural resources) and Sequoia Biological Consulting (Sequoia; biological compliance) as well as other stakeholders, including lessees DeSilva and Martin Marietta Materials and landowner, SFPUC, are working together to implement the proposed project. CalTrout is the project lead and is coordinating closely with all parties on project designs, fundraising, and permitting.

This Project is one of the last components of a multi-decadal program to improve fish passage in Alameda Creek through many partners in the Alameda Creek Fisheries Work Group. Since 2006, members of the Work Group have removed 5 fish passage barriers from mainstem Alameda Creek. In the past 2 years, Alameda County Water District and Alameda County Flood District collaborated to remediate two barriers downstream of the project site by installing fish ladders. Now that the barriers have been removed, in the fall and winter of 2022/2023, high flows restored access upstream to the upper watershed for the first time in more than 50 years. This pipeline and associated Er-Con Mat is the last major fish passage barrier remaining on mainstem Alameda Creek downstream of the major water storage reservoirs on Calaveras and San Antonio creeks.

Expected Environmental Benefits include:

- Completes action AIC-CCCS5.1.5.2 from the NMFS Recovery Plan for the threatened Central California Coast steelhead, which is to remove or modify the PG&E gas line crossing in the Sunol Valley.
- Fish passage will provide access to more than 20 miles of high-quality habitat for migratory fish, including California Central Coast steelhead, Chinook salmon, and lamprey species.
- Approximately 0.5 stream-miles will be graded to create a dynamic stream channel, including pools and meanders.
- The project will plant approximately 3,000 native riparian trees as cuttings, acorns, and nuts, contributing to future shade and wood as in-stream habitat.
- Approximately 6 acres will be revegetated with native plants, including a seed mix of grasses and other natives including milkweed and lupine. Non-native plants will be removed from the project footprint.
- Restoration of ecological function in this reach of mainstem Alameda Creek by restoring capacity to flush sediments, woody debris, and nutrients to sites downstream.

H. CDFW recommends direct coordination with all interested California Native American tribes. Please provide a summary of the Lead Agency's engagement with tribes. Be careful not to include any sensitive or confidential information. Please cite and attach any supporting documents.

The Project is subject to Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and its implementing regulations (36 Code of Federal Regulations [CFR] 800). The U.S. Department of Commerce's National Oceanic and Atmospheric Administration (NOAA) is the federal lead agency for the project. As such, NOAA issued a consultation initiation letter on August 7, 2024, to the eleven tribes listed in the Native American Heritage Commission (NAHC) list issued for the Project on May 17, 2024. Eight of the tribes responded to the letter including the Amah Mutsun Tribal Band of Mission San Juan Bautista, the Confederated Villages of Lisjan Nation, the Costanoan Rumsen Carmel Tribe, the Indian Canyon Mutsun Band of Costanoan, the Muwekma Ohlone Tribe of the SF Bay Area, the Northern Valley Yokut / Ohlone Tribe, the Ohlone Indian Tribe, and Wilton Rancheria. As of October 2024, the federal consultation effort is still in progress and the Confederated Villages of Lisjan Nation and Northern Valley Yokut / Ohlone Tribe have been in discussions with the Project team about involvement in Project-related activities.

As part of the federal effort, Stantec prepared a Cultural Resources Inventory and Evaluation for the Project. It included a review of all available relevant literature, a record search, a Sacred Lands File (SLF) search, and a pedestrian field survey of the portions of the Project APE not previously surveyed.

The Project is also subject to the California Environmental Quality Act (CEQA) and the SF Planning is the lead CEQA agency. SF Planning requested a SLF search and tribe Tribal Consultation List for the Project. The contact list had the same eleven tribes as the NAHC list issued for the federal effort. SF Planning will issue project notice letters to the eight tribes that responded to the federal consultation initiation letter. As of October 2024, the tribal notice effort lead by SF Planning is still in progress.

Project sponsor California Trout has agreed to fund Native American representatives to participate in the Project to whatever capacity and interest they have (i.e., monitoring of the project work, cultural sensitivity training). In addition, PG&E and SFPUC standard construction requirements for inadvertent discovery protocols will be incorporated into construction documents prior to bidding and ground disturbance. Inadvertent discovery protocols will include notification of tribal representatives upon discovery.

I. CDFW recommends public outreach and coordination with interested parties and public agencies. Please provide a summary of the Lead Agency's engagement with interested parties and public agencies. Please cite and attach any supporting documents.

The SF Planning, in collaboration with CalTrout, has had substantial coordination with interested parties and public agencies. CalTrout and SF Planning have met with the California Department of Fish and Wildlife Cutting the Green Tape staff, as well as regional biologists from permitting agencies. CalTrout has also met with NMFS, United States Fish and Wildlife Service, and the San Francisco Bay Regional Water Quality Control Board to discuss the project and potential use of Cutting the Green Tape permitting pathways. CalTrout has collaborated closely with the SFPUC, PG&E, the Alameda Creek Alliance, and the DeSilva gravel quarry to develop the project over the past year. CalTrout also presented the project at the September 2023 and the May 9, 2024 Alameda Creek Watershed Forum, which is a voluntary, non-regulatory stakeholder group that supports the community's interest in protecting and achieving a healthy and sustainable Alameda Creek watershed. It includes as key stakeholder organizations: the Alameda County Flood Control and Water Conservation District, Zone 7 Water Agency, Alameda County Resource Conservation District, Alameda County Water District, City of Fremont, City of Livermore, Living Arroyos, East Bay Regional Park District, Friends of the Arroyos, Livermore Area Recreation and Park District, and San Francisco Bay Regional Water Quality Control Board (https://acwforum.org/wp-content/uploads/1.-Sunol-Valley-Fish-Passage-Project-CalTrout.pdf). Non-key stakeholder organizations such as CalTrout, the project proponent, also participate in the Forum. Public outreach has also included articles on CalTrout's website and will include an upcoming tour at the Salmonid

Restoration Federation conference in 2025 as well as a public tour of the Alameda Creek watershed, including the Project site, hosted by Alameda Creek Alliance on November 17, 2024.

CalTrout has established a partnership with SFPUC to enhance and expand field trip opportunities for students from underserved Alameda County schools by providing transportation and curriculum resources for students as well as professional learning for SFPUC's Alameda Creek Watershed Center (ACWC) staff and youth educators at the new Alameda Creek Watershed Center. The Center is located approximately 2 miles downstream of the project site and is slated to open in the Fall of 2024. Exhibits will focus on watershed health, including the important role fish passage projects such as the project play in restoring access to high quality habitats upstream for native fishes.

4. REQUIRED DETERMINATIONS

Using substantial evidence and best available science, provide a determination and explanation for each SERP criteria listed below:

A. The Project is exclusively one or both of the following: (1) a project to conserve, restore, protect, or enhance, and assist in the recovery of California native fish and wildlife, and the habitat upon which they depend, or (2) a project to restore or provide habitat for California native fish and wildlife.

SF Planning has determined the Project is exclusively a project to conserve, restore, protect, or enhance, and assist in the recovery of California native fish and wildlife, and the habitat upon which they depend, and a project to restore or provide habitat for California native fish and wildlife.

Please provide an explanation supporting the above determination. Please cite and attach any supporting documents.

The Project is exclusively focused on removal of the Er-Con Mat, which will restore fish passage upon completion. The Er-Con Mat creates an approximately 7-foot drop in the thalweg of Alameda Creek and has been identified as a priority fish passage barrier in the NMFS Recovery Plan for threatened Central California Coast steelhead, in Gunther et al. in 2000, URS & HDR in 2010, and the 2002 Draft Steelhead Restoration Action Plan. The Action Plan indicated that the Er-Con Mat is a complete barrier at low flows due to shallow sheeting flows and likely a barrier at high flows due to high velocity. The shallow sheeting flows render the mat impassable for juvenile salmonids at all flows. The Project will complete recovery action AlC-CCCS5.1.5.2 from the NMFS Recovery Plan for the threatened Central California Coast steelhead: "remove or modify the PG&E gas line crossing in the Sunol Valley."

After removal of the barrier, fish passage through this section of Alameda Creek will be unimpeded. No physical barrier or drop will remain. The Alameda Creek channel will instead have a natural slope, with riffles, runs and pools providing adult and juvenile fish passage. The Project will restore a natural channel morphology through the reach that accommodates the natural Alameda Creek dynamics.

The existing L-303 pipe crossing Alameda Creek is operating in an effective and safe manner, no maintenance is needed, and it is being replaced solely to provide fish passage. The intent of this Project is solely to restore ecological function to benefit fish and riparian habitat in upper Alameda Creek. Pipeline L-303 will be replaced with a new pipeline buried about 18 feet below the existing Alameda Creek grade to eliminate any need for an erosion control structure in the creek bed that limits California native fish migration and ecological function.

Therefore, the Sunol Valley Fish Passage Project is exclusively a project to restore fish passage and assist in the recovery of California native fish in Alameda Creek and the habitat upon which they depend, per SERP

criteria A (1). In addition to its main fish passage purpose, the project will also restore approximately 6 acres of native vegetation, restoring habitat for California native fish and wildlife per SERP criteria A (2).

B. An eligible project may have incidental public benefits, such as public access and recreation.

SF Planning has determined that the Project has minor incidental public benefits. There is no public access to the project site, nor will any be created as part of project implementation. However, the Project will generate some minor public benefits by a slight reduction in flooding in some portions of the project footprint.

Please provide an explanation supporting the above determination. Please cite and attach any supporting documents.

Incidental public benefits include flood reduction. The Project reduces water surface elevations at 9,000 cfs for approximately 1,860 linear feet of Alameda Creek (Station 22+00 to 40+60). Reductions in the 100-year flood elevation of a few tenths of a foot may occur downstream of the current location of the Er-Con Mat. The Project reduces the risk of flooding in the future with more variable hydrology due to climate change.

C. The Project does both of the following: (1) Results in long-term net benefits to climate resiliency, biodiversity, and sensitive species recovery; and (2) Includes procedures and ongoing management for the protection of the environment.

SF Planning has determined that the Project does both of the following: (1) Results in long-term net benefits to climate resiliency, biodiversity, and sensitive species recovery; and (2) Includes procedures and ongoing management for the protection of the environment. Restoring access to perennial cool water upstream of the project site for coldwater species such as threatened steelhead, Chinook salmon, and lamprey is critical to their resilience to climate change and recovery. The Project will also protect biodiversity by restoring ecological function at the site for a host of native species through non-native removal and planting. CalTrout will be responsible for working with project partners to monitor and manage the project site post-implementation to protect the environment and ensure Project success.

For each criterion below, please provide an explanation supporting the above determination. Please cite and attach any supporting documents.

Long-Term Net Benefits to Climate Resiliency:

Habitat restoration and fish passage as part of the Project will provide access to a greater range of habitat for special-status (CCC steelhead) and other native species (California roach). A broader range will allow native species a higher likelihood of finding their specific habitat requirements under future climate change scenarios. This Project will allow native fishes including steelhead the opportunity to migrate unimpeded upstream or down as streamflows and conditions change throughout the year to access perennial habitat with cool water, food, cover, and sufficient spawning and rearing habitat. This is critical for recovery of steelhead in a changing climate where cool perennial streamflow lies at higher elevations upstream.

The Project also provides benefits to stream temperature and channel structure. The Project includes planting of riparian vegetation, enhancing shade. The Project also increases channel sinuosity, which may help create

deeper pools over the long-term. Sinuosity also increases the heterogeneity of stream channels, which helps to increase habitat resilience by increasing the structure and function of streams.

In addition, removing a structure that could have maintenance risks or undercutting issues in the future improves long-term sustainability of the creek and allows adaptation to extreme weather events without infrastructure risks. A natural, restored Alameda Creek channel will help facilitate natural physical and biological processes including sediment transport, vegetation recruitment, and erosion. Restoration of these natural processes is expected to improve ecosystem function, improving Alameda Creek's resiliency relative to expected hydrological changes resulting from climate change.

Long-Term Net Benefits to Biodiversity:

The Project directly benefits biodiversity by restoring ecological function suited to native aquatic species. The Project will open an additional 21.6 miles of habitat upstream and will also improve fish passage for fall-run Chinook salmon (hatchery origin, unlisted), Pacific lamprey (*Entosphenus tridentatus*; California Species of Special Concern and a federal Species of Concern), River lamprey (*Lampetra ayresi*; unlisted) and Western brook lamprey (*Lampetra richardsoni*; unlisted). After removal of the Er-Con Mat, these and other unlisted native aquatic species Sacramento sucker (*Catostomus occidentalis occidentalis*), California roach (*Hesperoleucus symmetricus*), Sacramento pikeminnow (*Ptychocheilus grandis*), and prickly sculpin (*Cottus asper*) (URS Corporation and HDR Architechture/Engineering 2010a, SFPUC 2021)) will have access to high quality rearing and spawning habitat further upstream in the Alameda Creek watershed. Greater habitat connectivity and improved access to diverse habitats should result in population increases and improved survival.

The Project also enhances the Alameda Creek corridor in terms of vegetation and tree cover, improving its use as a wildlife corridor for both aquatic and terrestrial species. The Project benefits native plant species through removal of non-native plant species at the project site and planting a range of native plants including a seed mix with native flowering species. The revegetated area will help provide habitat for native avian species such as Crotch's bumble bee (*Bombus crotchii*), loggerhead shrike (*Lanius ludovicianus*), Green heron (*Butorides virescens*), Anna's hummingbird (*Calypte anna*), common yellowthroat (*Geothlypis trichas)*, and other birds.

Long-Term Net Benefits to Sensitive Species Recovery:

The Project strongly benefits sensitive species recovery. In the long-term, the total removal of this fish passage barrier will allow for continued stream evolution and will restore sediment transport processes.. In addition, the native plantings made as part of the Project should help to provide a long-term seed source, increasing native species diversity and abundance in Alameda Creek long-term.

A San Francisco Estuary Watersheds Evaluation (Becker et al. 2007) identified Alameda Creek as one of the San Francisco Bay Area's eight "anchor" watersheds that are critical to a regional steelhead conservation and restoration strategy. The NOAA Fisheries Multispecies Recovery Plan for Central California Coast steelhead (NMFS 2016) calls out Alameda Creek as an "essential" population for the recovery of the Interior San Francisco Bay Diversity Stratum and the entire Distinct Population Segment. The Project directly addresses Action AlC-CCCS-5.1.5.2 in the NMFS Recovery Plan (NMFS 2016), "Remove or modify the PG&E gas line crossing in the Sunol Valley," a priority one recovery action noted for this watershed. Alameda Creek historically supported the greatest numbers of Chinook salmon and steelhead of any local tributary to San Francisco Bay (CEMAR 2008, NMFS 2016: https://media.fisheries.noaa.gov/dam-migration/2016-multispecies-recovery_plan-vol4.pdf). Long-term sustainability and an increase in abundance of CCC steelhead is anticipated due to their boosted ability to express diverse life histories, where juvenile *O. mykiss* can go back upstream to spend another summer in freshwater to grow before emigrating to the ocean at larger sizes or to grow larger before

spawning as resident fish. An overall increase in abundance and resilience in the watershed is anticipated with more habitat available due to restored passage, especially during varying water years.

The Project also helps with several other recovery actions, including AlC-CCCS-6.1.3.1, "Identify and evaluate adult staging pool in Niles Canyon, Arroyo de la Laguna, Arroyo Mocho, Sunol Valley, and Upper Alameda Creek and ensure that all have an adequate shelter for migrating adults" (NOAA, 2016). The project grading will add several pools to Alameda Creek in Sunol Valley, which can be used as adult steelhead staging pools.

The Project also addresses AlC-CCCS-7.1.1, "Improve canopy cover" (NOAA, 2016). The project will plant approximately 3,000 cuttings, acorns, and nuts of native tree species, which should improve canopy cover in this section of Alameda Creek.

In addition, the project revegetation planting palette incorporates considerations of other non-aquatic species such as native bees (i.e., Crotch's bumble bee, *Bombus crotchii)* by providing plants that will offer food sources for species that are listed or are likely to become listed in the foreseeable future. Sycamore plantings have been incorporated as well and they are a high priority species in the Sunol Valley and provide important habitat for a variety of native species.

Procedures for the Protection of the Environment:

As a restoration project, this Project includes a variety of elements to protect the environment. At the beginning of the Project, prior to any excavation, CalTrout's contractor will install fish exclusion fencing, relocate any fish, and then Hanford ARC will install a dewatering pipeline to route the flow of Alameda Creek around the project construction site. This team has experience working with various listed species and utilizing best management practices to reduce harm to species during implementation. This dewatering activity avoids turbidity from construction entering Alameda Creek and minimizes the potential impacts to aquatic species during construction. The fish exclusion fencing will be maintained during construction to ensure fish cannot enter the construction site.

Other species that could occur on site, including California Red-legged Frog, California Tiger Salamander, and Alameda Whip Snake, are also being considered and appropriate measures will be included to minimize effects to these species.

Existing riparian vegetation will be protected to the greatest extent possible. The grading plan has been designed to avoid removal of the few existing mature trees in this quarry reach. Existing trees will be flagged and protected with fencing outside of their driplines to prevent accidental damage.

Introduction of invasive species has been carefully considered. Before any construction equipment enters the site, aquatic decontamination procedures will be followed including a 7-day rest period after decontamination to ensure that aquatic invasive species (i.e., New Zealand mud snail, etc.) are not introduced to Alameda Creek. Prior to any person working in Alameda Creek, SFPUC requires aquatic decontamination of boots, waders, and any boats.

In addition, the revegetation plan is designed to avoid the introduction of soil pathogens (i.e., Phytophthora) to the site. No container stock has been used, and instead exclusively cuttings, acorns, nuts and seeds will be used for planting native species. Native plant nursery container stock can have soil pathogens in their containers, which then can be introduced into the natural environment. This Project avoids this potential altogether. Please see the attached 65% Design Planset for more information.

To avoid the potential for oil and gas contamination, the construction equipment operating in the dewatered Alameda Creek channel will use fuels that are non-toxic to aquatic species.

The Project is using Cutting the Green Tape permitting pathways and will be following all of the relevant measures from the Statewide Restoration General Order, NMFS Programmatic Biological Opinion, and USFWS Programmatic Biological Opinion. This includes but is not limited to construction worker awareness training prior to construction on all of the measures, identification of rare species, and procedures such as placing boards in any vertical-sided holes to allow species to exit overnight. See the attached Measure List.

Ongoing Management for the Protection of the Environment:

CalTrout will monitor the project site for 10 years, and may make grading changes or replant plant species based on monitoring results for the protection of the environment. Water quality will be monitored for the first year after construction. For the first two years post-implementation, CalTrout will work with subcontractors to ensure successful establishment of plantings of native species through seasonal irrigation and weeding. CalTrout will also conduct upstream adult salmonid monitoring in Alameda Creek after construction through implementation of a PIT tag array. Currently, no steelhead can pass the barrier. These post-construction fish observations will be compared to the existing network of PIT tag arrays in the region pre-construction. Grading changes may be made if passage fails. Please see the attached Monitoring Plan.

D. The Project does not include any construction activities, except for construction activities solely related to habitat restoration.

SF Planning has determined that the Project does not include any construction activities, except for construction activities solely related to habitat restoration.

Please provide an explanation supporting the above determination. Please cite and attach any supporting documents.

All construction activities for this Project are solely related to habitat restoration and fish passage. The Project is a restoration project, which would not be occurring otherwise. It is a recovery action in the NMFS Central California Coast steelhead recovery plan, and partially funded by NOAA Fisheries. The Project includes removal and replacement of a PG&E gas pipeline, L-303. However, the gas pipeline is only being moved, replaced and buried deeper in order to allow the removal of the Er-Con Mat, the fish passage barrier. Fish exclusion, dewatering, access, staging, grading and revegetation are all being done in order to allow removal of the Er-Con Mat and restore Alameda Creek after removal of this infrastructure. See attached 65% Design Planset and 90% Pipeline Planset.

All equipment and materials are to support habitat restoration and fish passage. Concrete debris from the Er-Con Mat will be hauled off-site. No import of materials other than native cuttings and seed is required. The Project will start and complete construction in 2025.

5. CERTIFICATION

I certify that I have the authority to determine whether a project is exempt pursuant to CEQA Guidelines section 15025(a)(1), and this Project meets all the requirements described in Public Resources Code section 21080.56, and that I have submitted all the determinations required therein necessary to obtain the concurrence of the Director of Fish and Wildlife.

Date: January 9, 2025

Lead Agency Signature

Printed Name and Title: Joy Navarrete, Principal Environmental Planner

ALAMEDA CREEK
SUNOL VALLEY FISH PASSAGE AND RESTORATION PROJECT

65% DESIGN

June 7, 2024

PRELIMINARY - NOT FOR CONSTRUCTION

Index of Sheets	
Sheet C-1	Project Title, Sheet Index, and Location Map
Sheet C-2	Legend, Notes, Volumes, and Control Information
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Sheet C-4	Design Planform Detail
Sheet C-5	Mainstem Longitudinal Profile View
Sheet C-6	Mainstem Pool Riffle Longitudinal Profile Detail View
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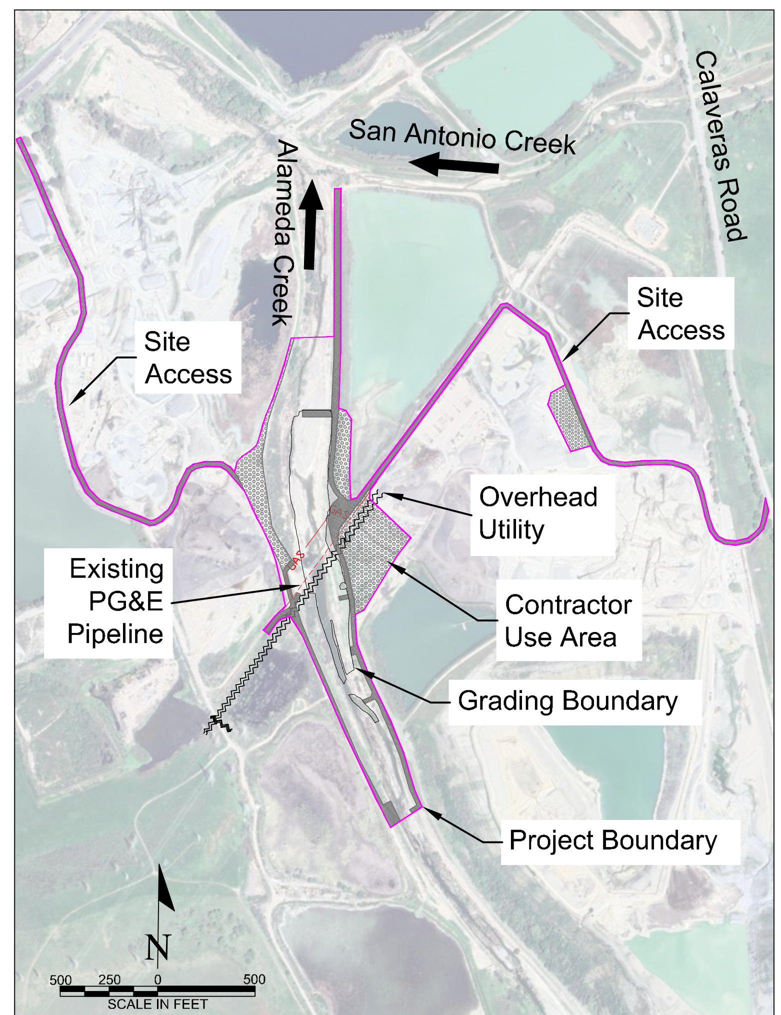
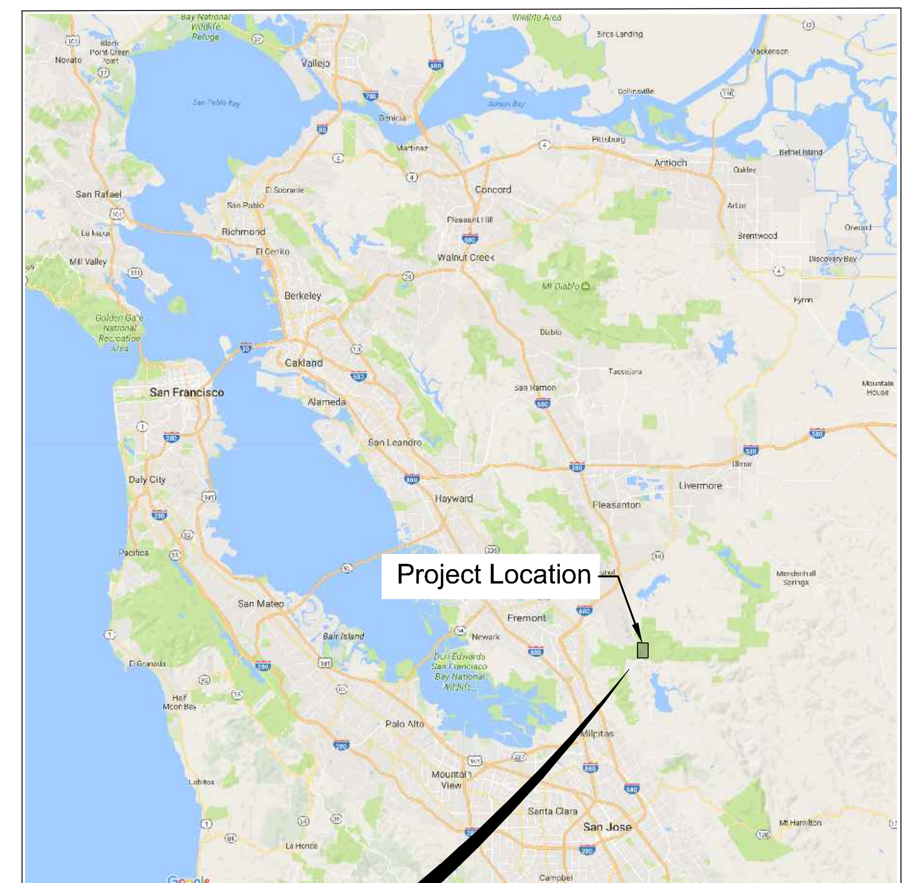
CALIFORNIA TROUT
FISH · WATER · PEOPLE

McBain Associates
APPLIED RIVER SCIENCES

LOCATION MAP



REGIONAL MAP



REV	DATE	DESCRIPTION

PG&E c/o CAMPOS EPC
Alameda Creek
Sunol Valley, CA 94586

MCBAIN ASSOCIATES
980 7TH STREET
ARCATA, CA 95521

DESIGNED BY: McBain Associates	ISSUE DATE: June 7, 2024
DRAWN BY: F. Meyer, R. George	PROJECT: Alameda Creek, PG&E
CHECKED BY: K. Harrison; S. McBain	CONTRACT NO: 03010059.001
APPROVED BY: K. Harrison, PE	DRAWING SET: 65% Design
SIZE: 22 x 34 in (full scale), 11 x 17 in (half scale)	

ALAMEDA CREEK
SUNOL VALLEY FISH PASSAGE AND RESTORATION PROJECT
Project Title, Sheet Index, and Location Map

SHEET ID
C-1
1 of 15

Topographic Data Source: Meridian Surveying and Engineering
Imagery Data Source: 2023 Google Earth Image

Horizontal Datum: CA State Plane, Zone 3, NAD 83, Feet
Vertical Datum: NAVD 88, Feet

STATUS 65%

PRELIMINARY - NOT FOR CONSTRUCTION

LEGEND PLAN VIEW

- Design Grade Index Contours (5 ft)
- Design Grade Intermediate Contours (1 ft)
- Existing Grade Index Contours (5 ft)
- Mainstem Alignment and Station
- Existing Alameda Creek Channel at 20 cfs (Approx.)
- Project Boundary
- Grading Boundary
- Design Spot Elevation
- Survey Control Point
- PG&E Er-Con Mat
- PG&E Gas Pipeline Proposed
- PG&E Gas Pipeline to be Removed
- Project Access
- Contractor Use Area
- PG&E Disturbance Extent
- Fish Exclusion Barrier
- Flow Barrier and Bypass Pipeline
- Regulatory Floodway, Zone AE
- In-channel Areas (IC-1 and IC-2)
- Floodplain 1 Area (FP-1)
- Floodplain 2 Area (FP-2)
- Floodplain 3 Area (FP-3)

LEGEND SECTION & PROFILE

- Existing Grade
- Finished Grade
- 65% Design Water Surface Elevation at 10 cfs
- 65% Design Water Surface Elevation at 50 cfs
- 65% Design Water Surface Elevation at 5,000 cfs
- Project Fill
- Project Cut
- PG&E ERCON Mat
- PG&E Proposed Gas Pipe Location
- Existing Slope Reference

VOLUME TABLE BY PROJECT AREA

Site	Area (acres)	Cut (cu.yd)	Fill (cu.yd)	Net (cu.yd)	
IC-1	1.8	3,153	615	2538	Cut
IC-2	0.2	273	9	263	Cut
FP-1	2.5	343	4,286	3944	Fill
FP-2	1.2	403	1,391	988	Fill
FP-3	1.8	4,150	2,022	2128	Cut
Total	**7.4**	**8,320**	**8,324**	**4**	**Fill**

Survey Control

Point Number	Elevation (ft)	Description
4	269.25	Control Point 4, Rebar

PROJECT NOTES

GENERAL

1. These plans are a graphical representation of the work to be performed for the Sunol Valley Fish Passage and Restoration Project.
2. References to the right or left bank on these plans are based on a reference point looking downstream.
3. All dimensions are shown in feet unless otherwise specified.
4. Existing grade contours within tree and brush areas may not meet 1 ft accuracy and should be considered approximate.
5. Design grade contour interval is 1-foot unless otherwise noted.
6. Prior to construction, the contractor shall clear and grub vegetation within construction areas only, unless flagged as "save tree," "clump planting," or "large wood" by on-site project representative.
7. It is the responsibility of the Hanford ARC (Contractor) and their subcontractor(s) to examine the project site prior to the commencement of work. The contractor shall become familiar with the conditions under which the work is to be performed, such as the nature and location of the work and the general and local conditions, particularly those affecting the availability of transportation; the disposal, handling, and storage of materials; availability of labor, water, and electricity; roads; the uncertainties of weather; the conditions of the ground; surface and subsurface materials; the uncertainties of streamflow and groundwater in Alameda Creek; the equipment and facilities needed primarily for and during the performance of the work, and the costs thereof. Any failure by the contractor and subcontractor(s) to acquaint themselves with all the available information will not relieve them from responsibility for properly estimating the difficulty and cost of successfully performing the work.
8. The Engineer of Record (EOR) responsible for preparation of these plans and specifications will not be responsible for or liable for unauthorized changes to or uses of these plans.
9. Should it appear that the work to be done, or any matter relative thereto, is not sufficiently detailed or explained on these plans, report, and/or attached specifications, the contractor shall contact the on-site project representative who will in turn contact the EOR responsible for the plan preparation, prior to conducting work on that portion of the project.
10. A set of signed working plans and specifications shall be kept at the job site at all times. All changes or variations in the work are to be recorded and/or corrected on these working plans and specifications daily and submitted to the on-site project representative upon completion of work.
11. The plans and specifications describe in general the quality and character of the materials, shape and configuration of the improvements and design intent of the completed work. Miscellaneous items of work, material, equipment, etc, necessary to complete the work shall be provided by the Contractor whether or not mentioned in the specifications or shown on the plans.
12. Because of the nature of the project, thoughtful grading is mandatory. The contours shown on the plans represent a general shape of the land, but the intent is that slopes, grade breaks, etc. be graded to natural flowing shapes that smoothly transition. As part of the scope of work, the contractor must work under the direction of the on-site project representative to create natural-looking, irregular surface with small hummocks and depressions in the graded areas resembling the topography of a natural river.
13. The contractor shall conform to all governing laws, codes, ordinances, and permits.
14. The Contractor shall be held responsible for any and all damages to existing vegetation, structures, and utilities during construction.
15. Diversion pipeline and irrigation systems shown in these plans are recommendations only. Contractor is responsible for the design (if needed) and implementation of the diversion pipeline and the revegetation irrigation system.

SURVEY NOTES

16. Survey control was established by Meridian Surveying Engineering's (MSE) professional land surveyor (PLS) in June of 2023. All subsequent surveys, including bathymetric surveys, were established from this control point.
17. The contractor will be responsible for the protection of all existing survey monuments and other survey markers during construction.
18. Horizontal datum for survey control points is NAD 83 (2011), California State Plane Coordinates, Zone 3, United States (US) Survey Feet.
19. Vertical datum for survey control points is NAVD 88, US Survey Feet.
20. Data sources for the existing terrain shown in these plans include:
    a. LiDAR data collected in 2016.
    b. Topography and bathymetry data collected by MSE in June and August of 2023.
    c. Aerial imagery: Google Earth, 2023.

ENVIRONMENTAL & CULTURAL

20. Contractor is responsible for following all applicable federal, state, county, and local laws during construction, including all permits for construction. Contractor shall keep project-specific permits on-site in an accessible location.
21. Biologically and culturally sensitive areas will be flagged for protection from disturbance prior to construction by CalTrout or representative.
22. Discovery of cultural resources (i.e., pottery, bones) during construction will require all work to stop and establishment of a 100 ft buffer will be established until a project archeologist is able to assess cultural resource discovery and authorize work to resume within the area of discovery.
23. Prevention of erosion and the release of sediment and other pollutants associated with construction are described in the Best Management Practices (BMPs) within the Stormwater Pollution Prevention Plan (SWPPP). A printed copy of the SWPPP will remain in an accessible on-site location for the duration of construction.
24. Contractor shall not start in-stream work until after CalTrout or representative installs fish exclusion barriers and conducts a fish rescue and relocation.
25. The in-water work window is June 15 to October 15.
26. Contractor shall minimize or eliminate non-storm drainage from the construction site to other water bodies. All construction activities shall be performed in a manner that minimizes, to the extent possible, any pollutants entering directly or indirectly into surface or groundwater. All materials that could cause water pollution (i.e. motor oil, fuels, paints, etc) shall be stored and used in a manner that does not cause any pollution.
27. All fueling and equipment maintenance shall occur at least 500 feet from Alameda Creek.
28. Avoidance and minimization and/or mitigation measures for plants and animals shall be followed. Measures are included in the environmental permits.
29. Contractor shall install temporary fencing or flagging at the perimeter of "save vegetation" areas and/or individual trees to be preserved.
30. Contractor will notify on-site project representative and only work within any flagged or environmentally sensitive buffer areas when a monitor is on site.

SAFETY AND SECURITY

31. Prior to commencement of work the Contractor shall provide a written safety plan to the contract officer.
32. Contractor must plan for flow in Alameda Creek up to 15 cfs throughout construction.
33. Contractor is responsible for the security of all equipment and materials.

ACCESS AND STAGING

34. Contractor shall coordinate with DeSilva Gates Aggregates and/or Martin Murietta - Sunol Aggregates to gain access to the site.
35. Contractor must reestablish existing roads disturbed by construction activities by connecting any new access routes to existing roads unless otherwise directed by on-site project representative.
36. Contractor shall develop and maintain all construction access ramps, turnouts, routes, turnarounds, etc., as necessary to haul and place fill as designated.
37. In addition to the Contractor Use Areas shown on this planset, the Contractor may also use off-site areas near the intersection of Highway 680 and Calaveras Road for staging, equipment decontamination, fueling, etc as modified by the landowners.

UTILITIES

38. Contractor shall field-locate all existing utilities in the project area prior to commencing work. The contractor shall contact all appropriate agencies and the underground service alert to field locate all underground utilities.
39. Contractor shall notify underground service alert (USA) at 1-800-227-2600 or 811, 48 hrs prior to any start of construction.

McBain Associates
APPLIED RIVER SCIENCES

REV	DATE	DESCRIPTION

PG&E c/o CAMPOS EPC
Alameda Creek
Sunol Valley, CA 94586

MCBAIN ASSOCIATES
980 7TH STREET
ARCATA, CA 95521

DESIGNED BY: McBain Associates
DRAWN BY: F. Meyer, R. George
CHECKED BY: K. Harrison; S. McBain
APPROVED BY: K. Harrison, PE
SIZE: 22 x 34 in (full scale), 11 x 17 in (half scale)
ISSUE DATE: June 7, 2024
PROJECT: Alameda Creek, PG&E
CONTRACT NO: 03010059.001
DRAWING SET: 65% Design

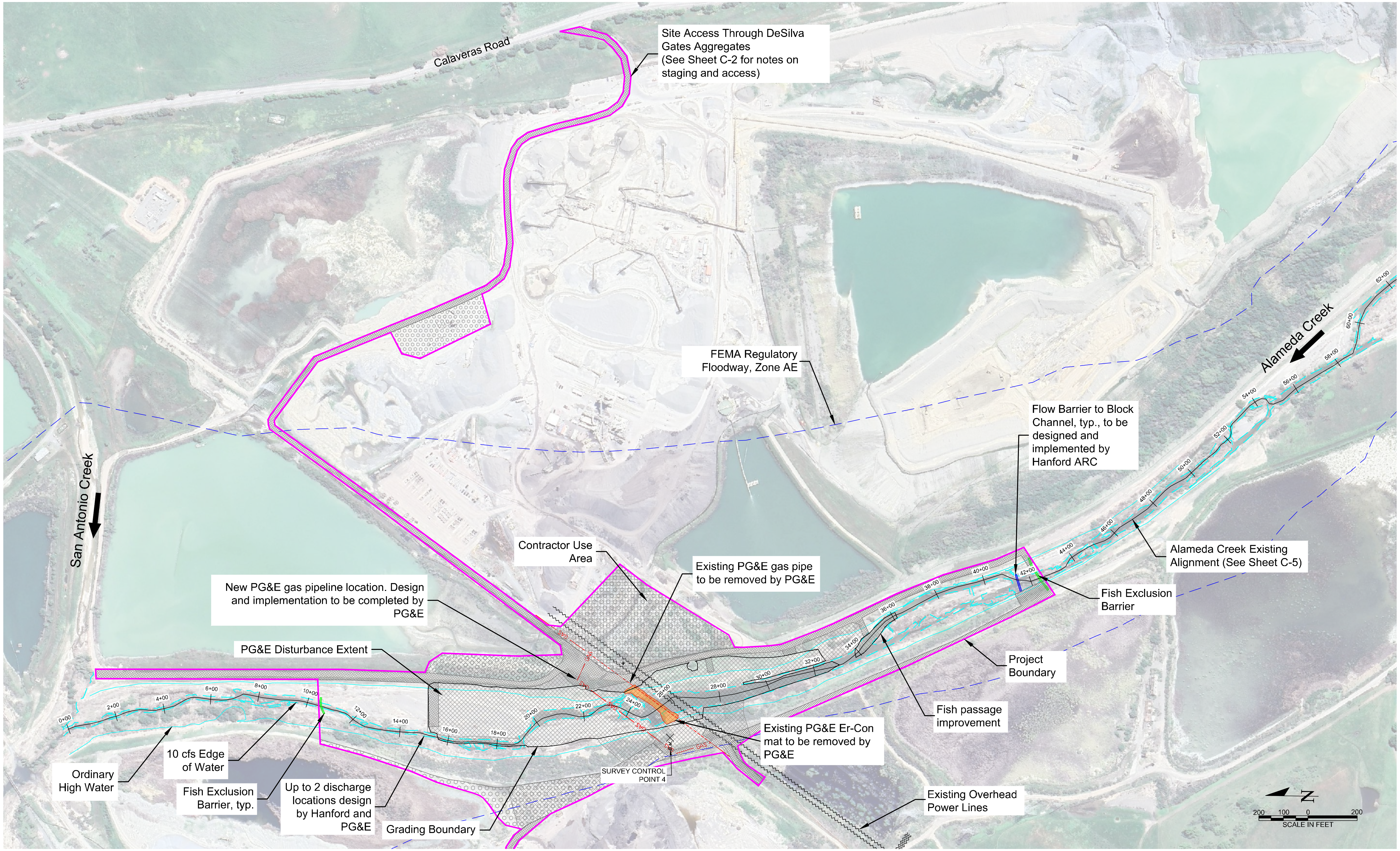
ALAMEDA CREEK
SUNOL VALLEY FISH PASSAGE AND RESTORATION PROJECT
Legend, Notes, Volumes, and Control Information

SHEET ID
C-2
2 of 15

STATUS 65%

Topographic Data Source: Meridian Surveying and Engineering
Imagery Data Source: 2023 Google Earth Image

Horizontal Datum: CA State Plane, Zone 3, NAD 83, Feet
Vertical Datum: NAVD 88, Feet



PRELIMINARY - NOT FOR CONSTRUCTION

SHEET NOTES
1. Mainstem (Alameda Creek) alignment in feet, beginning at Station 0+00 at the confluence of Alameda Creek and San Antonio Creek.
2. Fish exclusion barriers to be set at mainstem alignment Stations 11+00 and 42+50. Final locations to be determined by CalTrout.
3. Fish exclusion barriers to be implemented by CalTrout or representative.
4. Fish rescue to take place between mainstem alignment Station 11+00 and 42+50 or as modified based on Hanford ARC's diversion and discharge locations. To be implemented by CalTrout or representative.
5. Flow barrier set at Station 41+00. Final location to be determined by Hanford ARC.
6. Flow barriers and diversion to be designed and implemented by Hanford ARC prior to PG&E commencement of work.
7. Two discharges may occur between approximately mainstem alignment Station 11+50 and 15+00. Hanford ARC's surface water diversion pipeline would discharge back into Alameda Creek within this area. In addition, PG&E's dewatering system may discharge back into Alameda Creek within this area.

McBain Associates
APPLIED RIVER SCIENCES

REV	DATE	DESCRIPTION

PG&E c/o CAMPOS EPC
Alameda Creek
Sunol Valley, CA 94586

MCBAIN ASSOCIATES
980 7TH STREET
ARCATA, CA 95521

DESIGNED BY: McBain Associates
DRAWN BY: F. Meyer, R. George
CHECKED BY: K. Harrison; S. McBain
APPROVED BY: K. Harrison, PE
SIZE: 22 x 34 in (full scale), 11 x 17 in (half scale)
ISSUE DATE: June 7, 2024
PROJECT: Alameda Creek, PG&E
CONTRACT NO: 03010059.001
DRAWING SET: 65% Design

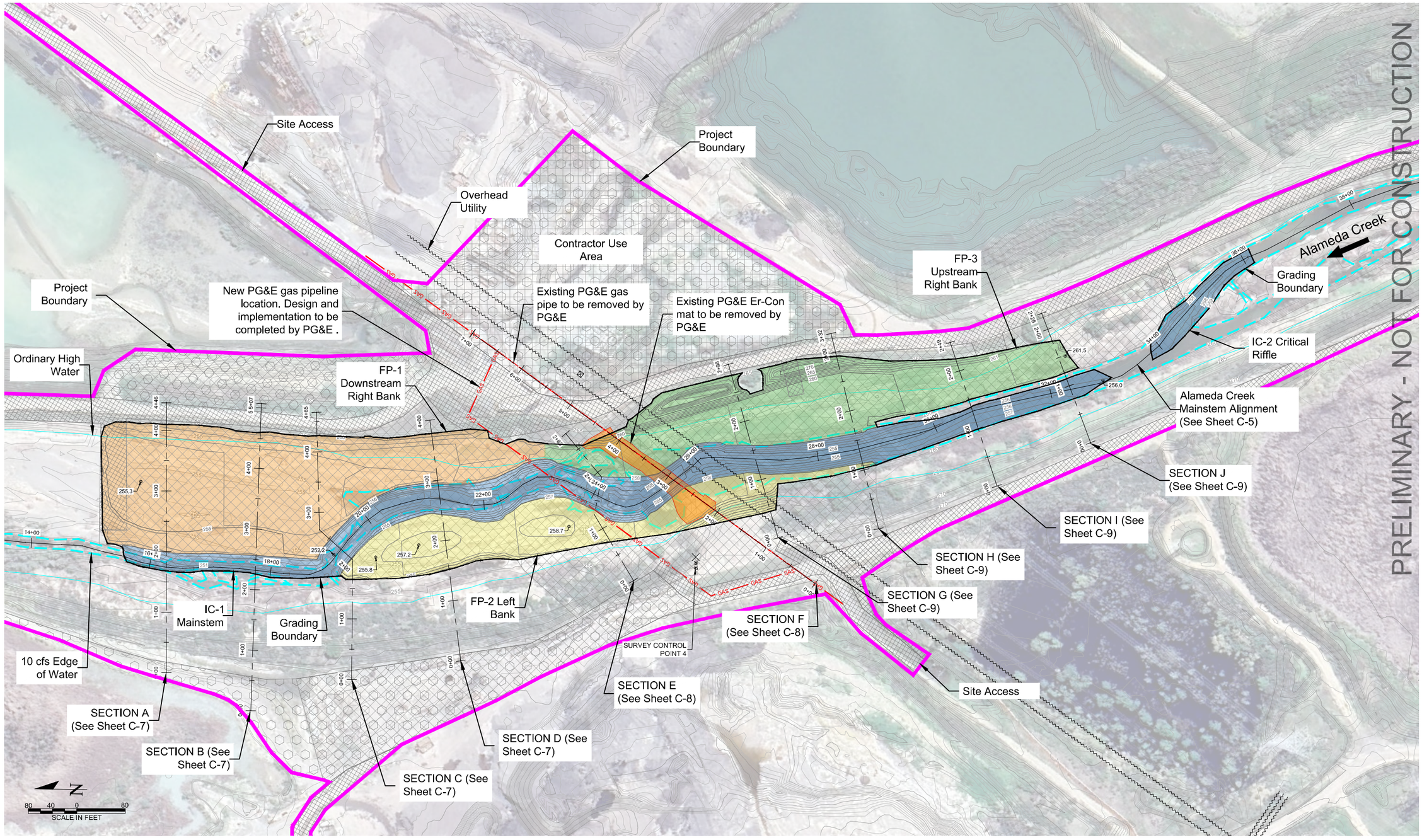
ALAMEDA CREEK
SUNOL VALLEY FISH PASSAGE AND RESTORATION PROJECT
Project Platform Overview

SHEET ID
C-3
3 of 15

STATUS 65%

Topographic Data Source: Meridian Surveying and Engineering
Imagery Data Source: 2023 Google Earth Image

Horizontal Datum: CA State Plane, Zone 3, NAD 83, Feet
Vertical Datum: NAVD 88, Feet



SHEET NOTES

1. Grading Footprint: 7.3 Acres
2. Fish exclusion barriers to be set at Mainstem Stations 16+20 and 41+50. To be implemented by CalTrout.
3. Flow barrier set at Station 41+00. Final location to be determined by Hanford ARC.
4. Flow barriers and diversion to be designed and implemented by Hanford ARC prior to PG&E commencement of work.
5. PG&E to remove and dispose of existing Er-Con Mat and decommissioned existing gas pipeline and install new gas pipeline prior to Alameda Creek channel and floodplain grading to be implemented by Hanford ARC.

McBain Associates
APPLIED RIVER SCIENCE

REV	DATE	DESCRIPTION

DESIGNED BY: McBain Associates
DRAWN BY: F. Meyer, R. George
CHECKED BY: K. Harrison, S. McBain
APPROVED BY: K. Harrison, PE
SIZE: 22 x 34 in (full scale), 11 x 17 in (half scale)
ISSUE DATE: June 7, 2024
PROJECT: Alameda Creek, PG&E
CONTRACT NO: 03010059.001
DRAWING SET: 65% Design

PG&E c/o CAMPOS EPC
Alameda Creek
Sunol Valley, CA 94586

MCBAIN ASSOCIATES
490 7TH STREET
ARCATA, CA 95521

ALAMEDA CREEK
SUNOL VALLEY FISH PASSAGE AND RESTORATION PROJECT
Design Planform Detail

SHEET ID
C-4
4 of 15

STATUS 65%

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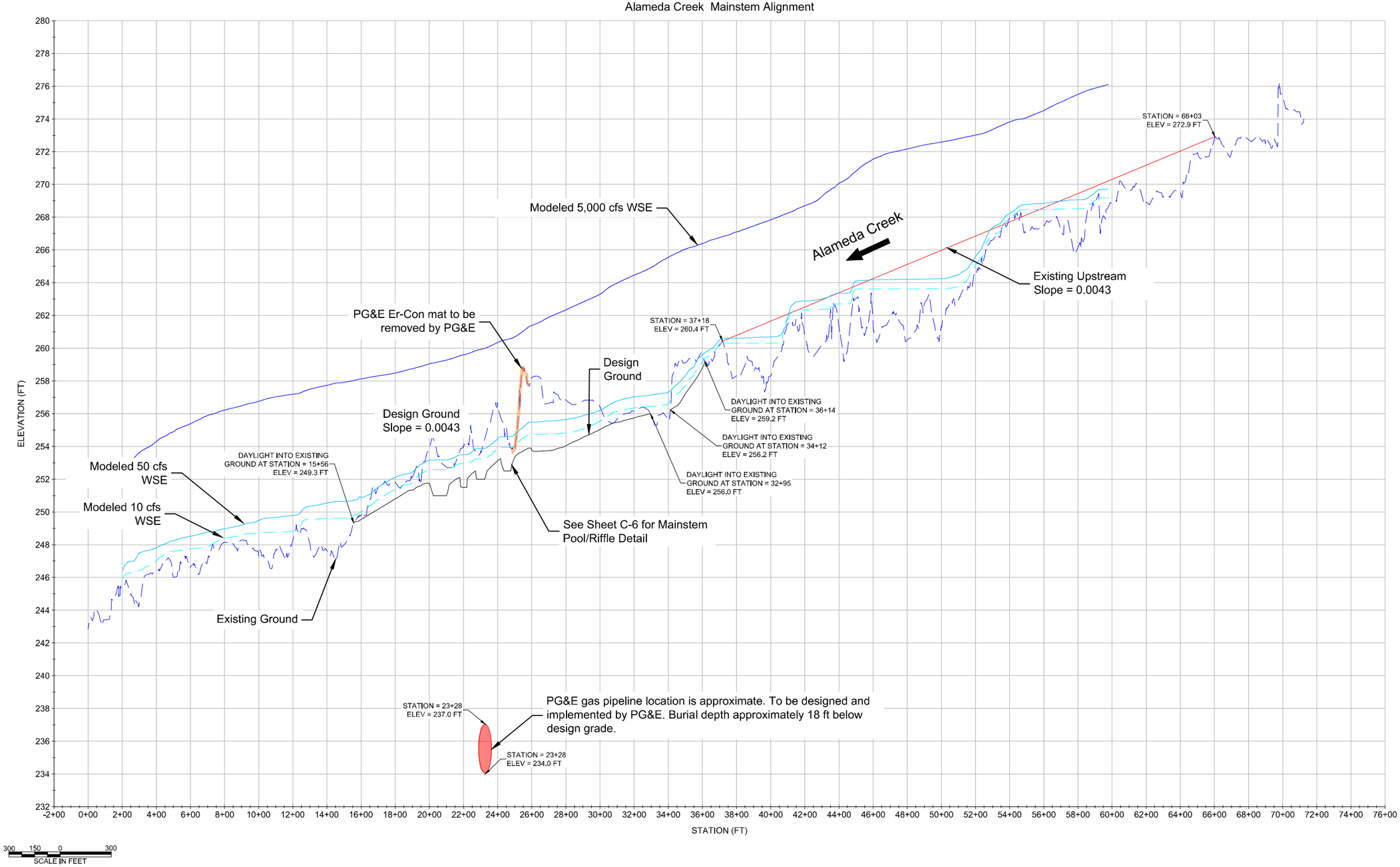
Topographic Data Source: Meridian Surveying and Engineering
Imagery Data Source: 2023 Google Earth Image

Horizontal Datum: CA State Plane, Zone 3, NAD 83, Feet
Vertical Datum: NAVD 88, Feet



SHEET NOTES

1. PG&E to remove and dispose of existing Er-Con Mat and decommissioned existing gas pipeline and install new gas pipeline prior to Alameda Creek channel and floodplain grading is implemented by Hanfrod ARC.

PRELIMINARY - NOT FOR CONSTRUCTION

McBain Associates
APPLIED RIVER SCIENCES

REV	DATE	DESCRIPTION

DESIGNED BY: McBain Associates	ISSUE DATE: June 7, 2024
DRAWN BY: F. Meyer, R. George	PROJECT: Alameda Creek, PG&E
CHECKED BY: K. Harrison, S. McBain	CONTRACT NO: 030100059.001
APPROVED BY: K. Harrison, PE	DRAWING SET: 65% Design
	SIZE: 22 x 34 in (full scale), 11 x 17 in (half scale)

PG&E c/o CAMPOS EPC
Alameda Creek
Sunol Valley, CA 94586

MCBAIN ASSOCIATES
820 7TH STREET
ARCATA, CA 95521

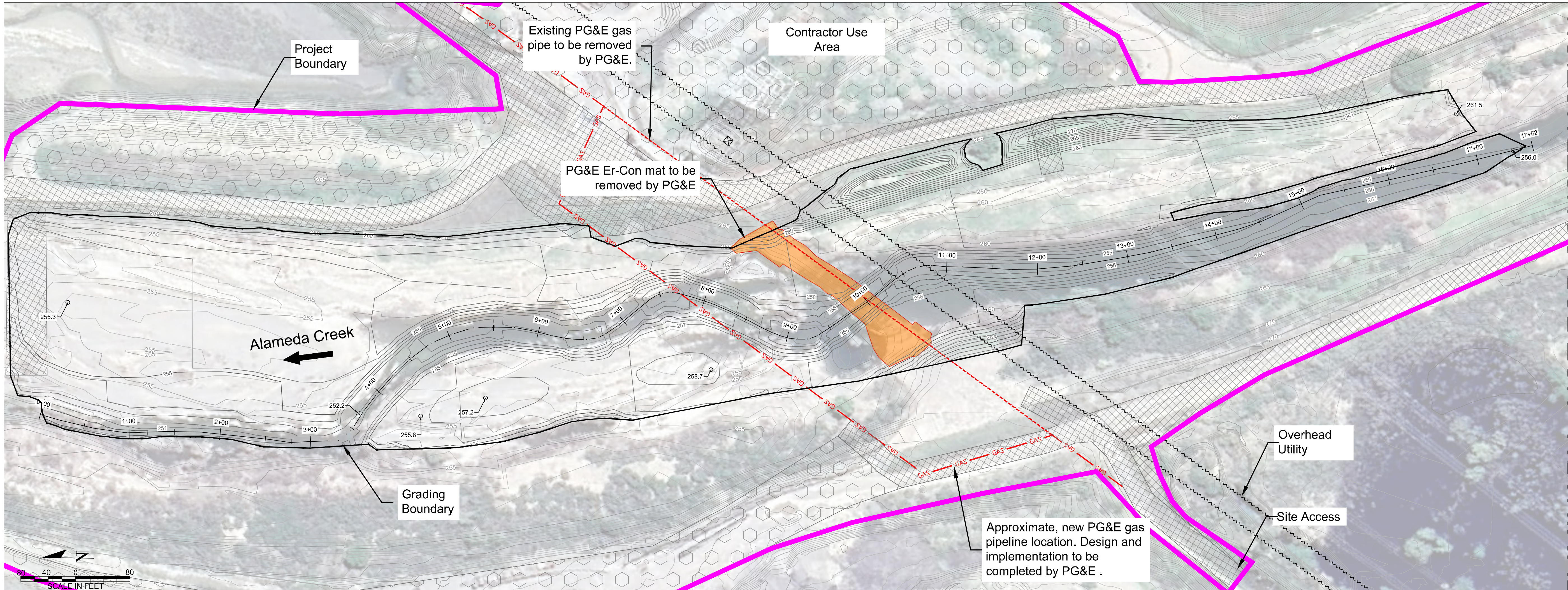
ALAMEDA CREEK
SUNOL VALLEY FISH PASSAGE AND RESTORATION PROJECT
Mainstem Longitudinal Profile View

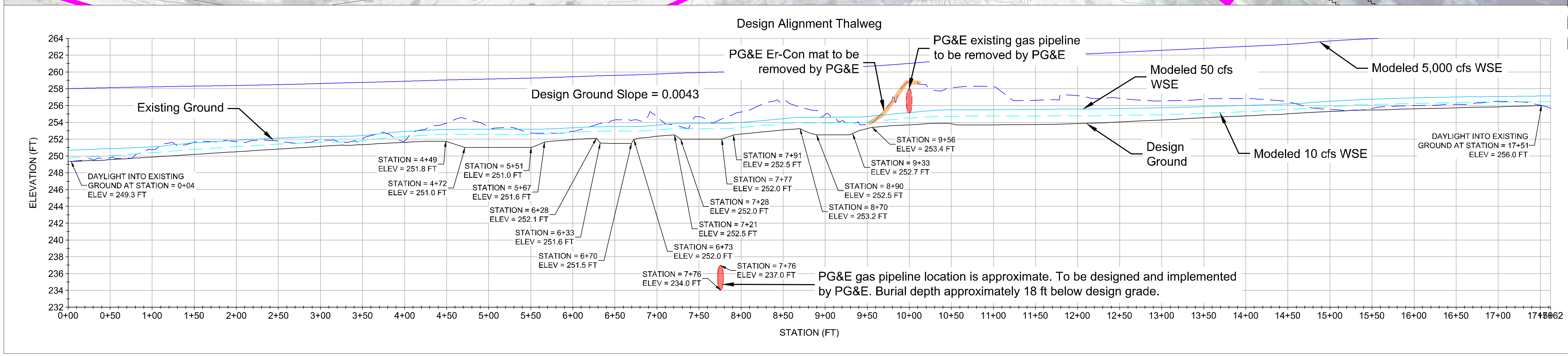
SHEET ID
C-5
5 of 15

STATUS 65%

Topographic Data Source: Meridian Surveying and Engineering
Imagery Data Source: 2023 Google Earth Image

Horizontal Datum: CA State Plane, Zone 3, NAD 83, Feet
Vertical Datum: NAVD 88, Feet





SHEET NOTES

1. Grading Footprint: 7.3 Acres
2. Fish exclusion barriers to be set at Mainstem Stations 16+20 and 41+50. To be implemented by CalTrout.
3. Flow barrier set at Station 41+00. Final location to be determined by Hanford ARC.
4. Flow barriers and diversion to be designed and implemented by Hanford ARC prior to PG&E commencement of work.
5. PG&E to remove and dispose of existing Er-Con Mat and decommissioned existing gas pipeline and install new gas pipeline prior to Alameda Creek channel and floodplain grading is implemented by Hanford ARC.

McBain Associates
APPLIED RIVER SCIENCES

REV	DATE	DESCRIPTION

PG&E c/o CAMPOS EPC
Alameda Creek
Sunol Valley, CA 94586

MCBAIN ASSOCIATES
980 7TH STREET
ARCATA, CA 95521

DESIGNED BY: McBain Associates
ISSUE DATE: June 7, 2024
DRAWN BY: F. Meyer, R. George
PROJECT: Alameda Creek, PG&E
CHECKED BY: K. Harrison; S. McBain
CONTRACT NO: 03010059.001
APPROVED BY: K. Harrison, PE
DRAWING SET: 65% Design
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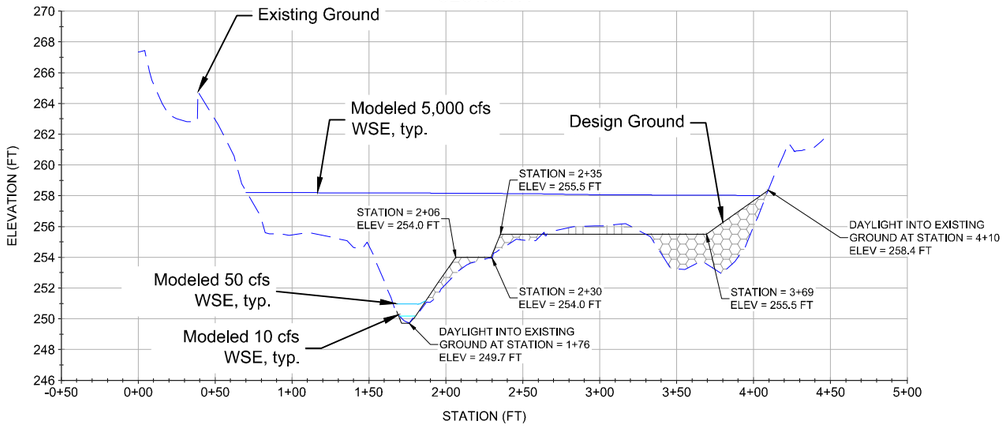
ALAMEDA CREEK
SUNOL VALLEY FISH PASSAGE AND RESTORATION PROJECT
Mainstem Pool / Riffle Longitudinal Profile Detail View

SHEET ID
C-6
6 of 15

STATUS 65%

SECTION A



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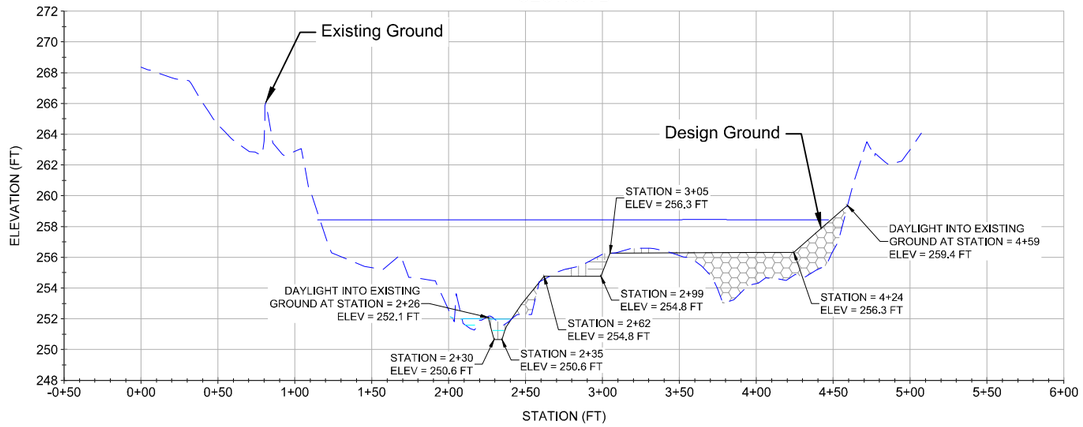

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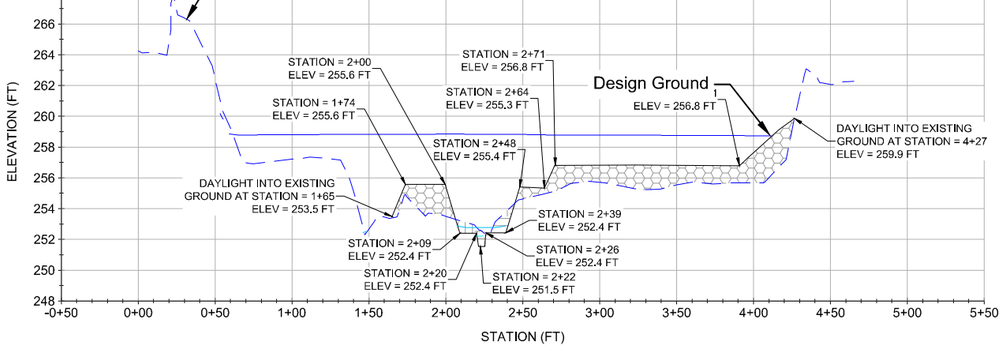

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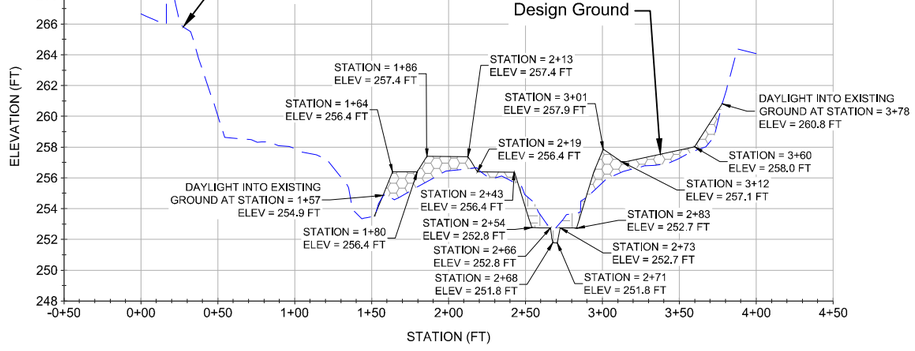

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SCALE IN FEET

PRELIMINARY - NOT FOR CONSTRUCTION

McBain Associates
APPLIED RIVER SCIENCES

REV	DATE	DESCRIPTION

DESIGNED BY: McBain Associates
DRAWN BY: F. Meyer, R. George
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PROJECT: Alameda Creek, PG&E
CONTRACT NO: 030100059.001
DRAWING SET: 65% Design

PG&E c/o CAMPOS EPC
Alameda Creek
Sunol Valley, CA 94586

MCBAIN ASSOCIATES
990 7TH STREET
ARCATA, CA 95521

ALAMEDA CREEK
SUNOL VALLEY FISH PASSAGE AND RESTORATION PROJECT
Section A, B, C, and D View

SHEET ID
C-7
7 of 15

STATUS 65%

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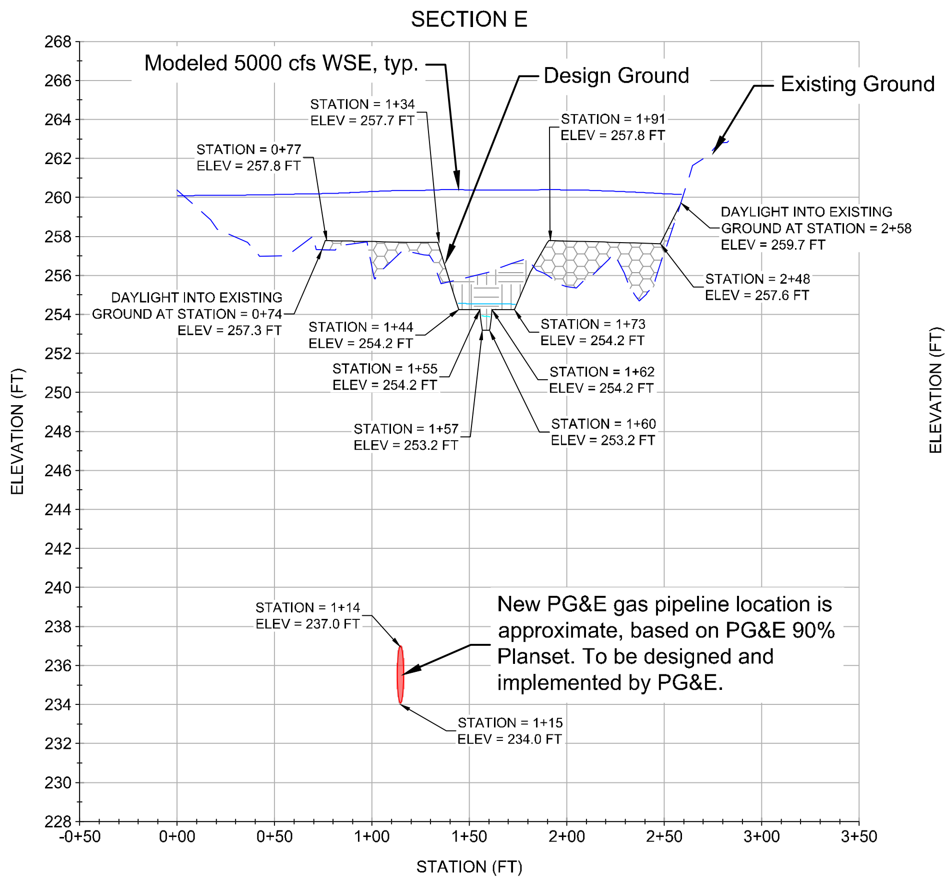
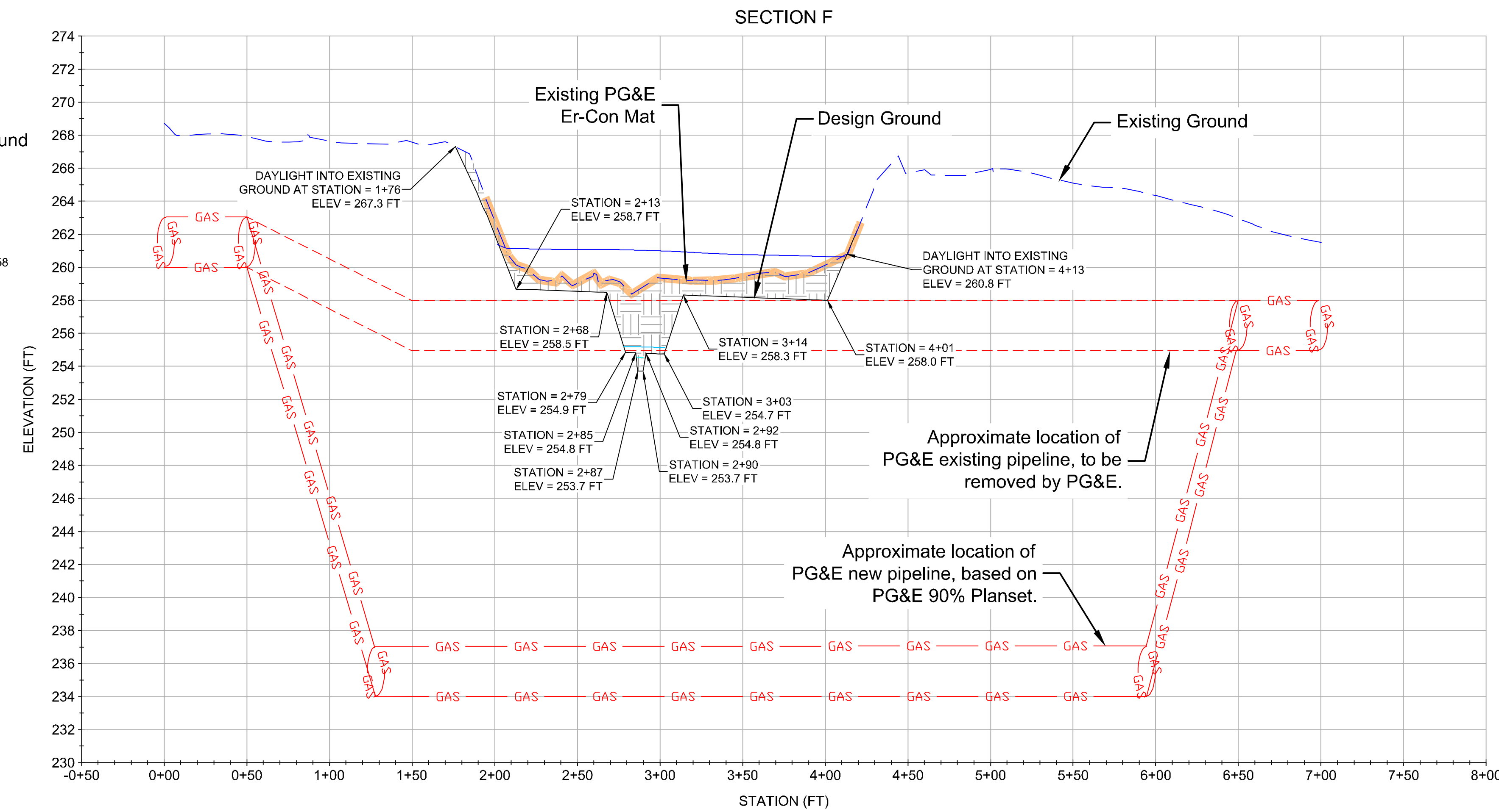
Topographic Data Source: Meridian Surveying and Engineering
Imagery Data Source: 2023 Google Earth Image

Horizontal Datum: CA State Plane, Zone 3, NAD 83, Feet
Vertical Datum: NAVD 88, Feet





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SCALE IN FEET

SHEET NOTES

1. PG&E to remove and dispose of existing Er-Con Mat and decommissioned existing gas pipeline and install new gas pipeline prior to Alameda Creek channel and floodplain grading is implemented by Hanford ARC.

PRELIMINARY - NOT FOR CONSTRUCTION

McBain Associates
APPLIED RIVER SCIENCES

REV	DATE	DESCRIPTION

PG&E c/o CAMPOS EPC
Alameda Creek
Sunol Valley, CA 94586

MCBAIN ASSOCIATES
980 7TH STREET
ARCATA, CA 95521

DESIGNED BY: McBain Associates
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DRAWING SET: 65% Design

ALAMEDA CREEK
SUNOL VALLEY FISH PASSAGE AND RESTORATION PROJECT
Sections E and F View

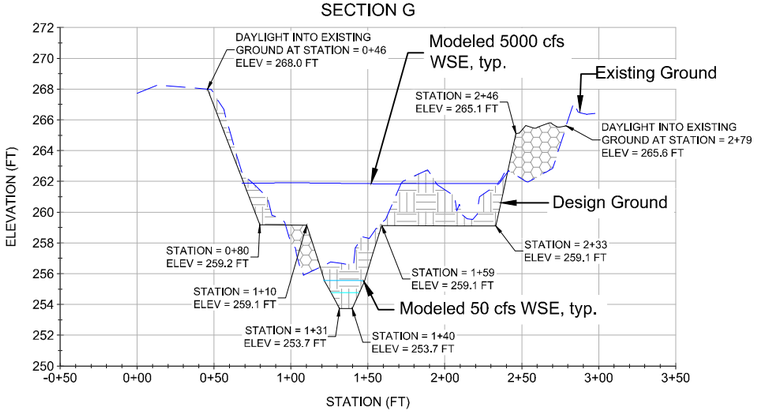
SHEET ID
C-8
8 of 15

STATUS 65%

Topographic Data Source: Meridian Surveying and Engineering
Imagery Data Source: 2023 Google Earth Image

Horizontal Datum: CA State Plane, Zone 3, NAD 83, Feet
Vertical Datum: NAVD 88, Feet

SECTION G



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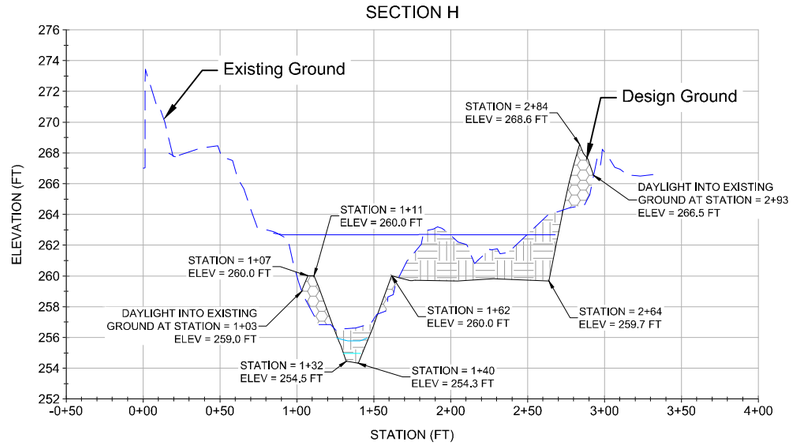

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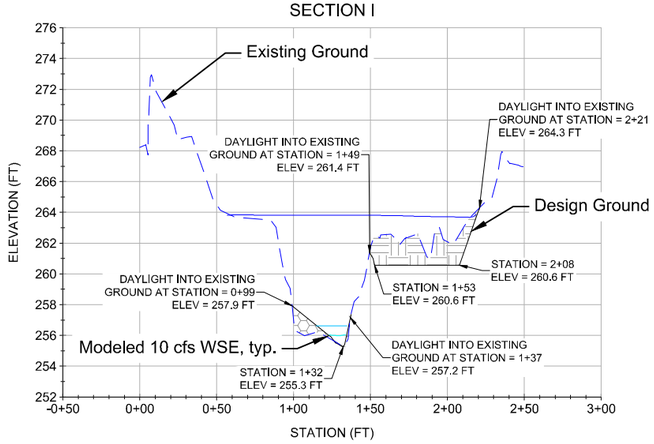

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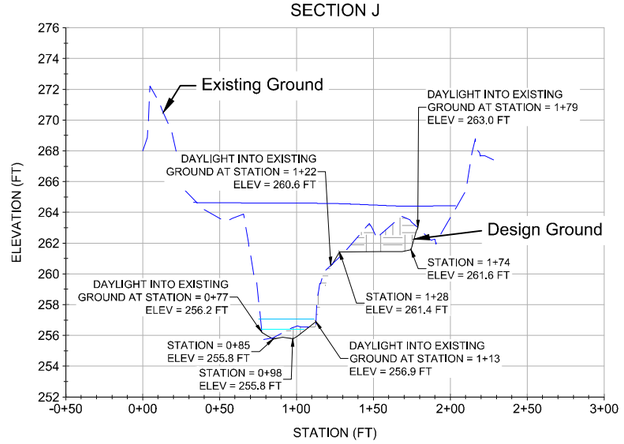

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SCALE IN FEET

PRELIMINARY - NOT FOR CONSTRUCTION

McBain Associates
APPLIED RIVER SCIENCES

REV	DATE	DESCRIPTION

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ISSUE DATE: June 7, 2024
PROJECT: Alameda Creek, PG&E
CONTRACT NO: 030100059.001
DRAWING SET: 65% Design

PG&E c/o CAMPOS EPC
Attn: Jennifer Crowe
Sunol Valley, CA 94586

MCBAIN ASSOCIATES
800 J STREET
ARCATA, CA 95521

ALAMEDA CREEK
SUNOL VALLEY FISH PASSAGE AND RESTORATION PROJECT
Section G, H, I, and J View

SHEET ID
C-9
9 of 15

STATUS 65%

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Topographic Data Source: Meridian Surveying and Engineering
Imagery Data Source: 2023 Google Earth Image

Horizontal Datum: CA State Plane, Zone 3, NAD 83, Feet
Vertical Datum: NAVD 88, Feet

COTTONWOOD - ARROYO WILLOW			
QUANTITY	SIZE	COMMON NAME	SCIENTIFIC NAME
131	pole cutting	arroyo willow	*Salix lasiolepis*
131	pole cutting	cottonwood	*Populus fremontii (or Populus trichocarpa)*

VALLEY OAK - SYCAMORE			
QUANTITY	SIZE	COMMON NAME	SCIENTIFIC NAME
290	pole cutting	blue elderberry	*Sambucus nigra ssp. caerulea*
869	acorn	valley oak	*Quercus lobata*
580	pole cutting	western sycamore	*Platanus racemosa*

BAY LAUREL - COAST LIVE OAK			
QUANTITY	SIZE	COMMON NAME	SCIENTIFIC NAME
256	nut	California bay	*Umbellularia californica*
256	acorn	coast live oak	*Quercus agrifolia*

BLUE OAK - BUCKEYE			
QUANTITY	SIZE	COMMON NAME	SCIENTIFIC NAME
366	acorn	blue oak	*Quercus douglasii*
366	nut	buckeye	*Aesculus californica*

EROSION CONTROL AND FLOODPLAIN SEED MIX			
QUANTITY (Pounds)	SIZE	COMMON NAME	SCIENTIFIC NAME
68	pounds	arroyo lupine	*Lupinus succulentus*
130	pounds	blue wildrye	*Elymus glaucus subsp. glaucus*
85	pounds	California brome	*Bromus carinatus*
85	pounds	meadow barley	*Hordeum brachyantherum*
11	pounds	narrowleaf milkweed	*Asclepias fascicularis*
85	pounds	purple needle grass	*Stipa pulchra*
102	pounds	small fescue	*Festuca microstachys*

MULCH		
QUANTITY (bales at 3,500 bs per acre)	SIZE	MATERIAL NAME
791	50# Bales	Flexterra

REVEGETATION LEGEND PLAN VIEW

- cottonwood - arroyo willow
- valley oak - sycamore
- bay laurel - coast live oak
- blue oak - buckeye
- seed only
- seed and mulch
- 65% Design Alameda Creek 5 cfs Wetted Edge

LEGEND PLAN VIEW

- Finished Grade Index Contours (5 ft)
- Finished Grade Intermediate Contours (1 ft)
- Existing Grade Index Contours (5 ft)
- Project Boundary
- Grading Boundary
- Project Access
- Contractor Use Area
- PG&E Disturbance Extent
- PG&E Gas Pipeline Proposed
- PG&E Gas Pipeline to be Removed

PRELIMINARY - NOT FOR CONSTRUCTION

McBain Associates
APPLIED RIVER SCIENCES

REV | DATE | DESCRIPTION

ISSUE DATE: June 7, 2024
PROJECT: Alameda Creek, PG&E
CONTRACT NO: 03010059.001
DRAWING SET: 65% Design
DESIGNED BY: McBain Associates
DRAWN BY: F. Meyer, R. George
CHECKED BY: K. Harrison; S. McBain
APPROVED BY: K. Harrison, PE
SIZE: 22 x 34 in (full scale), 11 x 17 in (half scale)

PG&E c/o CAMPOS EPC
Alameda Creek
Sunol Valley, CA 94586

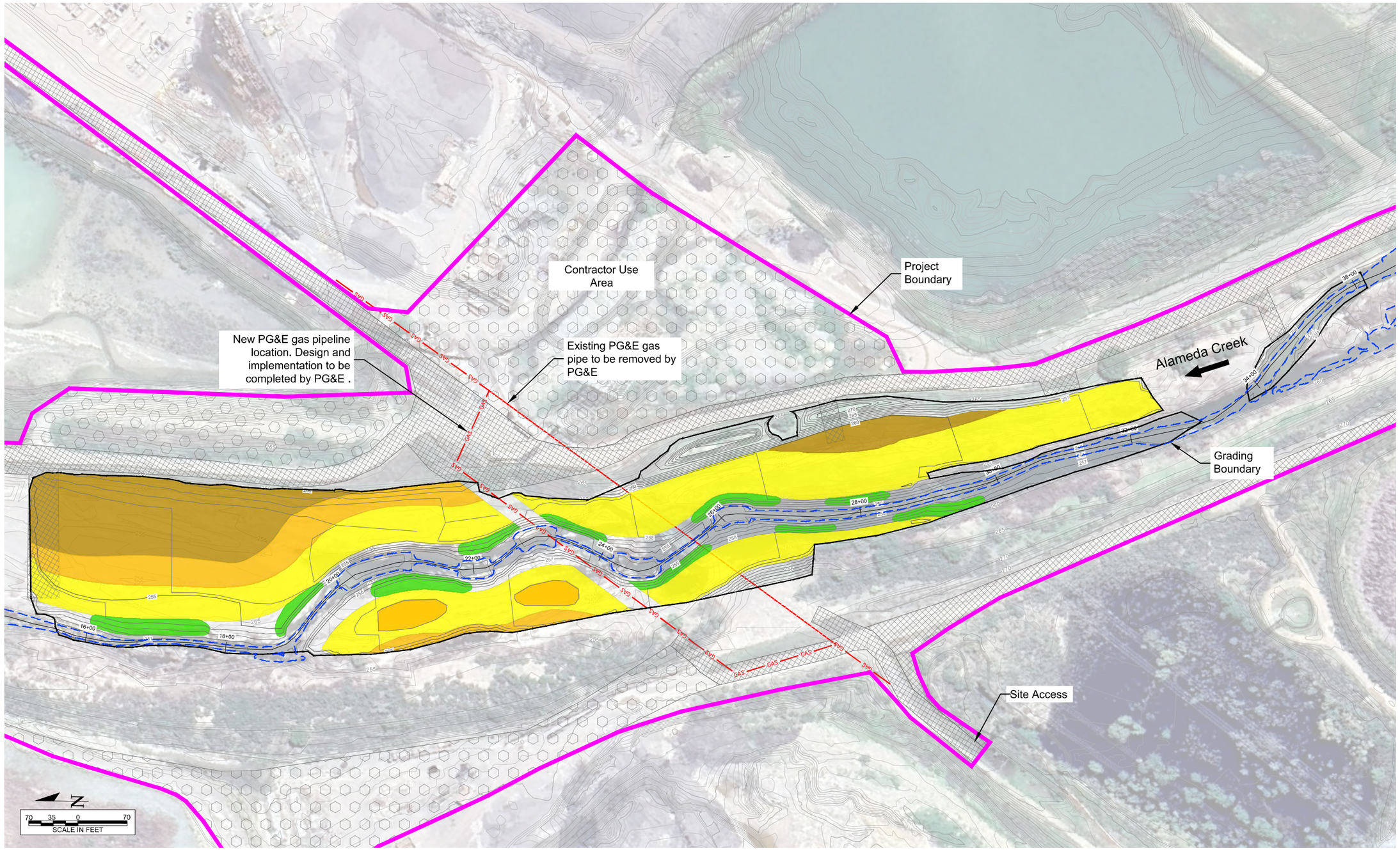
MCBAIN ASSOCIATES
980 7TH STREET
ARCATA, CA 95521

ALAMEDA CREEK SUNOL VALLEY FISH PASSAGE AND RESTORATION PROJECT

Revegetation Plant Quantities and Notes

C:\Users\...\AppData\Local\Temp\AcPublish_19232\240605_AlamedaCk_65%Design.dwg 05 Jun 2024 - 2:42pm
Topographic Data Source: Meridian Surveying and Engineering
Imagery Data Source: 2023 Google Earth Image
Horizontal Datum: CA State Plane, Zone 3, NAD 83, Feet
Vertical Datum: NAVD 88, Feet

STATUS 65%



SHEET NOTES.

1. Planting areas use the cluster layout. See Sheet R-4 for cluster layout detail.

Planting Area Legend

- cottonwood - arroyo willow
- valley oak - sycamore
- bay laurel - coast live oak
- blue oak - buckeye

- Project Boundary
- 65% Grading Boundary
- Project Access
- Contractor Use Area
- 65% Design Alameda Creek 5 cfs Wetted Edge

PRELIMINARY - NOT FOR CONSTRUCTION

McBain Associates
APPLIED RIVER SCIENCE

REV	DATE	DESCRIPTION

DESIGNED BY: McBain Associates
DRAWN BY: F. Meyer, R. George
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APPROVED BY: K. Harrison, PE
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ISSUE DATE: June 7, 2024
PROJECT: Alameda Creek, PG&E
CONTRACT NO: 030100059.001
DRAWING SET: 65% Design

PG&E c/o CAMPOS EPC
Alameda Creek
Sunol Valley, CA 94586

MCBAIN ASSOCIATES
490 7TH STREET
ARCATA, CA 95521

ALAMEDA CREEK
SUNOL VALLEY FISH PASSAGE AND RESTORATION PROJECT
Revegetation Planform Overview

SHEET ID
R-2
11 of 15

STATUS 65%

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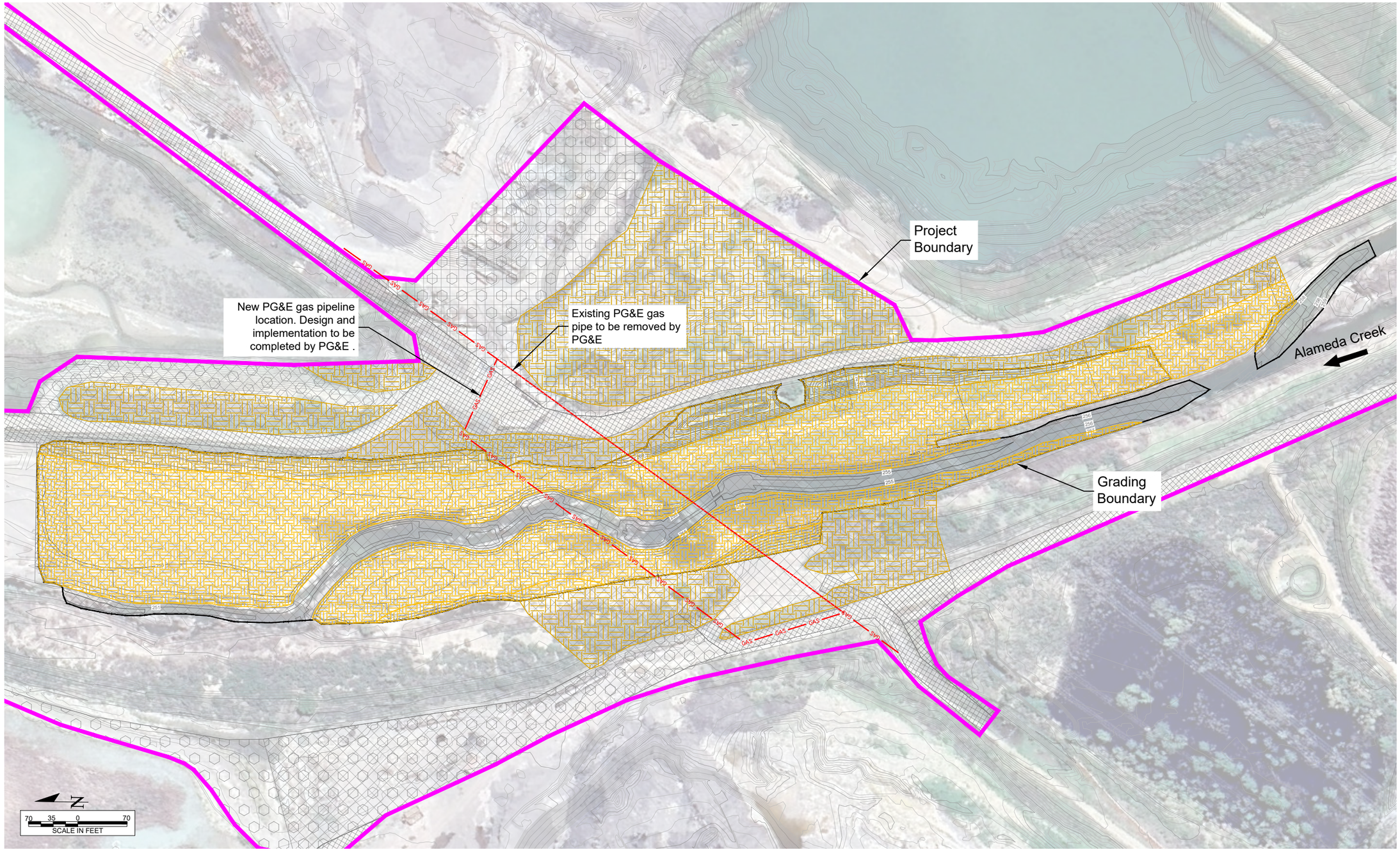
Topographic Data Source: Meridian Surveying and Engineering
Imagery Data Source: 2023 Google Earth Image

Horizontal Datum: CA State Plane, Zone 3, NAD 83, Feet
Vertical Datum: NAVD 88, Feet



SHEET NOTES

1. See Sheet R-1 for seed mix composition and quantities
2. See Sheet R-6 for Seed and Mulch Application Detail. All disturbed Contractor Use Areas, Access, and PG&E disturbance areas except for existing roads and the active wetted channel of Alameda Creek will be seeded with a native seed mix.
3. Sterile hydromulch (Flexterra or similar) shall be applied in quantities of 3,500 lbs per acre to areas outside the channel as shown on this sheet.

Legend

- Seed Only
- Seed and Mulch
- Project Boundary
- 65% Grading Boundary
- Access
- Contractor Use Area
- PG&E Disturbance Extent

PRELIMINARY - NOT FOR CONSTRUCTION

McBain Associates
APPLIED RIVER SCIENCES

REV	DATE	DESCRIPTION

DESIGNED BY: McBain Associates
DRAWN BY: F. Meyer, R. George
CHECKED BY: K. Harrison, S. McBain
APPROVED BY: K. Harrison, PE
ISSUE DATE: June 7, 2024
PROJECT: Alameda Creek, PG&E
CONTRACT NO: 03010059.001
DRAWING SET: 65% Design
SIZE: 22 x 34 in (full scale), 11 x 17 in (half scale)

PG&E c/o CAMPOS EPC
Alameda Creek
Sunol Valley, CA 94586

MCBAIN ASSOCIATES
1629 K STREET
ARCATA, CA 95521

ALAMEDA CREEK
SUNOL VALLEY FISH PASSAGE AND RESTORATION PROJECT
Seed and Mulch Planform Overview

SHEET ID
R-3
12 of 15

STATUS 65%

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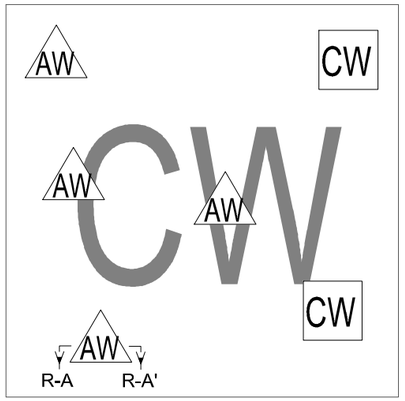
Topographic Data Source: Meridian Surveying and Engineering
Imagery Data Source: 2023 Google Earth Image

Horizontal Datum: CA State Plane, Zone 3, NAD 83, Feet
Vertical Datum: NAVD 88, Feet

COTTONWOOD - ARROYO WILLOW

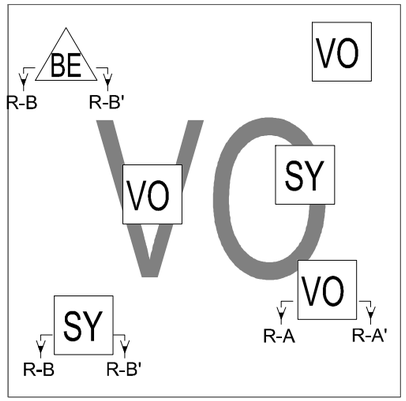


6 Plantings per 400 Feet²

327/acre - arroyo willow (AW)
327/acre - cottonwood (CW)

654/acre - Total

VALLEY OAK - SYAMORE

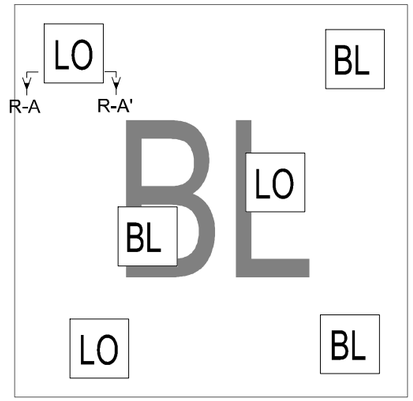


6 Plantings per 400 Feet²

109/acre - blue elderberry (BE)
218/acre - sycamore
327/acre - valley oak (VO)

654/acre - Total

BAY LAUREL - COAST LIVE OAK

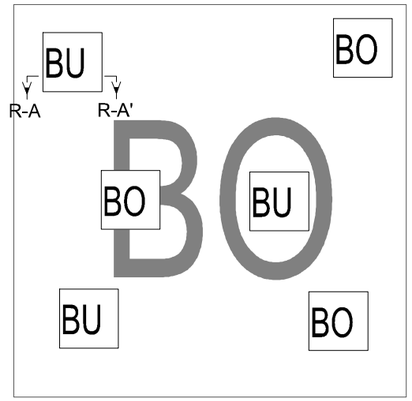


6 Plantings per 400 Feet²

327/acre - California bay laurel (BL)
327/acre - coast live oak (LO)

654/acre - Total

BLUE OAK - BUCKEYE



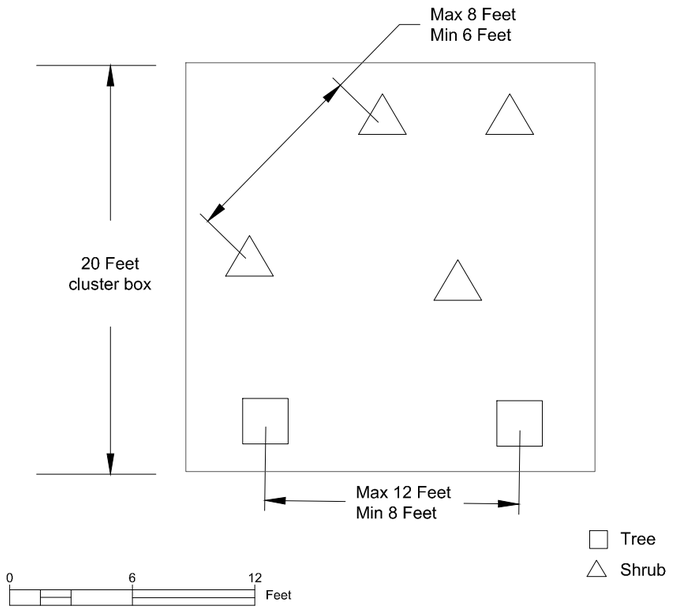
6 Plantings per 400 Feet²

327/acre - blue oak (BO)
327/acre - buckeye (BU)

654/acre - Total

PRELIMINARY - NOT FOR CONSTRUCTION

REVEGETATION SCALE AND LAYOUT



PLANT SPECIES

		TREE		SHRUB
CW	CW	cottonwood	AW	arroyo willow
BL	BL	California bay laurel	BE	blue elderberry
VO	VO	valley oak		
LO	LO	coast live oak		
BO	BO	blue oak		
BU	BU	buckeye		
SY	SY	sycamore		

SHEET NOTES

1. A planting unit is approximately 20x20 feet (400 feet²).
2. Number of plantings per 400 FT^2 is 6.
3. Number of plantings per acre is 654.
4. See Sections R-A and R-B on Sheet R-6

McBain Associates
APPLIED RIVER SCIENCES

REV	DATE	DESCRIPTION

DESIGNED BY: McBain Associates
DRAWN BY: F. Meyer, R. George
CHECKED BY: K. Harrison, S. McBain
APPROVED BY: K. Harrison, PE
SIZE: 22 x 34 in (full scale), 11 x 17 in (half scale)
ISSUE DATE: June 7, 2024
PROJECT: Alameda Creek, PG&E
CONTRACT NO: 030100059.001
DRAWING SET: 65% Design

PG&E c/o CAMPOS EPC
Alameda Creek
Sunol Valley, CA 94586

MCBAIN ASSOCIATES
1629 7TH STREET
ARCATA, CA 95521

ALAMEDA CREEK
SUNOL VALLEY FISH PASSAGE AND RESTORATION PROJECT
Revegetation Cluster Layout

SHEET ID
R-4
13 of 15

STATUS 65%

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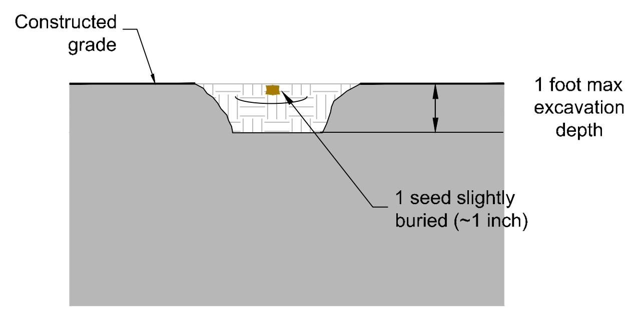
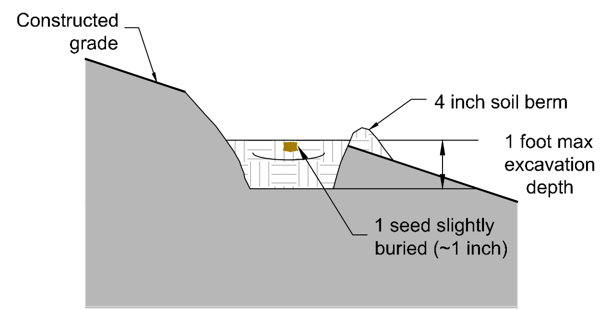
Topographic Data Source: Meridian Surveying and Engineering
Imagery Data Source: 2023 Google Earth Image

Horizontal Datum: CA State Plane, Zone 3, NAD 83, Feet
Vertical Datum: NAVD 88, Feet

DIRECT SEED PLANTING DETAIL (BENCH)
SECTION R-A - R-A'



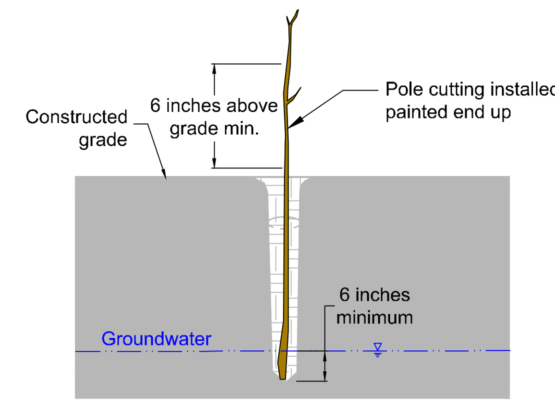
DIRECT SEED PLANTING DETAIL (SLOPE)
SECTION R-A - R-A'



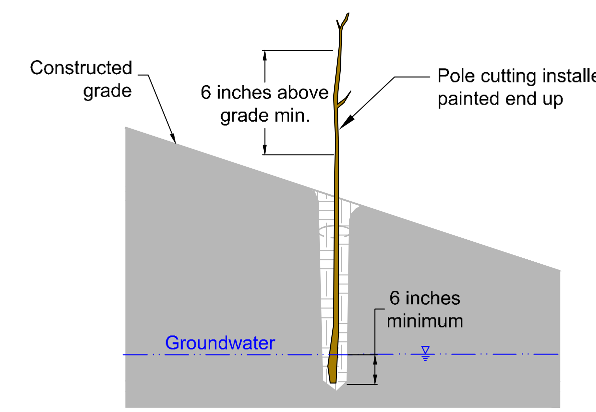
SHEET NOTES:

1. Excavate a shallow depression no more than 1 foot below constructed surface.
2. Backfill excavated hole 6 inches and cover with fill to 1 inch below constructed grade.
3. Plant 1 seed on its side 1 inch below constructed grade and cover with 1 inch of rock free backfill.
4. Upon completion of backfill, regrade area around planting as necessary so that finished surface is not more than 1 foot above constructed grade.

RIPARIAN POLE PLANTING DETAIL
SECTION R-B - R-B'



RIPARIAN POLE PLANTING DETAIL (SLOPE)
SECTION R-B - R-B'



SHEET NOTES:

1. Install cutting 6 inches minimum below groundwater.
2. Install one pole cutting at each planting location.
3. Maximum allowable vertical insertion angle of pole cuttings is 15 degrees.
4. Pole cuttings must be oriented up and must extend a minimum of 6 inches above grade.
5. Upon completion of planting, water soils to create slurry and fill all air pockets around buried roots and stems, and regrade area around planting as necessary so that finished surface is no more than 6 inches above grade.

PRELIMINARY - NOT FOR CONSTRUCTION

McBain Associates
APPLIED RIVER SCIENCES

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PG&E c/o CAMPOS EPC
Alameda Creek
Sunol Valley, CA 94586

MCBAIN ASSOCIATES
980 7TH STREET
ARCATA, CA 95521

ALAMEDA CREEK
SUNOL VALLEY FISH PASSAGE AND RESTORATION PROJECT
Container, Seed, Plug, and Pole Planting Detail

SHEET ID
R-5

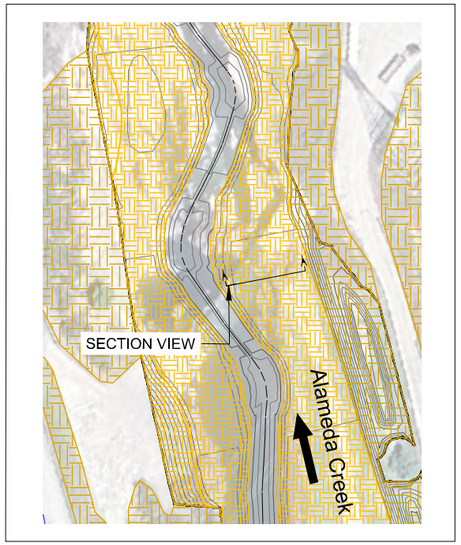
STATUS 65%

Topographic Data Source: Meridian Surveying and Engineering
Imagery Data Source: 2023 Google Earth Image

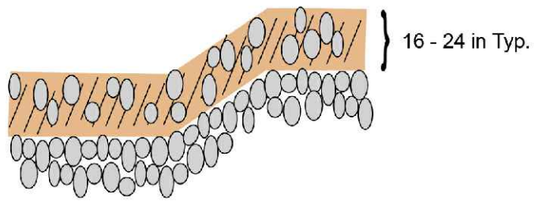
Horizontal Datum: CA State Plane, Zone 3, NAD 83, Feet
Vertical Datum: NAVD 88, Feet

GROUND SURFACE PREPARATION (TYPICAL)

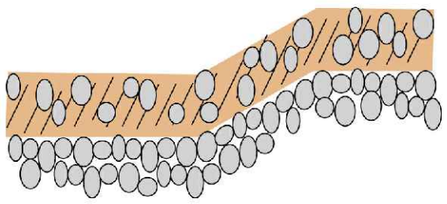
1 EXAMPLE OF SEED AND MULCH (PLAN VIEW)



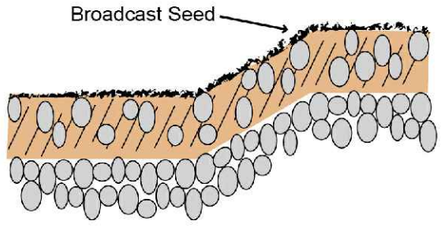
2 DECOMPACT/RIP/MIX 16 TO 24 INCHES



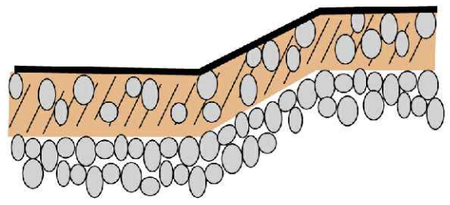
3 PLANT CONSTRUCTED SURFACES AS SHOWN IN PLANS (SEE PLANTING TYPICALS)



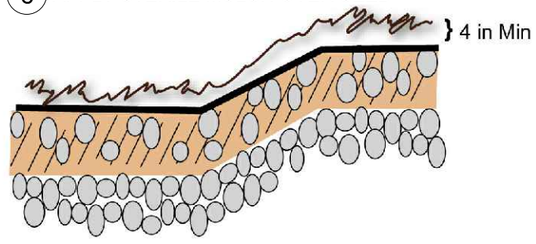
4 SPREAD SEED OVER DECOMPACTED AND PLANTED AREAS



5 DRAG (RAKE, ETC.) BROADCAST SEED



6 APPLY STERILE MULCH OVER SEED



SHEET NOTES:
1. For Seed Only mix, follow steps 1 through 5.
2. For Seed and Mulch mix, follow steps 1 through 6.

PRELIMINARY - NOT FOR CONSTRUCTION

McBain Associates
APPLIED RIVER SCIENCES

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CONTRACT NO: 030100059.001
DRAWING SET: 65% Design

PG&E c/o CAMPOS EPC
Attn: Jessica Cook
Sunol Valley, CA 94586

MCBAIN ASSOCIATES
839 3rd STREET
ARCATA, CA 95521

ALAMEDA CREEK
SUNOL VALLEY FISH PASSAGE AND RESTORATION PROJECT
Seed and Mulch Application Detail

SHEET ID
R-6
15 of 15

STATUS 65%

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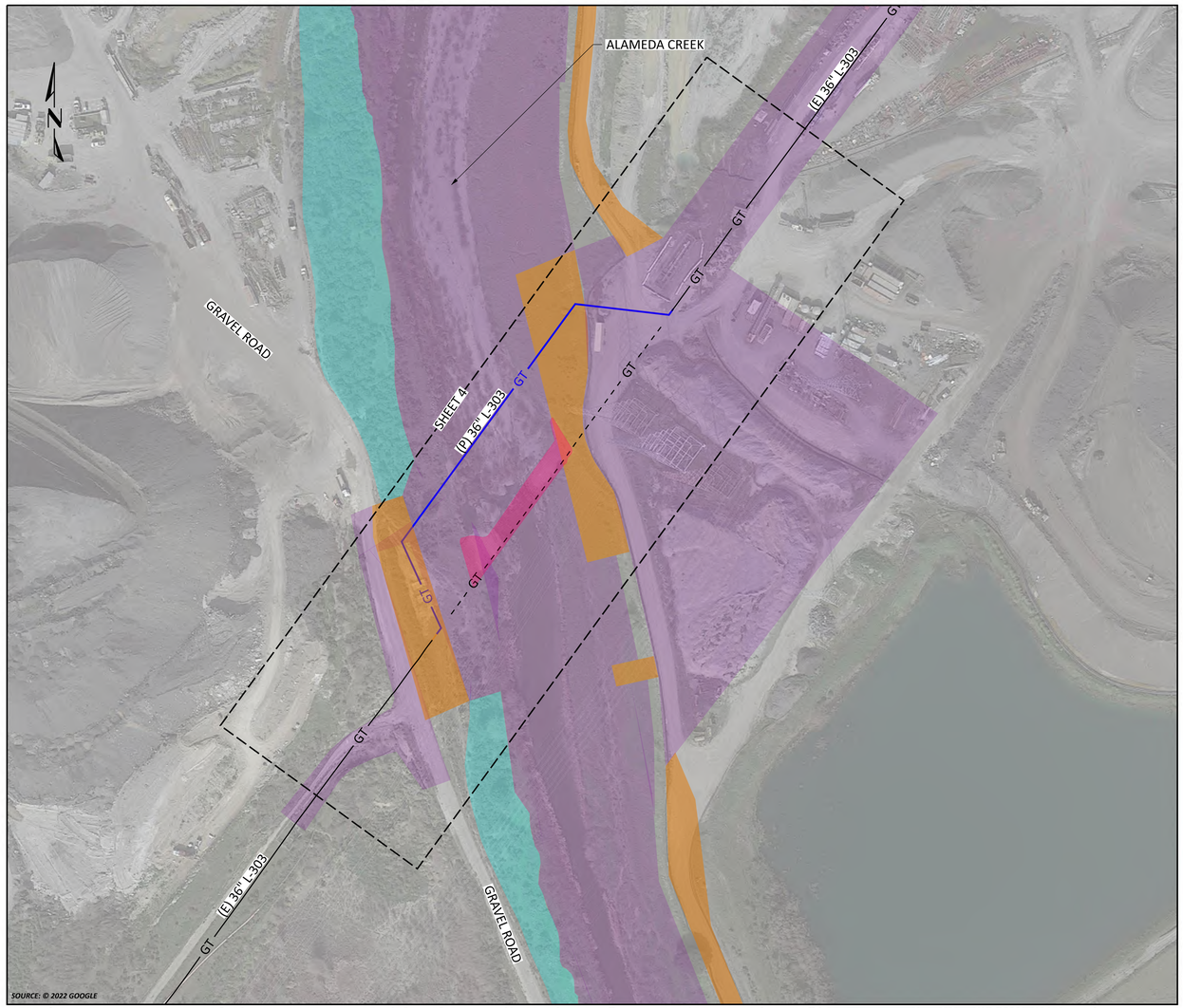
Topographic Data Source: Meridian Surveying and Engineering
Imagery Data Source: 2023 Google Earth Image

Horizontal Datum: CA State Plane, Zone 3, NAD 83, Feet
Vertical Datum: NAVD 88, Feet

L-303, MP 35.26-35.36
REPLACE 36" PIPE
SUNOL, ALAMEDA COUNTY



KEY MAP
SCALE: 1" = 100'

SCHEDULE OF SHEETS

SAFETY PLEDGE

I ALWAYS PUT SAFETY FIRST.
I LOOK FOR AND ACT TO RESOLVE UNSAFE SITUATIONS.
I HELP AND ENCOURAGE OTHERS TO ACT SAFELY.

GAS TRANSMISSION ESTIMATING & DESIGN

IMPACTED RECORD DRAWINGS:
[ ] YES [X] NO

CAP # N/A

90% DESIGN REVIEW

PACIFIC GAS AND ELECTRIC COMPANY

REV.	DATE	DESCRIPTION	ORDER	DWN	ADE	ENG	ENG APVD
B	12-7-23	ISSUED FOR 90% REVIEW	74009420	RWMS	MDGR	JUHR	
A	11-9-23	ISSUED FOR 65% REVIEW	74009420	RWMS	MDGR	JUHR	

REVISIONS

PIPELINE - TITLE & INDEX
L-303, MP 35.26-35.36
REPLACE 36" PIPE
SUNOL, ALAMEDA COUNTY

GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN RAMON, CALIFORNIA

BILL OF MATL SHEET 10

JOB ID R-297

SHEET NO. 1 OF 11 SHEETS

74009420 B

74009420-S001-TI.dgn 7-DEC-2023 16:57PM

Estimating.pdm

SUMMARY OF PROPOSED WORK:

1. EXCAVATE (2) 8' x 8' SNIFF HOLES
2. INSTALL 728 FEET OF 36" PIPE ON LINE 303
3. REMOVE APPROX 562' OF 36" PIPE

SEQUENCE OF OPERATIONS:

1. EXCAVATE (2) 8' X 8' SNIFF HOLES
2. INSTALL WATER BYPASS COMPLETED BY CALTRAOUT
3. EXCAVATE TRENCH FOR NEW PIPELINE
4. INSTALL NEW 36" STEEL PIPE AND FITTINGS
5. TIE IN STEEL PIPE AND FITTINGS.
6. PARTIAL BACK FILL TO TOP (P) GRADE AS PER DRAWINGS
6. REMOVE ERCON MATTING
7. REMOVE (E) PIPE
8. GRADE RESTORE SITE AS PER MCBAIN DRAWINGS

CONSTRUCTION NOTES:

GENERAL REQUIREMENTS:

1. UNDERGROUND SERVICE ALERT:
   CALL 811 (1-800-227-2600) A MINIMUM OF 2 BUSINESS DAYS (NOT INCLUDING INITIAL DAY OF CONTACT) IN ADVANCE FOR THE MARKING OF UNDERGROUND UTILITIES, INCLUDING ALL NON-UTILITIES BEFORE YOU DIG, GRADE, OR EXCAVATE.

2. UTILITY NOTES:
   A. DIMENSIONS SHOWN ON THESE DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION FROM SEVERAL SOURCES, AND SHALL BE VERIFIED IN THE FIELD BY CONSTRUCTION PERSONNEL PRIOR TO FABRICATION.
   B. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES, PROPERTY LINES, AND OTHER SUBSTRUCTURES IS NOT GUARANTEED TO BE ACCURATE OR ALL-INCLUSIVE, UNLESS OTHERWISE NOTED. CONSTRUCTION PERSONNEL ARE RESPONSIBLE FOR MAKING ALL DETERMINATIONS AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AND OTHER SUBSTRUCTURES AS NECESSARY TO AVOID DAMAGE OR ENCROACHMENTS.
   C. PROSPECTING IS REQUIRED AHEAD OF WORK. ALL OFFSETS OR ROPING WILL NEED TO BE APPROVED BY THE PG&E PROJECT ENGINEER (PED), AND REDLINED DETAILS SHOWN ON PROFILE AND CONSTRUCTION DETAIL SHEETS OF EACH ADDITIONAL SUBSTRUCTURE.
   D. ALL EXCAVATIONS WITHIN EXISTING STATIONS SHALL BE HAND DUG OR EXCAVATED USING SOFT DIG METHODS (e.g. VACUUM EXCAVATIONS OR SIMILAR).

3. ELBOWS AND FIELD BENDS:
   A. ALL BENDS ARE ELBOWS, EXCEPT WHERE SMOOTH FIELD BENDS ARE SHOWN. FIELD BENDS SHALL BE MADE IN ACCORDANCE WITH A-36, SECTION 4D. FIELD BENDS MAY BE USED IN LIEU OF ELBOWS WHEN PREAPPROVED BY THE PG&E PROJECT ENGINEER (PED).
   B. IN ORDER TO AVOID EXCESSIVE STRAIN ON THE PIPELINE, THERE SHALL BE A MINIMUM SEPARATION OF 5 FEET BETWEEN A ROPED SECTION OF PIPELINE AND ANY ELBOWS OR FIELD BENDS.
   C. ALL ANGLES SHOWN IN THE PLAN AND PROFILE ARE APPROXIMATE AND SHALL BE CUT TO SUIT FIELD CONDITIONS.

4. SEPARATION FROM OTHER STRUCTURES:
   A. CROSSING UNDERGROUND FACILITIES: PG&E PIPELINE MUST BE INSTALLED WITH AT LEAST 24 INCHES OF CLEARANCE FROM ANY OTHER SUBSTRUCTURE/UTILITY NOT ASSOCIATED WITH THE PIPELINE UNLESS NOTED ON THE DRAWINGS.
   B. PARALLELING UNDERGROUND FACILITIES: THIS PIPELINE MUST BE INSTALLED WITH AT LEAST 5 FEET OF CLEARANCE FROM ANY OTHER UNDERGROUND STRUCTURE/UTILITY NOT ASSOCIATED WITH THE PIPELINE UNLESS NOTED ON THE DRAWINGS.

5. RESTORATION AND CLEAN UP:
   A. RESTORATION OF PUBLIC STREETS, SIDEWALKS, CURBS, ETC. ABOVE PIPE BEDDING SHALL BE IN ACCORDANCE WITH THE LATEST CITY, COUNTY, OR AGENCY STANDARDS.
   B. WHERE EVER THERE ARE ROW CROPS, THE TOPSOIL SHALL BE REMOVED TO A DEPTH OF 12" AND STORED ON SITE. UPON COMPLETION OF CONSTRUCTION, THE TOPSOIL SHALL BE RESTORED. TAKE CARE TO PREVENT MIXING OF TOPSOIL AND SUBSOIL.

6. DESIGN NOTES:
   A. THIS DRAWING HAS BEEN CREATED BY REVIEW OF THE AS-BUILT DRAWINGS & RECORDS. ACCURACY IS DEPENDENT UPON THE SOURCE DOCUMENT LISTED ON THE REFERENCE DRAWINGS.
   B. PIPE & FITTING SPECIFICATIONS WITH ASTERISK (*) ARE CONSERVATIVE ASSUMED VALUES PER TD-4125P-09 PROCEDURE FOR THE RESOLUTION OF UNKNOWN PIPELINE FEATURES (PRUPF).
   C. ALL WORK DEPICTED IN THIS DRAWING IS TO BE AS-BUILT UNDER THE PRIMARY ORDER NUMBER.

7. WELDING REQUIREMENTS:
   A. ALL ARC WELDING IS TO BE PERFORMED IN ACCORDANCE WITH THE GAS WELDING CONTROL MANUAL TD-4160M. REFER TO TD-4160P-20 OR TD-4160P-26 FOR GENERAL WELDING REQUIREMENTS.
   B. PERFORM ALL IN-SERVICE WELDING PER UTILITY PROCEDURE TD-4160P-40.
   C. ALL CANS OR SPOOLS SHALL BE A MINIMUM LENGTH OF ONE PIPE DIAMETER, WHENEVER POSSIBLE.
   D. WHEN INTERNAL MISALIGNMENT AT GIRTHWELDS EXCEEDS 0.094", BACKWELD WHERE THERE IS ACCESS TO THE INSIDE OF THE WELD. WHERE THERE IS NO ACCESS TO THE INSIDE OF THE WELD, MACHINE BORING OR GRINDING IS REQUIRED. BACKWELDING, GRINDING, OR BORING MUST BE DONE IN ACCORDANCE WITH TD-4160P-20 OR TD-4160-26, AS APPROPRIATE.

8. STRENGTH TEST REQUIREMENTS
   A. STRENGTH TESTING SHALL MEET PRESSURE AND DURATION REQUIREMENTS OF GAS STANDARD A-34 AND SHALL BE CONDUCTED IN ACCORDANCE WITH UTILITY STANDARD TD-4137S AND ASSOCIATED UTILITY PROCEDURES TD-4137P-01 (TEST PROCEDURE FOR NEW PIPELINES), TD-4137P-02 (TEST PROCEDURE FOR EXISTING PIPELINES), AND TD-4137P-04 (TEST PROCEDURE FOR PIPELINES USING AIR, INERT, OR NATURAL GAS).
   B. ALL WELDS THAT HAVE NOT BEEN STRENGTH TESTED AND ALL FITTINGS SHALL BE SOAP TESTED AT 100 PSI AND AT OPERATING PRESSURE BEFORE COATING CAN OCCUR.
   C. POST HYDROSTATIC TEST, DRY PIPELINE IN ACCORDANCE WITH UTILITY PROCEDURE TD-4137P-03.

9. COATING REQUIREMENTS:
   A. ALL EXPOSED PIPE AND FITTINGS ARE TO BE COATED IN ACCORDANCE WITH GAS STANDARD E-30. ALL COATING ON BURIED PIPE AND FITTINGS ARE TO BE APPLIED IN ACCORDANCE WITH GAS STANDARD E-35.
   B. FOR COATING SELECTIONS ON BURIED PIPE, SEE DIRECT BURIAL COATING SELECTIONS TABLE.
   C. CONTACT THE PROJECT ENGINEER (PED) TO REQUEST VARIANCE FROM THE APPROVED COATING PRODUCTS.

10. INSPECTION OF EXISTING PIPELINE:
    A. WHENEVER EXISTING BURIED GAS FACILITIES ARE EXCAVATED DURING ENGINEERING OR DURING CONSTRUCTION, FOLLOW TD-5100P-01 TO DOCUMENT PIPE INSPECTION. THIS APPLIES TO EXISTING AND TO BE RETIRED FACILITIES.
    B. EXISTING GIRTH WELDS, AT TIE-IN LOCATIONS, SHALL BE IDENTIFIED AND REMOVED IF PRACTICAL.
    C. PRIOR TO TIE-IN, INSPECT COATING AND PIPE FOR DEFECTS. IF DEFECTS ARE FOUND, CONTACT PROJECT ENGINEER (PED) FOR GUIDANCE.

11. TIE-IN AND CLEARANCE PROCEDURE TO BE PREPARED AND PERFORMED IN ACCORDANCE WITH THE FOLLOWING WORK PROCEDURES:
    A. TD-4441P-21, TIE-IN CONSTRUCTION METHODS FOR GAS CLEARANCE.
    B. TD-4441S, GAS CLEARANCE PROCEDURES FOR FACILITIES OPERATING OVER 60 PSIG.

12. COATING REMOVAL:
    A. PERFORM THE FOLLOWING STEPS, IN ACCORDANCE WITH TD-4711P-01, BEFORE REMOVING ASPHALTIC PIPE WRAP ON PIPELINES INSTALLED PRIOR TO 1972 (BASED ON PG&E ANALYSIS, PIPE INSTALLED IN 1972 OR LATER DOES NOT HAVE PIPE WRAP THAT CONTAINS ASBESTOS):
       1. WHEN A PIPE WRAP SAMPLE IS REQUIRED TO BE ANALYZED FOR ASBESTOS:
          a. COLLECT SAMPLE PER TD-4711P-01 AND COMPLETE CHAIN OF CUSTODY FORM TD-4711P-01-F01.
          b. FILE PINK COPY OF THE CHAIN OF CUSTODY FORM AND FINAL LABORATORY RESULTS WITH THE AS-BUILTS.
       2. WHEN REMOVING PIPE WRAP THAT CONTAINS ASBESTOS, OR FOR EMERGENCY WORK, FOLLOW TD-4711P-01 "PIPE WRAP REMOVAL, HANDLING AND DISPOSAL".

CATHODIC PROTECTION NOTES:

1. FOLLOW TD-5100P-01 TO DOCUMENT INTERNAL CORROSION AND EXTERNAL CORROSION INSPECTION OF THE PIPELINE.
2. INSTALL ELECTROLYSIS TEST STATIONS IN ACCORDANCE WITH GAS DESIGN STANDARDS O-10, O-10.1 AND O-10.2.
3. UPON COMPLETION OF BORINGS, CONTACT THE CORROSION SUPERVISOR FOR THE LOCAL AREA/DIVISION TO PERFORM CURRENT DRAIN TESTS ON THE PIPELINE SEGMENT THAT WAS INSTALLED IN THE BORE. THE CURRENT DRAIN TEST MUST BE PERFORMED PRIOR TO WELDING PIPE ON EITHER SIDE OF THE BORE.
4. FOR THE INSTALLATION OF THE WATCHDOG RECTIFIER REMOTE MONITOR, CONTACT THE CORROSION SUPERVISOR FOR THE LOCAL AREA/DIVISION.
5. BONDING CABLES TO BE INSTALLED ACROSS PIPELINE CUT-OUTS AT ALL LOCATIONS THE PIPELINE IS SEVERED PRIOR TO REMOVAL. CHAIN CLAMPS, MAGNETIC CLAMPS, OR OTHER CONSTRUCTION MANAGEMENT APPROVED CLAMPS AND #6 (MIN) STRANDED CABLE SHALL BE UTILIZED. CLAMPS TO REMAIN IN PLACE UNTIL PIPELINE IS TIED IN.

ABANDONMENT PROCEDURE FOR EXISTING PIPE:

1. GT&D UTILITY WORK PROCEDURE TD 9500P-16, "ABANDONMENT OF UNDERGROUND GAS FACILITIES," SHALL BE FOLLOWED.
2. THE EXISTING PIPE SECTIONS SHALL HAVE FREE LIQUIDS REMOVED AND BE 100% PURGED PER GAS DESIGN STANDARD A-38, "PROCEDURES FOR PURGING GAS FACILITIES."
3. THE PIPE SHALL BE SECTIONALIZED AT INTERVALS AS SPECIFIED IN THE RETIREMENT PLAN. THE LOCATIONS CALLED OUT ARE APPROXIMATE AND ARE SUBJECT TO FIELD VERIFICATION TO IDENTIFY THE MOST OPTIMUM LOCATION IN THAT VICINITY. ACCURATE SURVEY DATA MAY NOT BE AVAILABLE FOR THESE LOCATIONS SO USE CAUTION DURING EXCAVATION AND WHEN IDENTIFYING THE PIPELINE TO BE RETIRED. OTHER ACTIVE PIPELINES MAY BE IN THE AREA.
4. AT EACH SUCH LOCATION NOTED ABOVE, A PIECE OF PIPE AT LEAST 24" LONG SHALL BE REMOVED. INSTALL A 1" HIGH PRESSURE SAVE-A-VALVE (H-17491, M022287) TO CHECK FOR PRODUCT AND PRESSURE PRIOR TO CUTTING INTO THE PIPELINE. THE OPEN ENDS OF THE RETIRED PIPE SHALL BE SEALED BY THE MOST APPROPRIATE METHOD OUTLINED IN GT&D UTILITY WORK PROCEDURE TD-9500P-16. BACKFILL MUST BE THOROUGHLY COMPACTED IN PLACE OF THE REMOVED SECTION OF PIPE.
5. REMOVE ALL PIPELINE MARKERS PER UTILITY WORK PROCEDURE TD-9500P-16.

DESIGN CHANGE PROCEDURE

MAINTENANCE AND CONSTRUCTION PERSONNEL MUST OBTAIN APPROVAL FROM THE PROJECT ENGINEER (PED) BEFORE MAKING ANY DESIGN CHANGE TO GAS FACILITIES PER TD-4014P-06.

CONTRACTOR NOTES:

1. CONTRACTOR SHALL SUBMIT THE DESIGN FOR ALL TEMPORARY DEWATERING SYSTEMS, SIGN AND STAMPED BY A CIVIL ENGINEER. WHERE SHORING IS EMPLOYED, THE DEWATERING SYSTEM SHOULD BE COMPATIBLE WITH THE TYPE OF SHORING BEING USED.
2. REFER TO GEOTECHNICAL REPORT, AND McBAIN RESTORATION PROJECT DRAWINGS FOR OTHER EXCAVATION AND BACKFILL RECOMMENDATIONS.
3. MINIMUM COVER AT TIE-IN LOCATIONS TO BE VERIFIED WITH PED

CONTACT INFORMATION:

PROJECT MANAGER	----	KELVIN QIU	925-404-3723
PROJECT ENGINEER (PED)	----	JOHN HESS	925-765-8558
PIPELINE ENGINEER (PLE)	----	WAYNE GILBERT II	925-551-1849
ESTIMATOR / DESIGNER	----	RYAN MOORE	916-462-0443
FIELD ENGINEER / CM	----	MATT MONTEZ	925-895-2150
LAND PLANNER	----	VICK GERMANY	925-464-8010
CULTURAL MONITOR	----	TBD	TBD
ENVIRONMENTAL (EFS)	----	LORIN MILLS	530-782-2730
BIOLOGIST	----	TBD	TBD
CORROSION ENGINEER	----	SEAN YOST	925-324-6147
DISTRIBUTION PLANNER	----	SHAUNA FONG	925-413-4367
TRANSMISSION PLANNER	----	PETER SHEVTCHENKO	925-328-5648
LOCAL MAINTENANCE SUPERVISOR	----	TBD	TBD
LOCAL CORROSION MECHANIC	----	KEVIN FORSSE	408-334-9268
MATERIALS (PIPE)	----	PIPE YARD REQUESTS	(510) 673-9470
MATERIALS (FITTINGS)	----	PAMELA TREVINO	(510) 468-7964
MATERIALS (CHAIN OF CUSTODY)	----	PATRICK HUDDLESTON	(925) 979-8007

REFERENCE DRAWINGS:

OPERATING MAPS	----	382203-1 REV 105
OPERATING DIAGRAMS	----	082414 REV 15
PLAT SHEETS	----	23-E09
AS-BUILT	----	B-MAOP16309427

CONTROL TABLE

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	2031710.36	6163126.14	270.93	SET RAILROAD SPIKE
2	2032027.01	6163400.36	266.62	SET RAILROAD SPIKE
3	2032505.01	6163673.42	267.85	SET RAILROAD SPIKE
5	2032792.12	6163910.68	265.56	SET RAILROAD SPIKE

BASIS OF COORDINATES & BEARINGS

The coordinates and bearings shown hereon are based on Global Positioning System observations (GPS) based on the California Coordinate System of 1983 (CCS83) Zone 3, being on the North American Datum of 1983 (NAD83) epoch (2011.00) and were derived from observations of the California Surveying & Drafting Supply (CSDS) real-time network (RTN).

BENCHMARK

The elevations shown hereon are based on the North American Vertical Datum of 1988 (NAVD88) and were derived from observations of the California Surveying & Drafting Supply (CSDS) real-time network (RTN).

811 Know what's below. Call before you dig.

ZERO IN ON SAFETY

REV.	DATE	DESCRIPTION	ORDER	DWN	ADE	ENG	ENG APVD
B	12-7-23	ISSUED FOR 90% REVIEW	74009420	RWMS	MDGR	JUHR	
A	11-9-23	ISSUED FOR 65% REVIEW	74009420	RWMS	MDGR	JUHR	

REVISIONS

GAS TRANSMISSION ESTIMATING & DESIGN

90% DESIGN REVIEW

PACIFIC GAS AND ELECTRIC COMPANY

PIPELINE - CONSTRUCTION NOTES
L-303, MP 35.26-35.36
REPLACE 36" PIPE
SUNOL, ALAMEDA COUNTY

GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN RAMON, CALIFORNIA

BILL OF MATL SHEET 10

JOB ID R-297

SHEET NO. 2 OF 11 SHEETS

74009420 B

DIRECT BURIAL COATING SELECTIONS	
MAIN LINE COATING	FBE (E-35.4)
MINOR REPAIRS	LIQUID EPOXY (E-35.3)
TIE-IN WELDS	LIQUID EPOXY (E-35.1)
GIRTH WELDS	LIQUID EPOXY (E-35.1)
BUTT WELDED FITTINGS	LIQUID EPOXY (E-35.1)
VALVE ASSEMBLIES	LIQUID EPOXY (E-35.7), WAX TAPE (E-35.7)
SHORT SEGMENTS OF PIPE	LIQUID EPOXY (E-35.1)
AIR-TO-SOIL TRANSITIONS	LIQUID EPOXY/PSX 700 (E-35.8)
PRESSURE CONTROL FITTINGS	LIQUID EPOXY (E-35.7), WAX TAPE (E-35.7)
TIE-INS/COATING TRANSITIONS	LIQUID EPOXY (E-35.3)
BORED COATING SELECTIONS	
MAIN LINE COATING	ARO APPLIED OVER FBE (E-35.4)
MINOR REPAIRS	LIQUID EPOXIES (E-35.2)
TIE-IN WELDS	LIQUID EPOXIES (E-35.2)

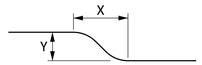
NOTES:
1) REFERENCE CONSTRUCTION NOTE 9, COATING REQUIREMENTS.

INTERNAL CORROSION (IC) DESIGN & CONSTRUCTION REVIEW		
IC REVIEW COMPLETED BY (ENGINEER OR DESIGNATE)	LAN ID	DATE
ENGINEERING HAS REVIEWED THIS DESIGN AND INCORPORATED ANY NECESSARY IC DESIGN AND CONSTRUCTION CONSIDERATIONS. DOCUMENTATION OF THE REVIEW AND ACTIONS TAKEN ARE IN THE JOB PACKAGE AND INCORPORATED IN THIS DESIGN.	**SXYN**	**7/26/23**
EDRS ROUTING NUMBER:	**2023-33405**	

CATHODIC PROTECTION REVIEW FORM (CPRF)		
EXTERNAL CORROSION REVIEW TO BE COMPLETED PER REQUIREMENTS OF TD-4181P-102		
PRE-CONSTRUCTION CPRF COMPLETED BY	LAN ID **DSRB**	DATE **4/24/23**
POST-CONSTRUCTION CPRF NEEDED:	YES ☐	NO ☐
POST-CONSTRUCTION CPRF COMPLETED BY	LAN ID* *CORROSION MECHANIC	DATE
NOTE: THE INFORMATION ABOVE IS FOR INFOMATION USE ONLY. IF REQUIRED, THE COMPLETED CPRF MUST BE INCLUDED IN THE SYSTEM OF RECORD.		

ROPING TABLE

MINIMUM DISTANCE REQUIRED TO ROPE AN OFFSET OF 36" O.D.x 0.500" WT. API-5L, GR. X65, SAWL PIPE.MIN. ROPING RADIUS =2,753FT.



Y	X	Y	X
1.0	**105**	3.0	**257**
1.5	**128**	3.5	**267**
2.0	**148**	4.0	**277**
2.5	**166**	5.0	**287**

405.
(A) EMPLOYEES SHALL MAINTAIN AT LEAST THE FOLLOWING MINIMUM WORKING DISTANCE FROM EXPOSED ENERGIZED CONDUCTORS OR APPARATUS THAT ARE NOT PROPERLY COVERED WITH APPROVED PROTECTIVE EQUIPMENT.

(B) EMPLOYEES SHALL MAINTAIN THE MINIMUM WORK DISTANCE FROM ALL CONDUCTIVE OBJECTS THAT ENCROACH UPON EXPOSED ENERGIZED CONDUCTOR OR APPARATUS AND WEAR THE SUITABLE CLOTHING FOR THE ACTIVITY BEING PERFORMED (REFER TO CSP RULE 11)

VOLATAGES (PHASE-TO-PHASE)	MINIMUM WORKING DISTANCE TO POWER CABLES
UNDER 50 VOLTS	NOT SPECIFIED
50V-300V	AVOID CONTACT
301V-600V	12"
601V-15kV	25"
15.1kV-36kV	28"
36.1kV-46kV	31"
46.1kV-72.5kV	36"
72.6kV-121kV	48"
121.1kV-242kV	63"
242.1kV-552kV	135"

WHEEL LOAD TABLE		
DEPTH OF COVER (FT)	EXISTING PIPE - 36.00" OD 0.422" WT, X-52, DSAW	
	MAXIMUM CONSTRUCTION PER HALF AXLE (LBS)	MAX. LOADING WITH SOIL RESTRAINT
8	140,278	162,928 LBS
7	116,310	135,090 LBS
6	92,367	107,281 LBS
5	70,488	81,869 LBS
4	51,617	59,951 LBS
3	35,359	41,069 LBS
2	22,879	26,573 LBS

LEGEND:

- GT — GAS TRANSMISSION LINE (PROPOSED)
- GT (T) — GAS TRANSMISSION LINE (TO BE TESTED)
- GT — GAS TRANSMISSION LINE (EXISTING)
- GD — GAS DISTRIBUTION LINE (EXISTING)
- GS — GAS SERVICE LINE (EXISTING)
- GT — GAS TRANSMISSION LINE (ABANDONED)
- GD — GAS DISTRIBUTION LINE (ABANDONED)
- GS — GAS SERVICE LINE (ABANDONED)
- OWNER — FOREIGN GAS LINE
- JT — JOINT TRENCH
- ET — ELECTRIC TRANSMISSION LINE
- ED — ELECTRIC DISTRIBUTION LINE
- ES — ELECTRIC SERVICE LINE
- ETOH — ELECTRIC TRANSMISSION OVERHEAD
- EDOH — ELECTRIC DISTRIBUTION OVERHEAD
- T — TELEPHONE LINE
- FO — FIBER OPTIC LINE
- TV — CABLE TV LINE
- SD — STORM DRAIN LINE
- SS — SEWER LINE
- W — WATER LINE
- UNK — UNKNOWN UTILITIES
- CASING
- PROPERTY BOUNDARY
- PG&E EASEMENT
- TEMPORARY EASEMENT
- R/W — FOREIGN RIGHT-OF-WAY
- CALTRANS RIGHT-OF-WAY
- GROUND WATER DEPTH
- HEIGHT GROUND WATER ROSE TO AFTER 20 MIN

- FENCE
- WALLTYPE — WALL
- BARRIER
- TEMPORARY BARRIER (TYPE K)
- GUARD RAIL
- TOE OF SLOPE
- TOP OF SLOPE
- EP / ER — EDGE OF PAVEMENT
- FC / FC — FACE OF CURB
- BW / FC — BACK OF WALK
- DASHED PAVEMENT MARKINGS
- UNPAVED ROAD
- RAILROAD
- ACCESS ROAD
- LAYDOWN / STAGING / CONSTRUCTION IMPACT AREA
- EXCAVATION / BELL HOLE
- SAFETY ZONE LIMITS
- ENVIRONMENTALLY SENSITIVE AREAS

- GAS LINE MARKER (OTHER)
- INSULATION JOINT
- PRESSURE CONTROL FITTING
- G — GAS BOX
- HPR — GAS HIGH PRESSURE REGULATOR
- M — GAS METER
- DR — GAS DISTRICT REGULATOR
- G — PG&E GAS MANHOLE
- G — GAS VAULT
- V — GAS VENT
- GAS VALVE
- E — PG&E ELECTRIC MANHOLE
- E — ELECTRIC VAULT
- UTILITY POLE (ELECTRIC)
- UTILITY POLE (OTHER)
- JOINT POLE
- EXISTING ELECTRIC TOWER
- STORM DRAIN INLET
- UTILITY MANHOLE
- W — WATER METER

- WATER VALVE
- TV — CABLE TV BOX
- T — TELECOMM BOX
- T — TELECOMM VAULT
- STREET LIGHT BOX
- TREE
- A — ANODE
- A — DEEPWELL ANODE
- CATS — COMPUTER AUTOMATED TEST STATION
- AC CTS — AC COUPON TEST STATION
- CTS — COUPON TEST STATION
- ETS — ELECTROLYSIS TEST STATION
- R — POLE-MOUNTED RECTIFIER
- DCIM — DCI MITIGATION CABINET
- POTHOLE
- CITY/COUNTY MONUMENT
- MONUMENT, SEE DESCRIPTION
- SURVEY CONTROL POINT
- ℄ — CENTERLINE

DETAIL LEGEND:

- PROPOSED GAS TRANSMISSION LINE
- EXISTING GAS TRANSMISSION LINE
- TEMPORARY GAS TRANSMISSION LINE (OWNED BY PG&E)
- GAS TRANSMISSION LINE (OWNED BY OTHERS)
- ABANDONED GAS TRANSMISSION LINE
- GAS TRANSMISSION LINE (TO BE REMOVED)
- CUT LINE (TO BE REMOVED)
- EXISTING GAS DISTRIBUTION LINE
- PROPOSED GAS DISTRIBUTION LINE
- TOP OF GRADE
- GAS VALVE
- PIPE END CUT (SIDE)
- PIPE END CUT
- FLOW — FLOW ARROW
- TIE-IN WELD
- 25 — MATERIAL OF RECORD ASSET
- 16 — BILL OF MATERIALS ASSET
- T6 — PIT TABLE TASK #

Acronym	Definition
(E)	Existing
(P)	Proposed
AB	Aggregate Base
ABN	Abandon
AC	Asphalt Concrete
API	American Petroleum Institute
APN	Assessor's Parcel Number
APPROX	Approximate
AVE	Avenue
ARC	Abrasion Resistant Coating
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing Materials
BBCL	Bell Bell Chill Ring
BC	Begin Curve
BD	Blowdown
BEG	Begin
BKF	Backfill
BLDG	Building
BLVD	Boulevard
BM	Bench Mark
BMP	Best Management Practice
BOM	Bill of Materials
BR	Bridge
BTU	British Thermal Units
BV	Ball Valve
BW	Back of Walk
CATS	Computer Automated Test Station
CCV	Corrosion Control Volume
CI	Cast Iron
CL	Centerline
CMP	Corrugated Metal Pipe
CNG	Compressed Natural Gas
CO	County
CONC	Concrete
COND	Conduit
CP	Cathodic Protection
CPT	Catch Point
CROP	Conditional Reduction of Pressure
CTS	Coupon Test Station
CU	Copper
CULV	Culvert
D	Depth
DE	Dead End
DCUST	Distribution Customer
DEG	Degree
DET	Detail
DFM	Distribution Feeder Main
DI	Drainage Inlet
DIA	Diameter
DIST	Distribution
DPV	Damage Prevention Volume
DR	Distribution Regulator
DREG	District Regulator
DSAW	Double Submerged Arc-Welded
DWA	Deep Well Anode
DWY	Driveway
E	East
EASE	Easement
EC	End Curve
EL	Elbow
ELECT	Electric
ELEV	Elevation
EM	Electronic Marker
EMS	Engineering Material Specification
ENGR	Engineer
EP	Edge of Pavement
EQ	Equation
ERW	Electric Resistance Welded
ESA	Environmentally Sensitive Area
ETS	Electrolysis Test Station
ETW	Edge of Traveled Way
F	Filter
F & C	Frame and Cover
FBE	Fusion Bonded Epoxy
FC	Face of Curb
FDP	Future Design Pressure
FG	Finished Grade
FH	Fire Hydrant
FIG	Figure
FL	Flow Line
FLG	Flange
FWY	Freeway
GS	Natural Gas Service
GS&S	Gas Standards and Specifications
GV	Gate Valve
GW	Natural Gas Well
H	Horizontal
HDD	Horizontal Directional Drill
HFW	High Frequency Weld
HPR	High Pressure Regulator
HWY	Highway
ID	Inside Diameter
ILI	In-Line Inspection
INV	Invert
IRR	Irrigation
JN	Job Number
JP	Joint Pole
JT	Joint Trench
L	Line Number
LAT	Latitude
LN	Lane
LNG	Liquid Natural Gas
LOC	Location
LONG	Longitude
LT	Left
M	Monitor
MAOP	Maximum Allowable Operating Pressure
MAX	Maximum
MH	Manhole
MIN	Minimum
MISC	Miscellaneous
MLV	Main Line Valve
MOI	Method of Installation
MON	Monument
MOP	Maximum Operating Pressure
MP	Mile Point
MSP	Maximum Stopping Pressure
MTR	Meter
MW	Working Monitor
MWP	Maximum Working Pressure
N	North
NDE	Non-Destructive Examination
NOP	Normal Operating Pressure
NPC	Non-Protected/Native Coupon
NTS	Not to Scale
OD	Outside Pipe Diameter
OG	Original Ground
OH	Overhead
P	Pipeline
P/L	Property Line
PC	Point of Curvature
PCF	Pressure Control Fitting
PKWY	Parkway
PL	Plastic
PLC	Programmable Logic Controllers
PRUPF	Procedure for the Resolution of Unknown Pipeline Features
PSI	Pounds per Square Inch
PV	Plug Valve
PVMT	Pavement
QTY	Quantity
R	Radius
RCP	Reinforced Concrete Pipe
RD	Road
RDWY	Roadway
REG	Regulator
REL	Relocate
REPL	Replace
REV	Revision
RR	Railroad
RT	Right
RTE	Route
R/W	Right of Way
S	South
SAWH	Submerged Arc-Welded Helical
SAWL	Submerged Arc-Welded Longitudinal
SCADA	Supervisory Control and Data Acquisition
SD	Storm Drain
SG	Subgrade
SHT	Sheet
SMLS	Seamless
SMYS	Specified Minimum Yield Strength
SPEC	Specification
SS	Sanitary Sewer
SSAW	Single Submerged Arc-Welded
ST	Street
STA	Station
STD	Standard
STL	Steel
STPR	Strength Test Pressure Report
T	Tied (Connected to System)
TCE	Temporary Construction Easement
TCP	Traffic Control Plan
TD	Technical Document
TDW	T. D. Williamson
TEL	Telephone
TEMP	Temporary
TG	Top of Grade
TT	Top Tap
TSP	Transmission System Planning
TYP	Typical
UG	Underground
USA	Underground Service Alert
UT	Ultra-Sonic Test
V	Valve
VIF	Verify in Field
VOL	Volume
W	Water
WT	Wall Thickness
WV	Water Valve
W/	With
W/O	Without
WP	Work Procedure

811 Know what's below. Call before you dig.

ZERO IN ON SAFETY

REV.	DATE	DESCRIPTION	ORDER	DWN	ADE	ENG	ENG APVD
B	12-7-23	ISSUED FOR 90% REVIEW	74009420	RWMS	MDGR	JUHR	
A	11-9-23	ISSUED FOR 65% REVIEW	74009420	RWMS	MDGR	JUHR	

REVISIONS

PIPELINE - LEGEND & STAMPS
L-303, MP 35.26-35.36
REPLACE 36" PIPE
SUNOL, ALAMEDA COUNTY

GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN RAMON, CALIFORNIA

GAS TRANSMISSION ESTIMATING & DESIGN

90% DESIGN REVIEW

PACIFIC GAS AND ELECTRIC COMPANY

BILL OF MATL SHEET 10

JOB ID R-297

SHEET NO. 3 OF 11 SHEETS

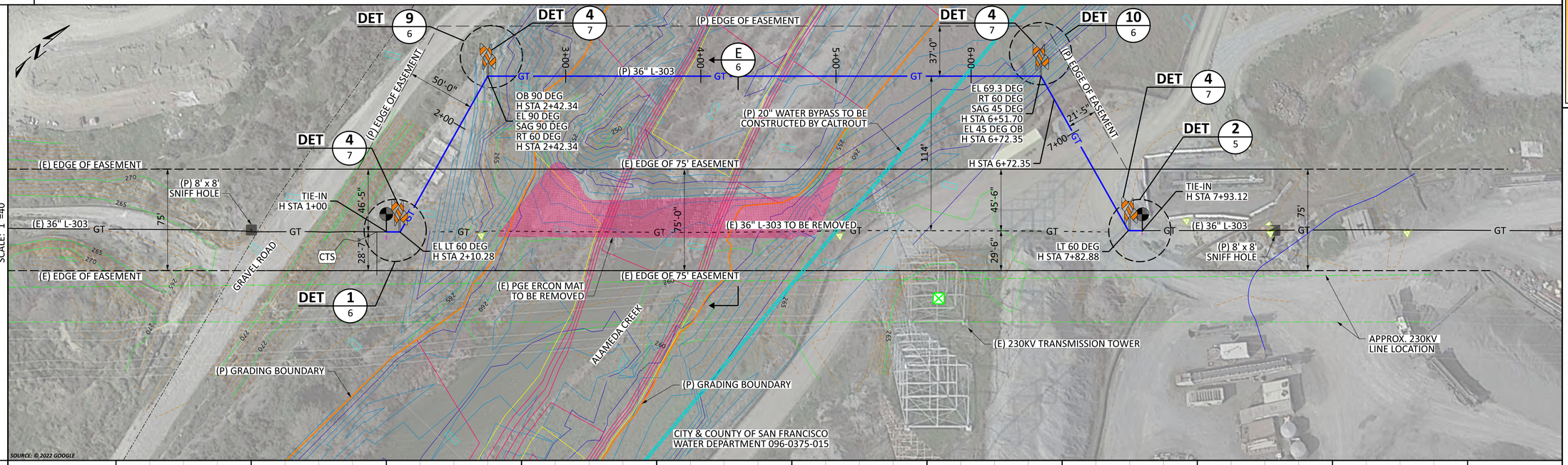
74009420 B

74009420-S003-LS.dgn 7-DEC-2023 16:58PM

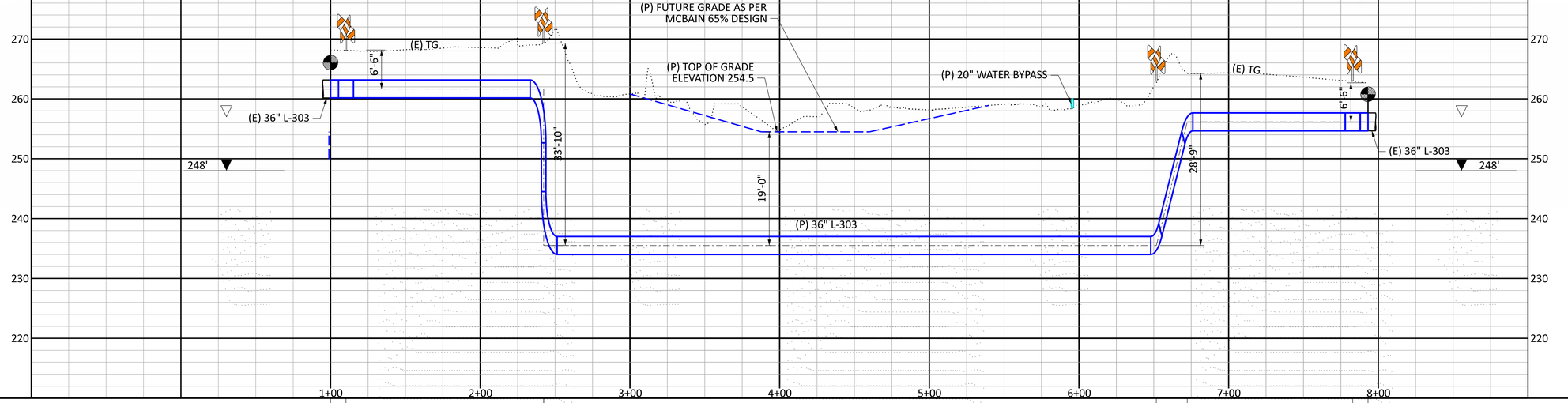
EstimatingLegen

R/W		
	OWNER/AGENCY	CITY & COUNTY OF SAN FRANCISCO WATER DEPARTMENT
	APN	096-0375-015
	LD#	
	H STA	1+00.00 - 7+93.12

SURVEY PLAN
SCALE: 1"=40'



SURVEY PROFILE
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=10'



PIPELINE STATIONING

TIE-IN
H STA 1+00.00
P STA 0+00.00

EL LT 60 DEG
H STA 2+10.28
P STA 1+10.28

OB 90 DEG
H STA 2+42.34
P STA 1+42.34

EL 90 DEG
SAG 90 DEG
RT 60 DEG
H STA 2+42.34
P STA 1+68.50

EL 69.3 DEG
RT 60 DEG
SAG 45 DEG
H STA 6+51.70
P STA 5+77.85

EL 45 DEG OB
H STA 6+72.35
P STA 6+06.06

LT 60 DEG
H STA 7+82.88
P STA 7+17.60

TIE-IN
H STA 7+93.12
P STA 7+27.83

BOM#													
	1	2	1	2	1	2	1	2	1	3	1	2	1

MOI
OPEN TRENCH

REV.	DATE	DESCRIPTION	ORDER	DWN	ADE	ENG	ENG APVD
B	12-7-23	ISSUED FOR 90% REVIEW	74009420	RWMS	MDGR	JUHR	
A	11-9-23	ISSUED FOR 65% REVIEW	74009420	RWMS	MDGR	JUHR	

REVISIONS

ZERO IN ON SAFETY

SAFETY PLEDGE

I ALWAYS PUT SAFETY FIRST.
I LOOK FOR AND ACT TO
RESOLVE UNSAFE SITUATIONS.
I HELP AND ENCOURAGE
OTHERS TO ACT SAFELY.

PG&E

90% DESIGN
REVIEW

PACIFIC GAS AND
ELECTRIC COMPANY

PIPELINE - PLAN & PROFILE
L-303, MP 35.26-35.36
REPLACE 36" PIPE
SUNOL, ALAMEDA COUNTY

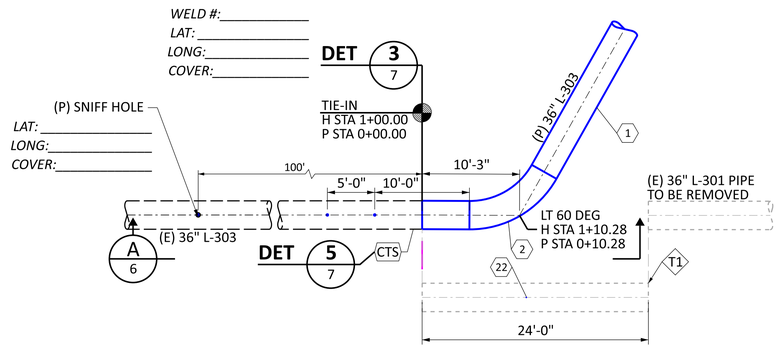
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN RAMON, CALIFORNIA

BILL OF MATL SHEET 10

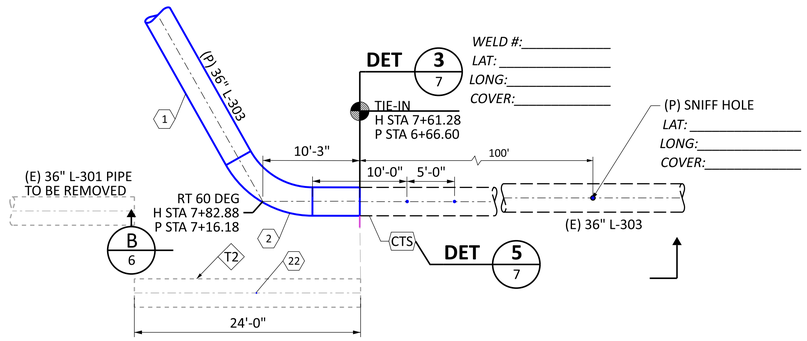
JOB ID R-297

SHEET NO. 4 OF 11 SHEETS

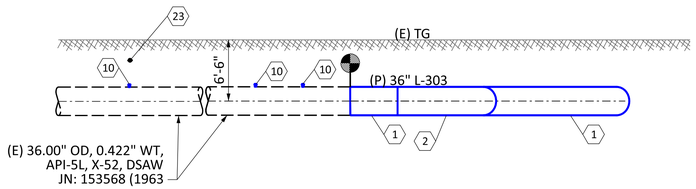
74009420 B



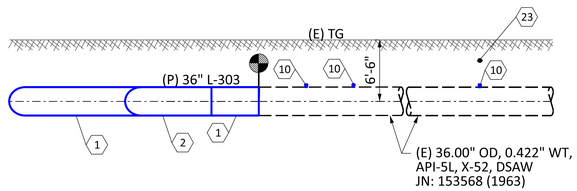
DETAIL 1
SCALE: 1/8" = 1'-0"



DETAIL 2
SCALE: 1/8" = 1'-0"



ELEVATION A
SCALE: 1/8" = 1'-0"



ELEVATION B
SCALE: 1/8" = 1'-0"

REV.	DATE	DESCRIPTION	ORDER	DWN	MDGR	ENG	ENG APVD
B	12-7-23	ISSUED FOR 90% REVIEW	74009420	RWMS	MDGR	JUHR	
A	11-9-23	ISSUED FOR 65% REVIEW	74009420	RWMS	MDGR	JUHR	

REVISIONS

PIPELINE - DETAILS
L-303, MP 35.26-35.36
REPLACE 36" PIPE
SUNOL, ALAMEDA COUNTY

GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN RAMON, CALIFORNIA

GAS TRANSMISSION
ESTIMATING & DESIGN

90% DESIGN REVIEW

PACIFIC GAS AND ELECTRIC COMPANY

BILL OF MATL SHEET 10

JOB ID R-297

SHEET NO. 5 OF 11 SHEETS

74009420 B

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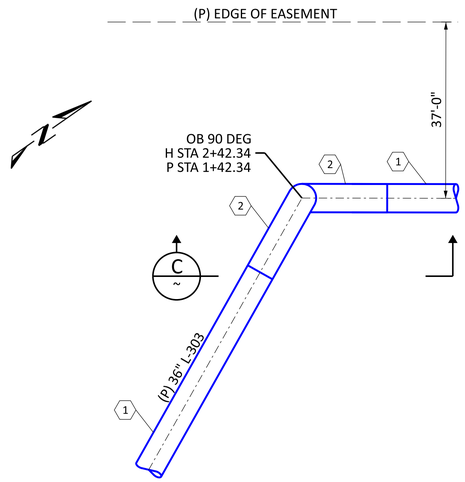
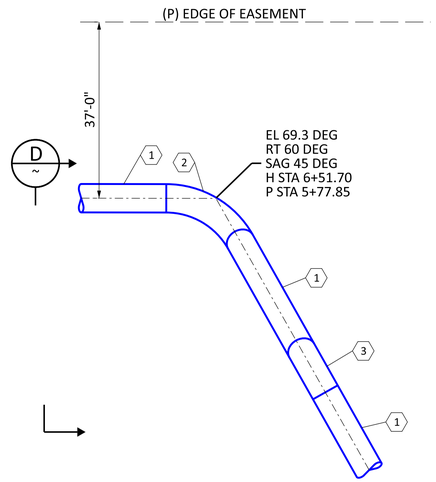
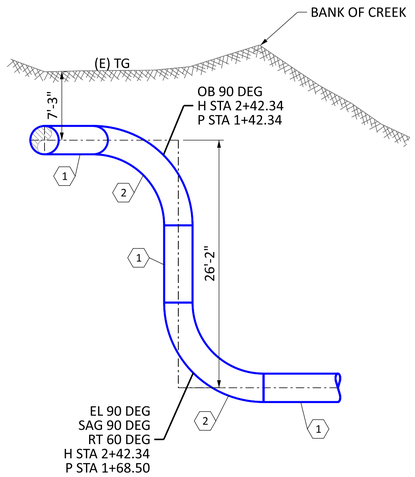


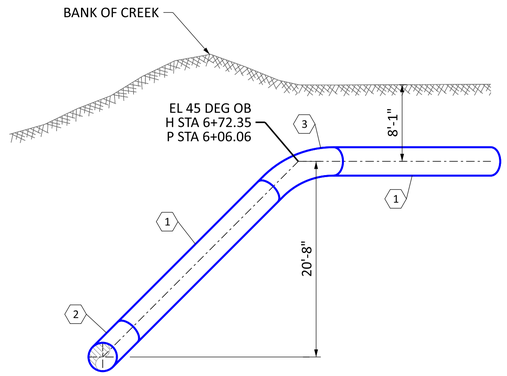
DETAIL 9/4
SCALE: 1/8" = 1'-0"



DETAIL 10/4
SCALE: 1/8" = 1'-0"



ELEVATION C/~
SCALE: 1/8" = 1'-0"



ELEVATION D/~
SCALE: 1/8" = 1'-0"

REV.	DATE	DESCRIPTION	ORDER	DWN	ADE	ENG	ENG APVD
B	12-7-23	ISSUED FOR 90% REVIEW	74009420	RWMS	MDGR	JUHR	
A	11-9-23	ISSUED FOR 65% REVIEW	74009420	RWMS	MDGR	JUHR	

REVISIONS

PIPELINE - DETAILS
L-303, MP 35.26-35.36
REPLACE 36" PIPE
SUNOL, ALAMEDA COUNTY

GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN RAMON, CALIFORNIA

GAS TRANSMISSION
ESTIMATING & DESIGN

90% DESIGN REVIEW

PACIFIC GAS AND ELECTRIC COMPANY

BILL OF MATL SHEET 10

JOB ID R-297

SHEET NO. 6 OF 11 SHEETS

74009420 B

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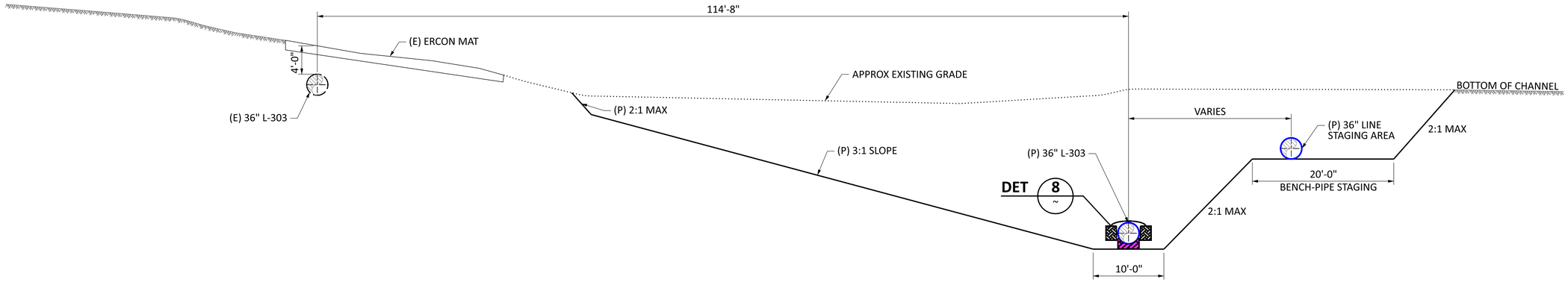
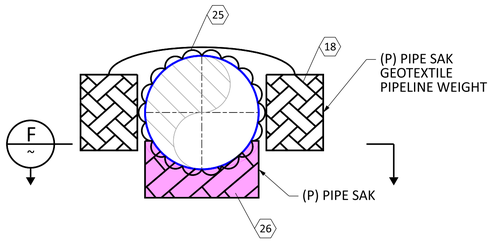


ELEVATION E / 4
SCALE: 1/8" = 1'-0"

(P) CONSTRUCTION EXCAVATION



DETAIL 8
SCALE: 1/2" = 1'-0"

811 Know what's below. Call before you dig.

ZERO IN ON SAFETY

REV.	DATE	DESCRIPTION	ORDER	DWN	MDGR	ENG	ENG APVD
B	12-7-23	ISSUED FOR 90% REVIEW	74009420	RWMS	MDGR	JUHR	
A	11-9-23	ISSUED FOR 65% REVIEW	74009420	RWMS	MDGR	JUHR	

REVISIONS

PIPELINE - DETAILS
L-303, MP 35.26-35.36
REPLACE 36" PIPE
SUNOL, ALAMEDA COUNTY

GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN RAMON, CALIFORNIA

GAS TRANSMISSION
ESTIMATING & DESIGN

90% DESIGN REVIEW

PACIFIC GAS AND ELECTRIC COMPANY

BILL OF MATL SHEET 10

JOB ID R-297

SHEET NO. 7 OF 11 SHEETS

74009420 B

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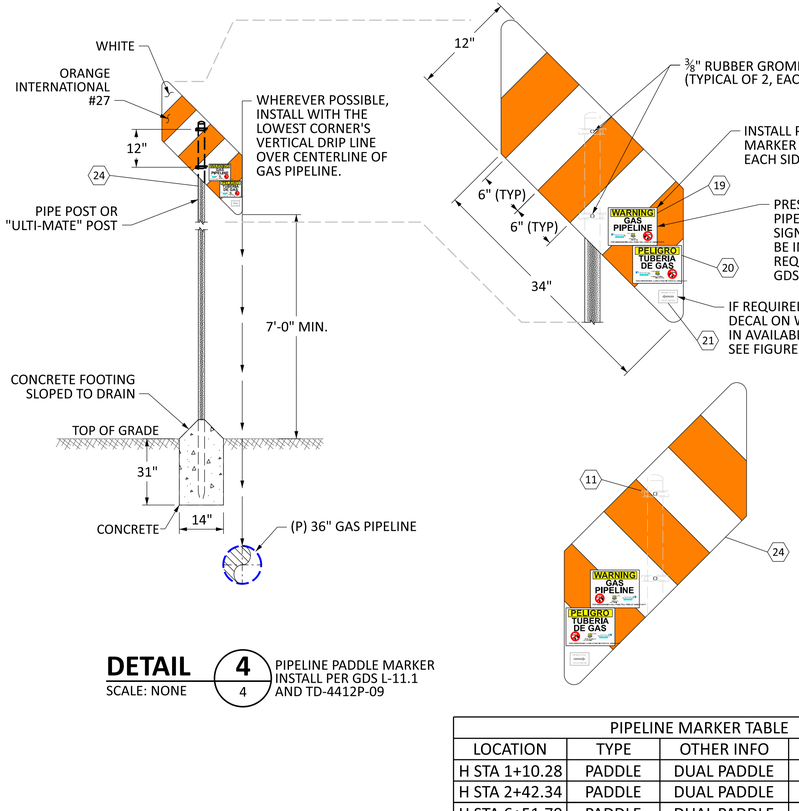
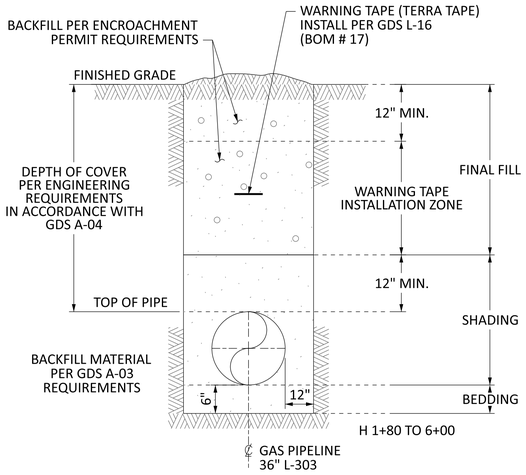
Estimating.pen



DETAIL 4 — PIPELINE PADDLE MARKER INSTALL PER GDS L-11.1 AND TD-4412P-09
SCALE: NONE

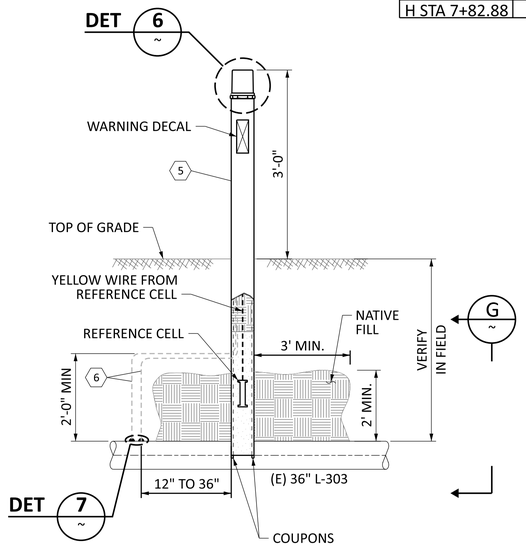
PIPELINE MARKER TABLE				
LOCATION	TYPE	OTHER INFO	LINE/DFM	SHEET
H STA 1+10.28	PADDLE	DUAL PADDLE	L-303	4
H STA 2+42.34	PADDLE	DUAL PADDLE	L-303	4
H STA 6+51.70	PADDLE	DUAL PADDLE	L-303	4
H STA 7+82.88	PADDLE	DUAL PADDLE	L-303	4



SEE TD-4621M FOR SHORING REQUIREMENTS

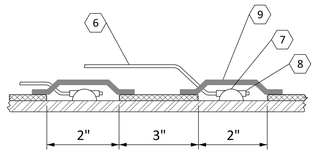
DETAIL TYP ~ — TRENCH NON-PAVED AREA
SCALE: NTS

DETAIL 3 (5) — WELD (TD-4160P-20) FIGURE A1
SCALE: NO SCALE

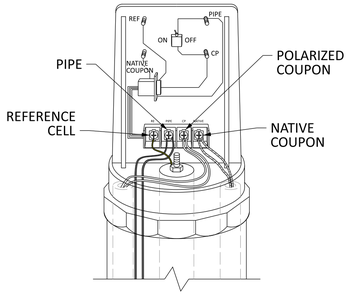


NOTE: INSTALL COUPONS PARALLEL TO PIPE A DISTANCE OF 8" TO 12". COUPONS MUST BE INSTALLED IN NATIVE SOIL WITHIN 18" OF ELECTRODE. TAMP NATIVE AND ADD IMPORT TO ACHIEVE A MINIMUM 85% COMPACTION.

DETAIL 5 (5) — COUPON TEST STATION INSTALLATION PER CCV O-10.2, FIGURE 2
SCALE: NONE

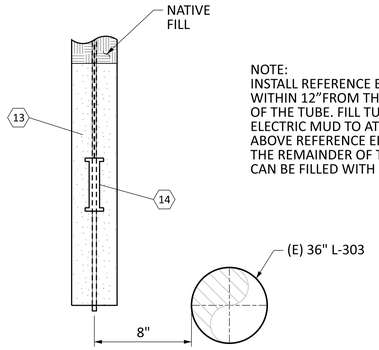


DETAIL 7 ~ — ATTACHING THE WIRES TO THE GAS MAIN CCV O-10, FIGURE 1
SCALE: NONE



NOTE: 7 WIRES TO UNIT NPC (BLACK X 2), WIRE PC (WHITE X2), WIRE REF CELL (YELLOW), PIPE #10 (BLACK X 2) GAUGE SOLID WIRES

DETAIL 6 ~ — COUPON TEST STATION HEAD PER CCV O-10.2, FIGURE 1
SCALE: NONE



NOTE:
INSTALL REFERENCE ELECTRODE WITHIN 12"FROM THE BOTTOM OF THE TUBE. FILL TUBING WITH ELECTRIC MUD TO AT LEAST 12" ABOVE REFERENCE ELECTRODE. THE REMAINDER OF THE TUBE CAN BE FILLED WITH NATIVE SOIL.

SECTION G ~
SCALE: NONE

GAS TRANSMISSION ESTIMATING & DESIGN

90% DESIGN REVIEW

PACIFIC GAS AND ELECTRIC COMPANY

811 Know what's below. Call before you dig.

ZERO IN ON SAFETY

REV.	DATE	DESCRIPTION	ORDER	DWN	ADE	ENG	ENG APVD
B	12-7-23	ISSUED FOR 90% REVIEW	74009420	RWMS	MDGR	JUHR	
A	11-9-23	ISSUED FOR 65% REVIEW	74009420	RWMS	MDGR	JUHR	

REVISIONS

PIPELINE - DETAILS
L-303, MP 35.26-35.36
REPLACE 36" PIPE
SUNOL, ALAMEDA COUNTY

GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN RAMON, CALIFORNIA

BILL OF MATL SHEET 10
JOB ID R-297
SHEET NO. 8 OF 11 SHEETS
74009420 B

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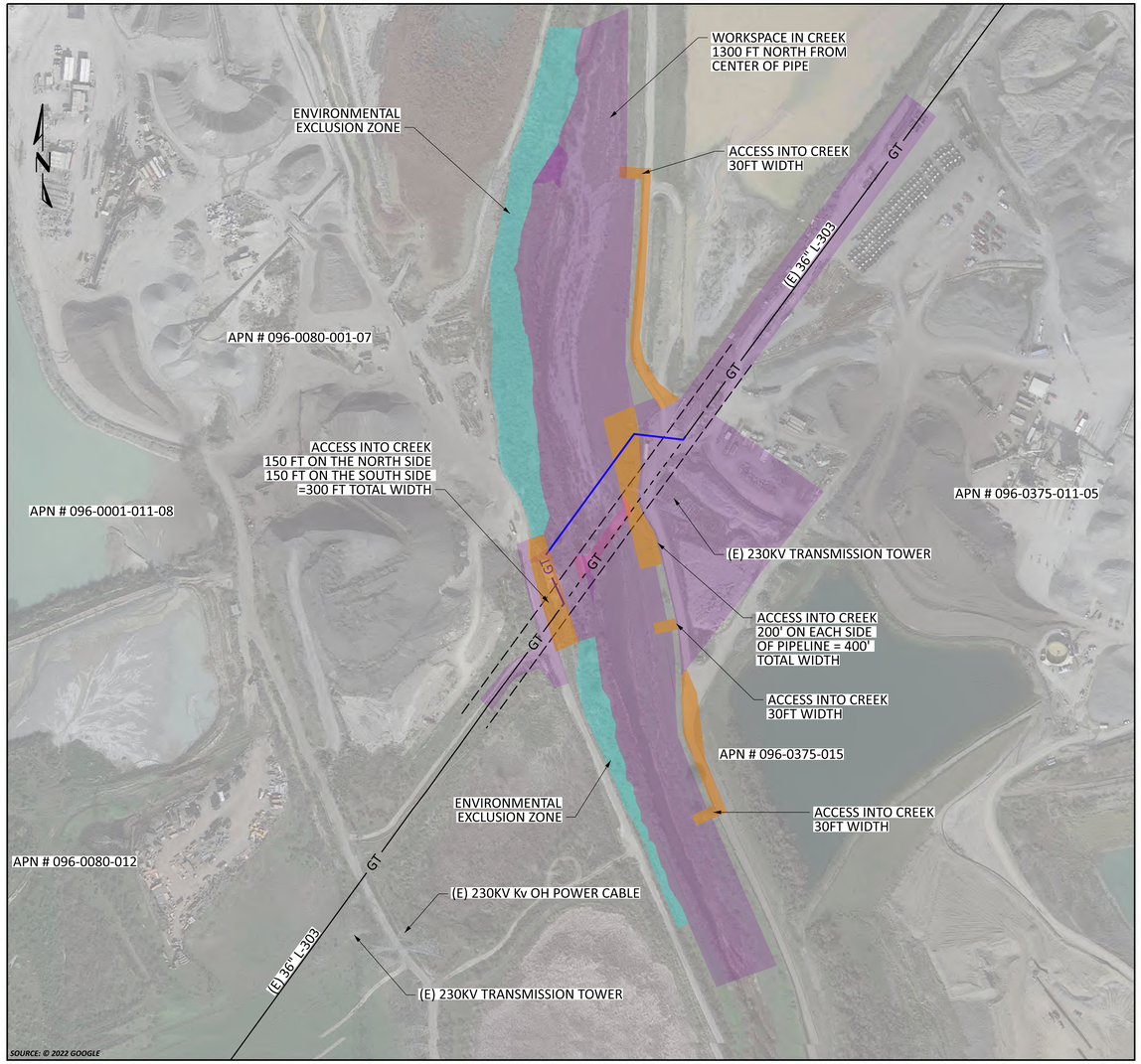
CREEK RESTORATION & LAYDOWN AREA



GAS TRANSMISSION
ESTIMATING & DESIGN

90% DESIGN REVIEW

PACIFIC GAS AND ELECTRIC COMPANY

811 Know what's below. Call before you dig.

ZERO IN ON SAFETY

REV.	DATE	DESCRIPTION	ORDER	DWN	ADE	ENG	ENG APVD
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A	11-9-23	ISSUED FOR 65% REVIEW	74009420	RWMS	MDGR	JUHR	

REVISIONS

PIPELINE - PROJECT MAP
L-303, MP 35.26-35.36
REPLACE 36" PIPE
SUNOL, ALAMEDA COUNTY

GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN RAMON, CALIFORNIA

BILL OF MATL SHEET 10

JOB ID R-297

SHEET NO. 9 OF 11 SHEETS

74009420 B

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BILL OF MATERIALS: 74009420 CAPITAL

BOM #	MATERIAL DESCRIPTION	MATERIAL CODE #	QTY	UNIT	STANDARD	NOTES
1	PIPE, STEEL, 36", 0.500" WT, API 5L, GRADE X65, SAWL, FBE	M010910	850	FT	GS&S A-15	
2	ELBOW, 36", 90 DEG, 0.500" WT, 3R RADIUS, CARBON STEEL, GRADE Y65	M022251	4	EA	GS&S B-20.2	
3	ELBOW, 36", 45 DEG, 0.500" WT, LONG RADIUS, CARBON STEEL, GRADE Y65	M024015	8	EA	GS&S B-20.2	
4	CAP, STEEL, 36", 0.500" WT, GRADE Y65	M022194	6	EA	GS&S B-20.2	
5	STATION, TEST COUPON, CC TECHNOLOGIES # CS3100, SMALL PLASTIC CONDUIT AND TERMINAL TEST HEAD CONSTRUCTION, 3" OD X 10' LONG	M560691	1	EA	CCV O-10.2	
6	WIRE, ELECTRICAL, INSULATED, COPPER, 10 AWG, 600 V, 47 MIL PVC, SOLID 1 CONDUCTOR, BLACK	M294991	1	FT	CCV O-10	
7	CARTRIDGE, BRAZING, CADWELD # CA-15, THERMOWELD #15P, ERICO PRODUCTS COMPANY	M159260	1	EA	CCV O-10	
8	SLEEVE, COPPER SPLICING #14 TO #10	M303755	1	EA	GS&S O-10	
9	TAPE HANDY CAP 4" X 4", ROYSTON IP W/ INTEGRATED PRIMER	M562324	1	EA	GS&S E-27	
10	NIPPLE, SAVE-A-VALVE, 2", WELD, STEEL, MUELLER # H-17491, STEEL CAP, DRILLING 1200 PSI MAXIMUM, 1440 PSI MAXIMUM	M022289	10	EA	GS&S C-14	
11	BRACKET, U-BOLT ASSEMBLY WITH 1/4" GALV BOLT, TO FIT 2.375" OD STEEL PIPE	M018704	8	EA	GS&S L-11.1	
12	PIPE, PIPELINE MARKER ASSEMBLY, 2" X 12' GALVANIZED PIPE, SCHEDULE 40, W/ CLAMP ON U-BOLT & PRESS-ON CAP	M018566	4	EA	GS&S L-11.1	
13	ELECTRODE, REFERENCE, STEALTH 2, COPPER-COPPER SULFATE, BORIN MANUFACTURING # SRE-007-CUY, WITH 50' OF WIRE	M241423	1	EA	CCV O-71	
14	ELECTRODE, REFERENCE, GELATIN, BACKFILL, BORIN MANUFACTURING # EMB-001-CUS, ELECTRIC MUD, GELATIN BACKFILL, CUCUSO4, SINGLE UNIT, FOR ONE INSTALLATION	M041192	1	EA	CCV O-71	
15	STATION, TEST, CATHODIC PROTECTION, COTT MFG # 400S5, ORANGE, FLUSH FINK, 5 TERMINALS, STEEL PLATE	M569392	1	EA	CCV O-10.1	
16	CONDUIT, 4", PVC, SCHEDULE 40, GRAY	M360456	1	EA	CCV 10.1	
17	TAPE, WARNING, PIPELINE, GAS UNDERGROUND, REEF INDUSTRIES # 42-0084, YELLOW WITH BLACK WRITING, "CAUTION GAS LINE BURIED BELOW", 8 MILS THICK, 6" WIDE X 1000' LONG	M379947	1	EA	GS&S L-16	
18	THE PIPE SAK		55	EA	ARIBA	ARIBA
19	SIGN, "WARNING GAS PIPELINE", IN ENGLISH, (800) 811-4111, SELF-ADHESIVE, DECAL STYLE	M379962	16	EA	GS&S L-17	
20	SIGN, "WARNING GAS PIPELINE", IN SPANISH, PELIGRO TUBERIA DE GAS (800) 811-4111, SELF-ADHESIVE DECAL STYLE	M379961	16	EA	GS&S L-17	
21	DECAL, OFFSET ARROW, PRESSURE SENSITIVE, SELF-ADHESIVE	M379960	2	EA	GS&S L-17	
22	NIPPLE, SAVE-A-VALVE, 1", WELD, STEEL, MUELLER # H-17491, STEEL CAP, DRILLING 1200 PSI MAXIMUM, 1440 PSI MAXIMUM	M022287	8	EA	GS&S C-14	
23	MARKER, EXTENDED RANGE BALL, EMS TYPE, YELLOW, 3M # 1405-XR, FOR MARKING BURIED GAS FACILITIES, MAXIMUM INSTALLED DEPTH IS 5'	M374944	2	EA	GS&S M-60	
24	SIGN, PADDLE MARKER ONLY, COATED ALUMINUM, NO HARDWARE OR POST, 0.08" THICK ALUMINUM W/2 MIL CORROSION RESISTANT WHITE COATING FOR PIPELINE MARKER POST	M379959	4	EA	GS&S L-17	
25	PIPE DEFENDER IMPACT STRENGTH POLYETHYLENE 48" LENGTH 3 PANELS PER SECTION OF PIPE		545	PANAEL		ARIBA
26	PIPE PILLOW DIAMETER 36"		245	EA		ARIBA

PIPE INSPECTION TABLE

14" DESTRUCTIVE TEST SAMPLE (CVN) (3C) DELIVERY ADDRESS: 26102 EDEN LANDING ROAD SUITE 3, HAYWARD, CA, 94545 (510) 887-8811

5' DESTRUCTIVE TEST SAMPLE (PPD) (3D) DELIVERY ADDRESS: 34453 PLYMOUTH AVE, AVENAL, CA, 93204 (620) 874-1525

UNIQUE IDENTIFIER							EXISTING PIPE SPECIFICATIONS (* = ASSUMED)									CHARGE (3A) TO PROJECT ORDER #	INSPECTIONS REQUIRED (CHARGE TO PM#74009420)				COMMENTS
TASK # (1A)	JOB # (1B)	LINE # (1C)	MILE POINT (1D)	DIG SITE # (1E)	COC UNIQUE IDENTIFIER SAMPLE (1F)	COC UNIQUE IDENTIFIER CUT TEST SAMPLE (1G)	DRAWING SHEET (1H)	DRAWING P STATION (1I)	INSTALL JOB # (2A)	INSTALL YEAR (2B)	OD (in.) (2C)	WT (in.) (2D)	MATERIAL GRADE (2E)	SEAM TYPE (2F)	FITTING RATING AND MWP (2G)	FEATURE TYPE (2H)	PFL / SFL FEATURE # (2I)	PLANNED LENGTH OF FEATURE TO BE REMOVED (2J)	COATING DISBONDMENT ASSESSMENT (3A)	LONG SEAM CHARACTERIZATION (3B)	14" DESTRUCTIVE TEST SAMPLE (CVN) (3C)	5' DESTRUCTIVE TEST SAMPLE (PPD) (3D)	FITTINGS VERIFICATION (3E)	
1	1	303	35.36	DET1			4	5+74	153568	1963	36.00	0.422	52,000	DSAW		PIPE	3337	X > 5 FT	YES	YES	YES	YES		
2	2	303	35.26	DET2			4	0+00	153568	1963	36.00	0.422	52,000	DSAW		PIPE	3329	X > 5 FT	YES	NO	NO	NO		

DESIGN CRITERIA

BOM #	OD (IN)	WT (IN)	SMYS (PSI)	DESIGN CLASS LOCATION	DESIGN FACTOR	FDP (PSIG)	FDP (% SMYS)	MAOP (PSIG)	MAOP (% SMYS)	PSIG @ 90% SMYS
1,2,3	36.000	0.500	65000	3	0.50	720	39.88	720	39.88	1625

811 Know what's below. Call before you dig.

ZERO IN ON SAFETY

REV.	DATE	DESCRIPTION	ORDER	DWN	ADE	ENG	APVD
B	12-7-23	ISSUED FOR 90% REVIEW	74009420	RWMS	MDGR	JUHR	
A	11-9-23	ISSUED FOR 65% REVIEW	74009420	RWMS	MDGR	JUHR	

REVISIONS

PIPELINE - BILL OF MATERIALS
L-303, MP 35.26-35.36
REPLACE 36" PIPE
SUNOL, ALAMEDA COUNTY

GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN RAMON, CALIFORNIA

GAS TRANSMISSION ESTIMATING & DESIGN

90% DESIGN REVIEW

PACIFIC GAS AND ELECTRIC COMPANY

BILL OF MATL SHEET 10

JOB ID R-297

SHEET NO. 10 OF 11 SHEETS

74009420 B

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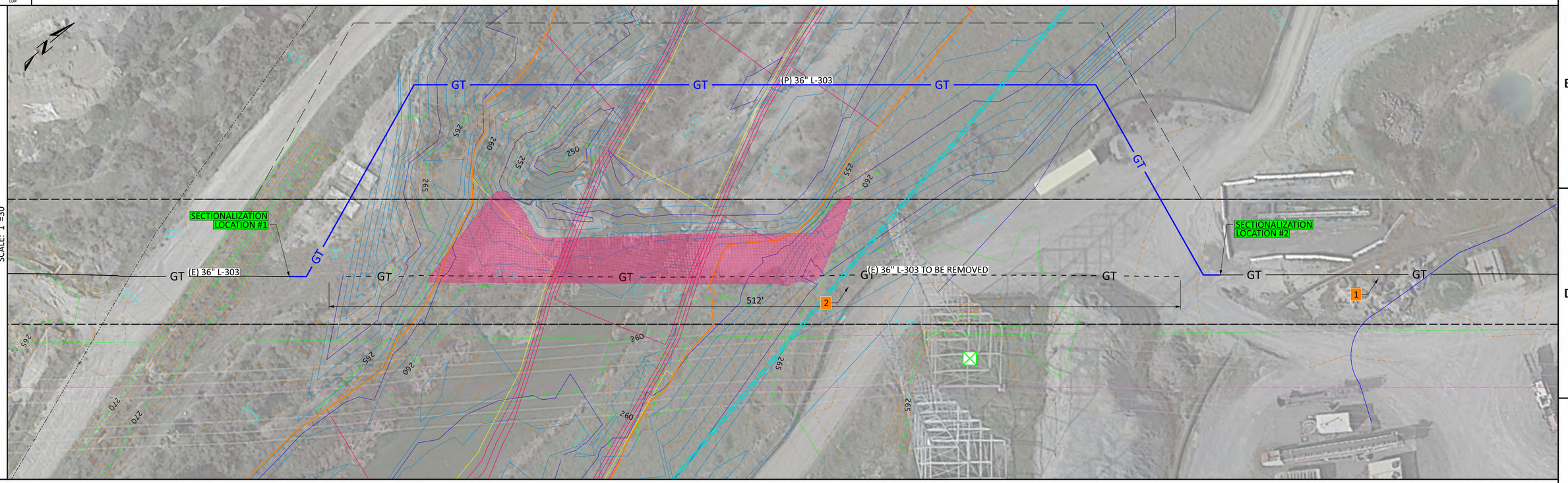
R/W
OWNER/AGENCY: CITY & COUNTY OF SAN FRANCISCO WATER DEPARTMENT
APN: 096-0375-015
LD#

SURVEY PLAN
SCALE: 1"=30'



ABANDONMENT PROCEDURE FOR EXISTING PIPE:

1. GT&D UTILITY WORK PROCEDURE TD 9500P-16, "ABANDONMENT OF UNDERGROUND GAS FACILITIES," SHALL BE FOLLOWED.
2. THE EXISTING PIPE SECTIONS SHALL HAVE FREE LIQUIDS REMOVED AND BE 100% PURGED PER GAS DESIGN STANDARD A-38, "PROCEDURES FOR PURGING GAS FACILITIES."
3. THE PIPE SHALL BE SECTIONALIZED AT INTERVALS AS SPECIFIED IN THE ABANDONMENT PLAN. THE LOCATIONS CALLED OUT ARE APPROXIMATE AND ARE SUBJECT TO FIELD VERIFICATION TO IDENTIFY THE MOST OPTIMUM LOCATION IN THAT VICINITY. ACCURATE SURVEY DATA MAY NOT BE AVAILABLE FOR THESE LOCATIONS SO USE CAUTION DURING EXCAVATION AND WHEN IDENTIFYING THE PIPELINE TO BE ABANDONED. OTHER ACTIVE PIPELINES MAY BE IN THE AREA.
4. AT EACH SUCH LOCATION NOTED ABOVE, A PIECE OF PIPE AT LEAST 24" LONG SHALL BE REMOVED. INSTALL A 1" HIGH PRESSURE SAVE-A-VALVE (H-17491, M022287) TO CHECK FOR PRODUCT AND PRESSURE PRIOR TO CUTTING INTO THE PIPELINE. THE OPEN ENDS OF THE ABANDONED PIPE SHALL BE SEALED BY THE MOST APPROPRIATE METHOD OUTLINED IN GT&D UTILITY WORK PROCEDURE TD-9500P-16. BACKFILL MUST BE THOROUGHLY COMPACTED IN PLACE OF THE REMOVED SECTION OF PIPE.
5. REMOVE ALL PIPELINE MARKERS PER UTILITY WORK PROCEDURE TD-9500P-16.
6. FILL OUT FORM TD-4412P-09-F01 FOR EACH PIPELINE MARKER REMOVED

SECTIONALIZATION LOCATION TABLE

LOC #	LINE NUMBER	MILE POINT	LATTITUDE	LONGITUDE	AS-BUILT LATTITUDE	AS-BUILT LONGITUDE	CITY, COUNTY	NOTES
1	L-303	35.26	37.568533	-121.873233			SUNOL, ALAMEDA COUNTY	
2	L-303	35.36	37.569818	-121.872091			SUNOL, ALAMEDA COUNTY	

PIPELINE MARKER REMOVAL TABLE (SEE NOT 6 ON THIS PAGE)

#	LINE NUMBER	MARKER TYPE	LAT	LONG	REMOVED (YES/NO/NOT FOUND)
1	L-303	PADDLE MARKER	37.57083	-121.87117	
2	L-303	PADDLE MARKER	37.57636	-121.8687	

GAS TRANSMISSION
ESTIMATING & DESIGN

90% DESIGN REVIEW

PACIFIC GAS AND ELECTRIC COMPANY

811 Know what's below. Call before you dig.

ZERO IN ON SAFETY

REV.	DATE	DESCRIPTION	ORDER	DWN	ADE	ENG	ENG APVD
							KSP4
							RWMS
							RWMS
B	12-7-23	ISSUED FOR 90% REVIEW	74009420	RWMS	MDGR	JUHR	
A	11-9-23	ISSUED FOR 65% REVIEW	74009420	RWMS	MDGR	JUHR	

REVISIONS

PIPELINE - ABANDONMENT SHEET
L-303, MP 35.26-35.36
REPLACE 36" PIPE
SUNOL, ALAMEDA COUNTY

GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN RAMON, CALIFORNIA

BILL OF MATL SHEET 10
JOB ID R-297
SHEET NO. 11 OF 11 SHEETS
74009420 B

74009420-S011-DT.dgn
7-DEC-2023 17:08PM
EstimatingLayer

SEQUOIA
Ecological Consulting, Inc.

California Trout Inc.
Sunol Valley Fish Passage Project
Sunol, California

Biological Constraints Report

July 2024

Prepared for:

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1.0 INTRODUCTION

Sequoia Ecological Consulting, Inc. (Sequoia) has prepared an updated Biological Constraints Report (BCR) for California Trout (CalTrout), using the 2017 report prepared by Swaim Biological Incorporated (Swaim 2017) for Pacific Gas and Electric (PG&E) as the basis for comparison and update for the proposed Sunol Valley Fish Passage Project site located on Alameda Creek in Sunol Valley, south of the census-designated place of Sunol in unincorporated Alameda County, California (Figures 1 and 2). Our analysis reviews and updates the current conditions, likelihoods for special-status species to occur and their regulatory statuses and evaluates whether prescribed avoidance and minimization measures (AMMs) are adequate or if additional protective measures are recommended to minimize potential impacts. Sequoia understands that CalTrout is leading the Sunol Valley Fish Passage Project in close cooperation with project partner, PG&E. Sequoia also understands that CalTrout intends to have the project approved under the California Environmental Quality Act (CEQA) through the California Department of Fish and Wildlife's (CDFW) Statutory Exemption for Restoration Projects, as well as other permit authorizations for aquatic restoration projects.

Biological resources include common plant and animal species and special-status plants and animals as designated by the U.S. Fish and Wildlife Service (USFWS), CDFW, National Marine Fisheries Service (NMFS), and other resource organizations, including the California Native Plant Society (CNPS). Biological resources also include waters of the United States and State of California as regulated by the U.S. Army Corps of Engineers (USACE), California Regional Water Quality Control Boards (RWQCB), and CDFW. Please note that this analysis assesses the potential for impacts to regulated waters and a full wetland delineation was performed by McBain Associates, Applied River Sciences in 2023 (McBain 2024a).

Included herein are a general description of the project, a discussion of the methods, and the results for analysis of the potential project constraints associated with biological resources. Recommendations for avoiding and minimizing impacts to biological resources are also provided.

2.0 LOCATION AND SETTING

The project site is located south of Sunol, in the Sunol Valley, in unincorporated Alameda County (Figure 1 and 2). The site can be accessed by traveling Interstate 680 (I-680) to the Sunol Valley region. To access the project from the west bank, take the Andrade Road exit, drive to Athenour Way (south of I-680 and west of Alameda Creek), and enter through Martin Marietta Materials at 7999 Athenour Way, Sunol, California, 94586. For entry from the east bank, take Exit 21A, drive to Calaveras Road (south of I-680 and east of Alameda Creek), and enter through DeSilva Gates Aggregates at 6527 Calaveras Road, Sunol, California, 94586.

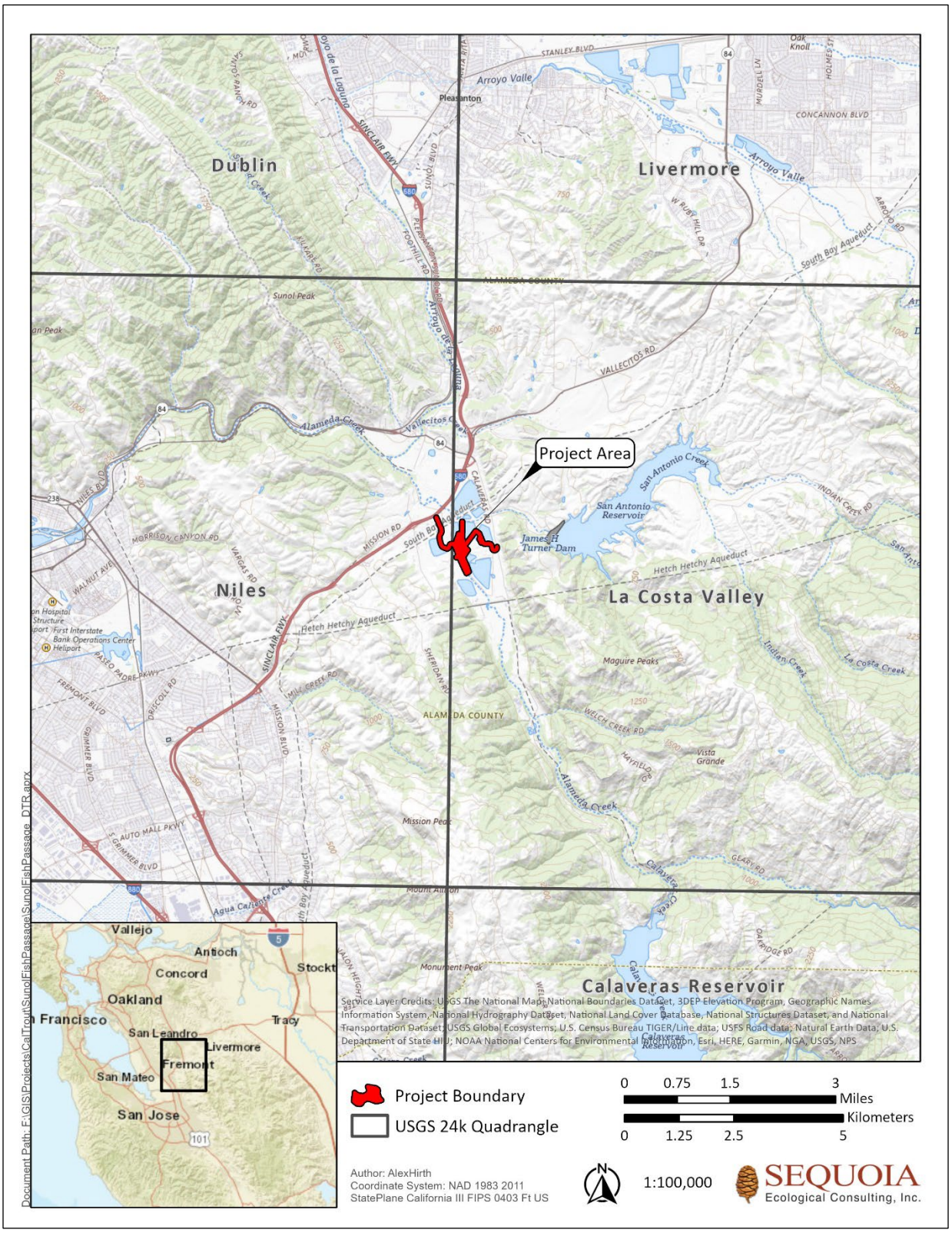

Figure 1. Regional Map of the Sunol Valley Fish Passage Project Site.

Figure 2. Location Map of the Sunol Valley Fish Passage Project Site.

3.0 PROJECT DESCRIPTION

Currently in Sunol Valley, a concrete erosion control mat (Er-Con mat) protecting a 36-inch gas transmission pipeline, L303, owned and operated by PG&E, blocks upstream and downstream fish passage on mainstem Alameda Creek between the San Antonio Creek confluence and Calaveras Dam. The Er-Con mat is approximately 200 feet long, 70 feet wide, totaling 0.03 acres.

The project is centrally focused on restoration of fish passage through removal of the Er-Con mat. The existing L303 pipe crossing Alameda Creek is operating in an effective and safe manner and the intent of this project is solely to restore ecological function to benefit fish and riparian habitat in upper Alameda Creek. Pipeline L303 will be replaced with a new pipeline buried approximately 18 feet below the existing Alameda Creek grade to eliminate any need for an erosion control structure in the creek bed that limits fish migration and ecological function. The new pipeline will be located north of the existing alignment to allow for an open trench with shallow side slopes to account for soil stability during the construction excavation. The new pipeline will be connected to the existing pipeline outside of the creek banks, on both the east and west sides, at the same locations that the old line was cut out. The project will also regrade the Alameda Creek channel several hundred feet upstream and downstream of the pipeline crossing. No changes to hydrology or flooding regimes will result from the restoration activities, except for a slight reduction in the flood elevations and a reduction in the amount of erosion that otherwise would have occurred due to the 7-foot drop after Er-Con mat removal. Sediments upstream of the fish passage barrier are not contaminated, and sediment currently passes over the Er-Con mat in large flow events.

Removing the Er-Con mat and replacing the pipeline, as well as the subsequent grading and planting, will require dewatering Alameda Creek through the project site. The diversion system will likely consist of a coffer dam (likely supersacks filled with sand/gravel from the project site, with a heavy-duty plastic covering for impermeability) upstream of the project site, and a pipeline along the floodplain ending back in Alameda Creek below the project site. Where project activities would cause disturbance, invasive species will be removed and appropriately disposed of to eliminate the local seed source within the project grading footprint.

Following site prep and dewatering, PG&E will enter the project site to begin installing the new 36-inch pipeline. The new proposed pipeline will be offset approximately 114 feet north of its current location. The new line would be installed via open cut/direct trenching. PG&E will manage dewatering of the open trench Options for disposal of hydrotest water and groundwater include discharge to land or surface water. Discharge to land or surface water for all gas utility projects in California are governed by State Gas Utility Permit (WDR #: 2017-0029-DWQ, WDID: NGU001). All sampling, filtration, and discharge land or surface water will be done in accordance with this general permit: specific requirements may be added if required by the property owner. If discharge to land and surface water are not feasible (due to water quality, volume, and/or other factors), groundwater and test water may

be characterized and transported by PG&E's authorized waste hauler for disposal at a permitted offsite wastewater treatment and disposal facility.

After PG&E backfills their trench and removes the old pipeline, Alameda Creek will be regraded to remove the elevation difference between the Alameda Creek channel bed upstream and downstream of the Er-Con mat. Finally, regrading will provide space for a natural channel morphology and a starting point for natural sediment transport processes to reestablish gravel bars and pools beyond the project reach. Excavators, loaders, and dozers as well as haul trucks will be used to spread the soil, gravel, and cobble along approximately 2,000 linear feet of Alameda Creek. The project will then be revegetated with native plants. Approximately 5 acres will be planted with approximately 3,280 individual native tree and shrubs.

4.0 REGULATORY SETTING

Regulatory authority over biological resources is shared by federal, state, and local agencies under a variety of laws, ordinances, regulations, and statutes. Below, we provide a summary of the regulatory authorities with a nexus to the project, and a brief discussion on applicability to the proposed project. More in-depth analyses are provided in Section 6.0 (Results) and Section 7.0 (Recommended Avoidance and Minimization Measures).

4.1 Federal

4.1.1 Federal Endangered Species Act

The Federal Endangered Species Act (FESA) provides protection for federally listed endangered and threatened species and their habitats. A project may obtain permission to take federally listed species in one of two ways: a Section 10 Habitat Conservation Plan (HCP) issued to a non-federal entity or a Section 7 Biological Opinion from the USFWS and/or the National Oceanic and Atmospheric Administration (NOAA) issued to another federal agency that funds or permits an action (e.g., USACE). Under either Section of the FESA, adverse impacts to protected species are avoided, minimized, and mitigated. Both cases require consultation with the USFWS and/or NMFS, which ultimately issue a Letter of Concurrence for an informal consultation (May Affect, Not Likely to Adversely Affect determination) or a Biological Opinion (BO) determining whether the federally listed species may be incidentally taken pursuant to the proposed action and authorizing incidental take.

This project has a federal lead agency (National Marine Fisheries Service) who is funding the project, and therefore the Project will receive FESA compliance through Section 7. This Project fits within the project description of the Programmatic Biological Opinion (PBO) for Restoration Projects from the USFWS, issued in August 2022, as well as the PBO for Restoration Projects from NMFS. Therefore, the PBO forms will be submitted to the appropriate agencies to document and obtain compliance with the FESA. This permitting pathway does not require a Letter of Concurrence or a BO, since the BO was already issued.

Instead, each agency simply signs the PBO form after working with the federal action agency (i.e. USACE) and project proponent to modify any measures required.

FESA Section 9 prohibits all persons and agencies from take of threatened and endangered species without exception (Section 10). Exceptions to Section 9 prohibitions include Section 10 HCP and obtaining a BO/PBO under Section 7 of FESA as described above. Those who violate this mandate face civil and criminal penalties, including civil fines of up to $25,000 per violation, as well as criminal penalties of up to $50,000 and imprisonment for one year.

4.1.1.1 Applicability to the Proposed Project

There is potential for federally listed species to utilize Alameda Creek and to use the project site for overland travel and refugia. There is no federally-designated critical habitat on the project site. Alameda Creek could be utilized by steelhead (Central California Coast Distinct Population Segment [CCC DPS], *Oncorhynchus mykiss irideus*). The upland habitat could be used by California red-legged frog (*Rana draytonii*) for dispersal but will only temporarily be impacted, and the overall function of the habitat will not change. In addition, the upland habitat of the project site has been highly disturbed historically. This has reduced the quality of the upland habitat and diminished the number of burrows present on the site. Avoidance and Minimization Measures (AMMs, Section 7.0) will be implemented to avoid and protect special-status species. With the implementation of AMMs, the potential to impact federally listed species will be minimal.

4.1.2 Migratory Bird Treaty Act of 1918

The Migratory Bird Treaty Act (MBTA) (16 USC §703–711), as administered by the USFWS, makes it unlawful to "pursue, hunt, take, capture, kill, attempt to take, capture or kill, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export at any time, or in any manner, any migratory bird, or any part, nest, or egg of any such bird." This includes direct and indirect acts, except for harassment and habitat modification, which are not included unless they result in direct loss of birds, nests, or eggs.

4.1.2.1 Applicability to the Proposed Project

The project site may provide suitable nesting habitat for common passerine (songbird) species, specifically for avian species that nest on the ground or within trees on the project site or in the immediate vicinity. Passerine and raptor (bird of prey) species are protected pursuant to the MBTA. As such, prior to commencement of project-related activities, a preconstruction survey should be performed, and active nests detected should be provided with an appropriately sized non-disturbance buffer (likely 250 feet for passerines and 500 feet for raptors).

4.1.3 Bald and Golden Eagle Protection Act of 1940

The Bald and Golden Eagle Protection Act (BGEPA, 16 USC. 668-668c) prohibits anyone from taking, possessing, or transporting a bald eagle (*Haliaeetus leucocephalus*) or golden eagle (*Aquila chrysaetos*) or the parts, nests, or eggs of such birds without prior authorization. This includes inactive nests as well as active nests. Per the Act, "take" means to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb." Any activity that directly or indirectly leads to "take" are prohibited without a permit.

4.1.3.1 Applicability to the Proposed Project

The project site is within range of bald and golden eagles but does not provide suitable nesting, or preferred foraging habitat. Accordingly, no further considerations under the BGEPA are anticipated for the proposed project.

4.1.4 Magnuson-Stevens Fishery Conservation and Management Act

Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), Alameda Creek is designated as Essential Fish Habitat (EFH) for coho (*Oncorhynchus kisutch*) and chinook salmon (*Oncorhynchus tshawytscha*, U.S. Geologic Survey [USGS] Hydrologic Unit Code 18050004). EFH is described as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (U.S.C. 1853 95-354, 99-659, 101-627, 104-297).

The Magnuson-Stevens Act mandates that federal agencies conduct an EFH consultation with the NMFS regarding any actions authorized, funded, or undertaken that may adversely affect EFH. "Adverse effects" can refer to "direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystems components" (50 CFR § 600.910). Adverse effects to EFH may result from actions occurring within EFH or outside of EFH, including site-specific or habitat-wide impacts as well as individual, cumulative, and synergistic consequences as a result of actions.

4.1.4.1 Applicability to the Proposed Project

Alameda Creek comprises EFH that is protected pursuant to the Magnuson-Stevens Act. The proposed project will employ water diversion by way of an upstream cofferdam with an outflow pipe or channel that carries flows from Alameda Creek past the work area to a point downstream of the project. This diversion will temporarily affect Alameda Creek's function as EFH, but impacts will be short-lived and will not pose a long-term effect to the function of the creek system. No permanent structures or barriers to fish movement along the corridor will occur as a result of the proposed project – on the contrary, the purpose of the project is to remove a permanent structure to benefit fish passage. With implementation of the mitigation measures discussed in Section 7.0, impacts to EFH will be minimal and relatively short in duration, and implementation of the project will lead to a long-term net benefit to EFH.

4.1.5 U.S. Army Corps of Engineers—Clean Water Act—Section 404

USACE regulates activities within "waters of the United States" pursuant to congressional acts: Section 404 of the Clean Water Act (CWA; 1977, as amended) and Section 10 of the Rivers and Harbors Act of 1899. Section 404 of the CWA (1977, as amended) requires a permit for discharge of dredged or fill material into waters of the United States. Under Section 404, waters of the United States are defined as all waters that are used currently, were used in the past, or may be used in the future for interstate or foreign commerce, including waters subject to the ebb and flow of the tide up to the high tide line. Additionally, areas such as wetlands, rivers, and streams (including intermittent streams and tributaries) are considered waters of the United States. The extent of wetlands is determined by examining the presence of hydrophytic vegetation, hydric soils, and wetland hydrology. Under normal circumstances, all three of these parameters must be satisfied for an area to be considered a jurisdictional wetland under Section 404 of the CWA. Fill within wetlands is regulated under the CWA through a Nationwide Permit Program and an Individual Permit Program.

4.1.5.1 Applicability to the Proposed Project

Alameda Creek on the project site falls under USACE jurisdiction pursuant to Section 404 of the CWA. Thus, prior authorization from USACE pursuant to Section 404 of the CWA will be required. Sequoia understands that Nationwide Permit (NWP) 27 (Aquatic Habitat Restoration, Enhancement, and Establishment Activities) will likely be required.

4.2 State

4.2.1 California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires public agencies in California to analyze and disclose potential environmental impacts associated with a proposed discretionary project that the agency will carry out, fund, or approve. Any significant impact must be mitigated to the extent feasible, below the threshold of significance.

4.2.1.1 Applicability to the Proposed Project

This document may be used to inform analysis of potential environmental impacts that may occur as a result of the proposed project. This report was prepared to provide the results of Sequoia's biological site assessment and desktop review for the proposed project. Our analysis provides a description of existing biological resources on the project site and sensitive biological resources that have potential to occur on the project site, a discussion of potential effects to sensitive biological resources that could result from the proposed project, and recommended AMMs and Best Management Practices (BMPs) to be implemented to avoid adverse effects to sensitive biological resources.

Though CEQA applies to all discretionary projects in California, through the Cutting the Green Tape initiative, the CDFW created a Statutory Exemption for Restoration Projects (SERP) from CEQA under

Section 21080.56 of the California Public Resources Code. SERP eligibility is evaluated on a case-by-case basis with the Cutting the Green Tape Program established by the CDFW, who is responsible for coordinating with CEQA lead agencies seeking SERP concurrence.

The CEQA lead agency for this project is the San Francisco Planning Department. They will complete the CEQA determination, though CalTrout has been involved in early consultation with the CDFW's Cutting the Green Tape Program regarding the eligibility of the project for SERP. This report will be provided to CDFW to further evaluate project eligibility under SERP.

4.2.2 California Endangered Species Act

The CDFW is responsible for administering the California Endangered Species Act (CESA). Section 2080 of the California Fish and Game Code (CFGC) prohibits take of any species that the Fish and Game Commission determines to be an endangered species or a threatened species. However, CESA does allow for take that is incidental to otherwise lawful development projects. Sections 2081(b) and (c) of CESA allow the CDFW to issue an incidental take permit for a state-listed threatened and endangered species only if specific criteria are met (i.e., the effects of the authorized take are minimized and fully mitigated). The actions needed to fulfill this requirement should be approximately proportional to the effect of the permitted taking on the species. If multiple options are available to meet this requirement, the chosen actions should align with the applicant's goals as much as possible. All required actions must be feasible and able to be successfully carried out.

4.2.2.1 Applicability to the Proposed Project

There is potential for CESA protected species to utilize the project site. Historically, the project site has been highly disturbed through previous projects and adjacent surface mining activity. As a result, the quality of the upland habitat is diminished as a result of regular disturbance. Limited suitable habitat is present for special-status plants or animals. With the implementation of BMPs and AMMs, species protected by CESA would likely not be impacted by the proposed project. However, Sequoia understands that CDFW intends to issue a Restoration Consistency Determination through the Cutting the Green Tape Program. If the federal incidental take statement is found to be consistent with CESA, the Restoration Consistency Determination will be issued, and no further authorization or approval under CESA is necessary (CDFW 2024b).

4.2.3 California Fish and Game Code—Lake or Streambed Alteration Agreement

The CDFW regulates activities within watercourses, lakes, and in-stream reservoirs. Under Section 1602 of CFGC—often referred to as the Lake or Streambed Alteration Agreement—the CDFW regulates activities that would "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream or lake". Each of these activities requires a Section 1602 permit. Section 1602 also

identifies the process through which an applicant can come to an agreement with the state regarding the protection of these resources, both during and following construction.

4.2.3.1 Applicability to the Proposed Project

Impacts to the bed, bank, and/or channel of Alameda Creek would be regulated by the CDFW pursuant to Section 1602 of the CFGC. As such, a Section 1602 agreement (i.e., Streambed Alteration Agreement) from the CDFW will be required for the proposed project (see Section 7.0).

4.2.4 California Fish and Game Code—Nesting Birds

Section 3503 of the CFGC states that it is unlawful to take, possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided by the CFGC or any regulation made pursuant thereto. Section 3503.5 of the CFGC protects all birds of prey (raptors) and their eggs and nests. Section 3513 states that it is unlawful to take or possess any migratory nongame bird as designated in the MBTA.

4.2.4.1 Applicability to the Proposed Project

These regulations could require that elements of this Project (specifically, vegetation removal or construction near nest trees) be reduced or eliminated during critical phases of the nesting cycle unless surveys by a qualified biologist demonstrate that nests, eggs, or nesting birds will not be disturbed, which may be subject to approval by the CDFW and/or the USFWS.

4.2.5 California Fish and Game Code—Fully Protected Species, Species of Special Concern, and Nongame Mammals

The “fully protected” designation was the CDFW’s first attempt to identify and give specific protections to animals that were rare or in danger of extinction. CFGC sections pertaining to “fully protected” species (birds at §3503 and §3511, mammals at §4150 and §4700, amphibians and reptiles at §5050, and fish at §5515) state that these species “may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected species;” however, take may be authorized for necessary scientific research (CDFW 2024a).

California Species of Special Concern are defined as animals not listed under CESA or FESA. These species are of concern to the CDFW because of rapid decline in populations that could result in listing or because they historically occurred in low numbers and known threats to their continued existence are present. This designation is intended to result in special consideration for these animals by the CDFW, project proponents, and consultants, among others, and is also intended to encourage collection of additional information on these species and risks to their persistence. Although these species are afforded no special legal status, they are provided special consideration under CEQA during project review.

Sections 4150–4155 of the CFGC protect nongame mammals, including bats. Section 4150 states "a mammal occurring naturally in California that is not a game mammal, fully protected mammal, or furbearing mammal is a nongame mammal". Nongame mammals that may be taken or possessed are primarily those that cause crop or property damage. Bats are classified as a nongame mammal and are protected under the CFGC.

4.2.5.1 Applicability to the Proposed Project

Fully protected birds (CFGC §3511) including the California condor (*Gymnogyps californianus*), California least tern (*Sterna antillarum browni*), bald eagle (*Haliaeetus leucocephalus*), and golden eagle (*Aquila chrysaetos*) have ranges that overlap with the project area and were identified in desktop review results (Section 6). These species are not expected to occur onsite, but any form of take of these species is prohibited.

The project site provides suitable roosting/maternity habitat for bats protected pursuant to CFGC Section 4150 and suitable migration/dispersal habitat for amphibians and other animals listed as California Species of Special Concern—specifically, pallid bat (*Antrozous pallidus*), San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), western pond turtle (*Emys marmorata*), California red-legged frog, and CCC DPS steelhead. As such, preconstruction surveys for these species will be conducted prior to project commencement to ensure no direct mortality of these species occurs as a result of the proposed project (Section 7.0).

4.2.6 Regional Water Quality Control Board—Clean Water Act—Section 401 and Porter-Cologne Water Quality Control Act

The State Water Resources Control Board (SWRCB) and RWQCB regulate activities in "waters of the state" (which includes wetlands) through two sources of legal authority: Section 401 of the CWA and the Porter-Cologne Water Quality Control Act (Porter-Cologne Act) (Wat. Code, Div. 7, §13000 et seq.). The Section 401 water quality certification program allows the state to ensure that activities requiring a federal permit or license comply with state water quality standards. Though similar to Section 404 and 401 requirements, the Porter-Cologne Act applies to all "waters of the state" rather than to the portions thereof below ordinary high-water mark (OHWM). "Waters of the state" is defined as any surface water or groundwater, including saline waters, within the boundaries of the state (Water Code §13050[e]). Waters under RWQCB regulation include both the top of bank and isolated water or wetland features. The Porter-Cologne Act mandates that anyone discharging or planning to discharge waste in any area that could impact the quality of the state's waters must submit a waste discharge report.

The SWRCB defines an area as a wetland if it contains wetland hydrology, wetland soils, and (if vegetated) wetland plants. This definition differs from the federal Waters of the US because areas lacking vegetation can also be wetlands.

4.2.6.1 Applicability to the Proposed Project

Alameda Creek and any seasonal wetlands on the project site fall under the RWQCB/SWRCB's jurisdiction pursuant to Section 401 of the CWA. Impacts to waters of the state typically require mitigation to the satisfaction of the RWQCB prior to issuance of a permit for impacts to these features; however, the SWRCB has permitting pathways for restoration pathways that do not require compensatory mitigation due to long-term net benefit to aquatic systems. Potential RWQCB permitting options include the Statewide Restoration General Order (No. WQ 2022-0048-DWQ) or completing the standard Section 401 certification application and submitting the project as an Ecological Enhancement or Restoration Project.

To further comply with the Porter-Cologne Act, adequate pre- and post-construction BMPs will be incorporated into project implementation plans to protect downstream waterways. In addition, the project will develop a Stormwater Pollution Prevention Plan that will be submitted to the County of Alameda as a condition of project approval demonstrating BMPs that will be installed/implemented prior to project commencement. Stormwater protection and treatment measures will be implemented to ensure that the proposed project remains in compliance with the Porter-Cologne Act.

A delineation of aquatic features for the project area was conducted on May 10 and 11, 2023, by MA-ARS wetland delineators, Professional Geologist Geoff Hales, and Riparian Botanist Amy Livingston and compiled into a report in 2024 (McBain 2024a).

4.3 Local

4.3.1 Alameda County General Plan

The Alameda County General Plan includes a Biological Resource Protection Plan in Chapter 7, which provides an overview of the significant biological resources in Castro Valley, focusing on creek corridors, canyons, and hillside open space areas. It emphasizes the importance of protecting these resources, particularly through the creation of a Biological Resources Overlay Zone (BROZ), which imposes special development and review requirements on properties with significant biological resources. The document identifies sensitive habitats, wildlife corridors, and special-status species within the planning area, detailing the associated vegetation types and the potential impact of development on these habitats. The BROZ map delineates priority levels based on habitat sensitivity and species presence, guiding the level of development allowed and design features necessary to protect biological resources. The document lists goals and policies in relation to biological resources, including the need to protect wildlife corridors, such as creeks, protecting riparian habitat from any new developments.

4.3.1.1 Applicability to the Proposed Project

The proposed project is not in direct conflict with the Alameda County General Plan's Biological Resources section, as the purpose of the project is to improve fish habitat and bolster native vegetation, and not to create new developments.

4.3.2 Alameda County Tree Ordinance

The County Board of Supervisors has a tree ordinance to manage tree planting, maintenance, and removal. These regulations aim to ensure diversity in tree species, promote public health and safety, and balance individual property rights with community interests. The ordinance prohibits harmful actions such as topping or damaging trees, and it mandates proper procedures for tree planting and maintenance. Additionally, it outlines procedures for obtaining encroachment permits and addresses circumstances for tree removal.

4.3.2.1 Applicability to the Proposed Project

The Alameda County Tree Ordinance is not applicable to the project at hand, as it only applies to trees within the "right-of-way," which is defined broadly as land that is reserved for use as a public roadway.

5.0 METHODS

Sequoia performed various desktop and in-field assessments. Using field data and publicly available data online, Sequoia evaluated the presence of and/or likelihood of occurrence of sensitive resources on the project site.

5.1 Definitions

5.1.1 Special-Status Species

For the purposes of this document, special-status species include:

- Plant, fish, and wildlife species listed as Threatened or Endangered under FESA (50 CFR 17) and candidates for listing under the statute
- Plant, fish, and wildlife species listed as Threatened or Endangered under CESA, the laws and regulations for implementing CESA as defined in CFGC §2050 et seq. and the California Code of Regulations (CCR) 14 CCR §670.1 et seq., and candidates for listing under the statute (CFGC §2068)
- Species meeting the definition of "Rare" or "Endangered" under CEQA Guidelines 14 CCR §15125 (c) and/or 14 CCR §15380, including plants listed on CNPS Lists 1A, 1B, 2A, and 2B, 3, and 4; plants occurring on CNPS Ranks 3 and 4 are "plants about which more information is necessary," and "plants of limited distribution" (CNPS 2001), and these plants may be included as special-status species on a case-by-case basis due to local significance or recent biological information (see additional definition information below)
- USFWS Birds of Conservation Concern
- Species protected by the CFGC, including nesting birds and Fully Protected species (CFGC §§ 3511, 4700, 5050, and 5515)
- Species of Special Concern, as designated by the CDFW and required by 14 CCR §15380

- Avian species protected under the MBTA of 1918

State and federal threatened, endangered, or species of special concern are discussed above. Additional information regarding the California Native Plant Society rank species is provided below.

5.1.1.1 CNPS Rank Species

The CNPS maintains an inventory of special-status plant species. This inventory has four lists of plants with varying rarity. These lists are Rank 1, Rank 2, Rank 3, and Rank 4. Although plants on these lists have no formal legal protection (unless they are also state- or federally listed species), this document includes CNPS Rank 1 and 2 species. Rank 1 and 2 species are defined below:

- Rank 1A: Presumed extinct in California
- Rank 1B: Rare, threatened, or endangered in California and elsewhere
- Rank 2A: Plants presumed extirpated in California but more common elsewhere
- Rank 2B: Rare, threatened, or endangered in California but more common elsewhere

5.2 Desktop Review

Sequoia reviewed relevant databases and literature for baseline information regarding biological resources occurring and potentially occurring on the project site and the immediate vicinity. The review included the following sources:

- CNPS Online Inventory of Rare and Endangered Plants of California for the Alameda, California and eight surrounding USGS 7.5-minute quadrangles (CNPS 2024)
- NMFS Online Species List Query (NMFS 2024, Attachment B)
- CalFish, Lower Alameda Creek Watershed (Attachment C)
- Pacific Lamprey, Western River Lamprey, and Western Brook Lamprey Range Maps (Moyle et al. 2015; Attachment D)
- USFWS National Wetlands Inventory (USFWS 2024c, Figure 3)
- US Geological Survey (USGS) National Hydrography Dataset for Soils (Figure 4)
- Land Cover Types derived from McBain Fine-Scale Land Cover Mapping (McBain 2024b, Figure 5)
- USFWS Information for Planning and Consultation (IPaC) search (USFWS 2024a; Attachment A) and Critical Habitat Portal (USFWS 2024b; Figure 7)
- California Natural Diversity Database (CNDDB) for the project polygon and a 3-mile buffer (CNDDB 2024a, CNDDB 2024b, CNDDB 2024c, Figures 6 and 8)
- Aerial photographs (Google Earth 2024)

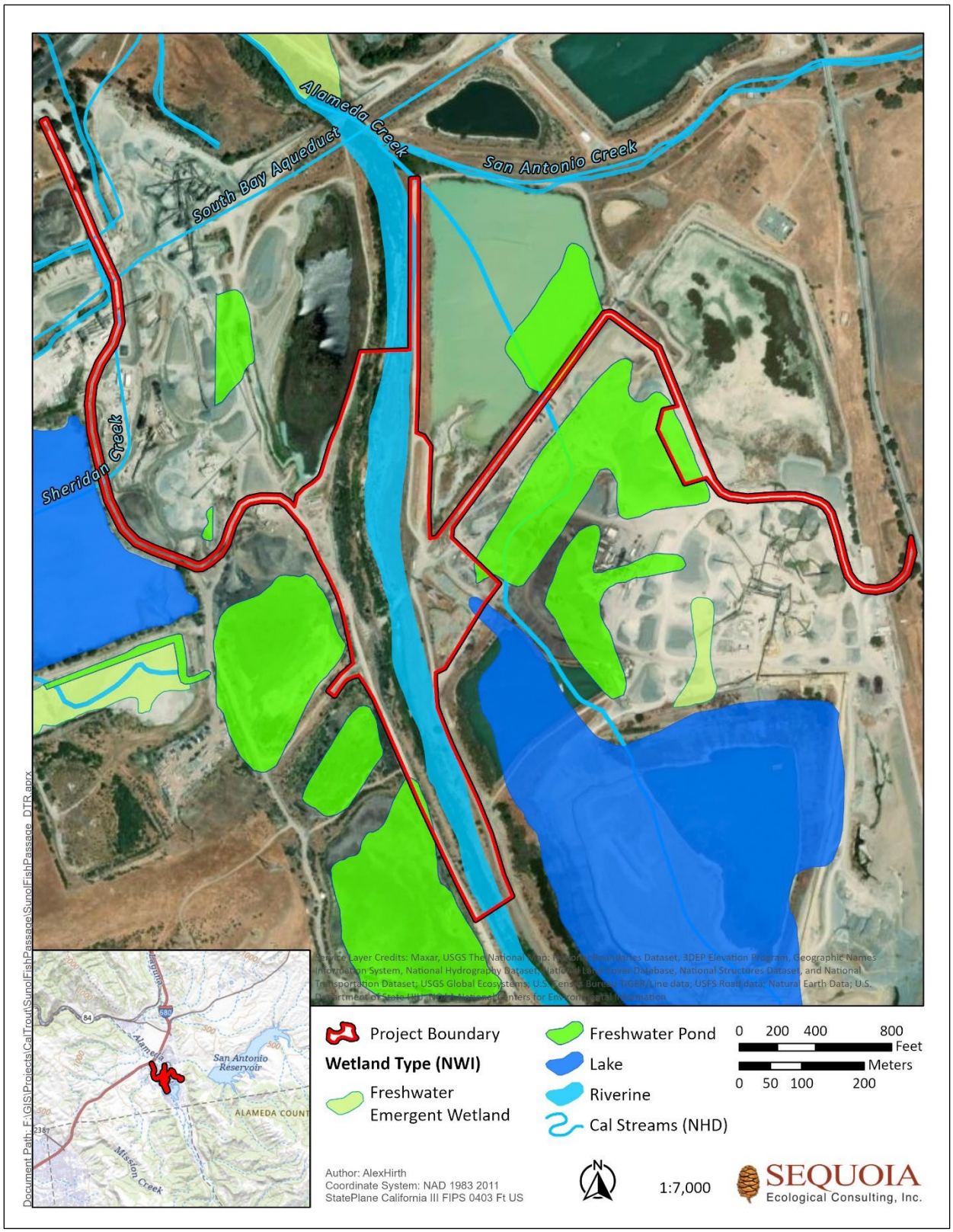

Figure 3. USFWS National Wetlands Inventory on the Sunol Valley Fish Passage Project Site.

5.3 Site Reconnaissance Survey

Sequoia biologist Aurelie Hening and botanists Andrew Ford and Zoe Minervini-Zick conducted surveys on the project site on April 15, 2024, to record biological resources and assess the limits of areas potentially regulated by resource agencies (i.e., preliminary hydrology analysis). Surveys involved searching all habitats on the site and recording all plant and animal species observed. Sequoia cross-referenced the habitats occurring on the project site with the habitat requirements of regional special status species to determine if the proposed project could directly or indirectly impact these species. Any special-status species or suitable habitat was documented.

5.3.1 Potential to Occur

Following the site assessment, potential for special-status species to occur on the project site was evaluated according to the following criteria:

- *No Potential*: Habitat on and adjacent to the site is clearly unsuitable for the species' requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime)
- *Low Potential*: Few of the habitat components meeting the species' requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality; the species is not likely to be found on the site
- *Moderate Potential*: Some of the habitat components meeting the species' requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable; the species has a moderate probability of being found on the site
- *High Potential*: All of the habitat components meeting the species' requirements are present, and/or most of the habitat on or adjacent to the site is highly suitable; the species has a high probability of being found on the site
- *Present*: Species is observed on the site or has been recorded (i.e., CNDDB, other reports) on the site recently

6.0 RESULTS

The results of the desktop review and site assessment conducted on April 15, 2024, are presented below.

6.1 Topography and Hydrology

The assessment area is located within the Sunol Valley, which is located approximately 10 miles east of south San Francisco Bay and is bordered to the east by the Inner California Coast Range. The assessment area lies on the western edge of the La Costa Valley USGS 7.5-minute quadrangle map within the Alameda Creek corridor, in the upper Alameda Creek watershed/Sunol Valley reach.

The hydrology of the study area is influenced by rainfall and mirrors the "flashy" nature of most central California coastal streams. These streams experience short, intense periods of high flow, followed by brief recession and prolonged periods of low or intermittent baseflows. Following the initial storms of the season, streamflow in Alameda Creek quickly reacts to rainfall in the steep upper watershed tributaries. However, more significant antecedent rainfall is needed to elevate the groundwater table in the lower reaches, particularly in the project reach, which is a highly permeable alluvial valley. In addition to natural factors, upstream flow regulation at Calaveras Dam and groundwater lowering from nearby gravel mining pits have reduced baseflows, creating a dynamic longitudinal streamflow gradient in the project area (McBain 2024a). Annual peak flow events typically occur from late fall through early spring (McBain 2024a).

Streamflow in Alameda Creek is regulated by 3 dams and a diversion, including the Alameda Creek Diversion Dam (ACDD, upper Alameda Creek), Calaveras Dam (Calaveras Creek), and Turner Dam (San Antonio Creek). Of these, ACDD and Calaveras Dam regulate flows in the project area, and Turner Dam regulates flow on San Antonio Creek, which enters Alameda Creek downstream of the project area. Additionally, adjacent gravel quarry operations capture groundwater and return it to Alameda Creek near the San Antonio Creek confluence through pumping. Prior to January 2019, there were no prior flow release requirements from Calaveras Dam, and the project area was typically dry in the summer and fall with deep groundwater levels.

New instream flow management recommendations required after the Calaveras Dam Replacement Project (CDRP) included instream flow schedules for Calaveras Dam and minimum bypasses and diversions for ACDD. Following the completion of the CDRP, the SFPUC began implementing the instream flow schedule for Calaveras Dam and ACDD in January 2019. Now, Alameda Creek through the project area is wet in most years in the summer and fall.

The project reach lies between two gravel mining operations: Martin Marietta Materials to the west and DeSilva Gates Aggregates to the east. The Alameda Creek corridor between these quarries is largely manmade, having been rerouted in 1979. During this rerouting, the creek was confined to a narrow corridor and separated from the adjacent quarries by tall artificial berms. Consequently, artificial tops-of-bank were created on both sides, and upland vegetation has grown throughout the creek corridor, except within the low-flow channels and the active floodplain within the OHWM (Swaim 2017).

6.2 Soils

The Natural Resources Conservation Service (NRCS) Web Soil Survey data were reviewed for the study area. The NRCS soil survey mapped Yolo loam over gravel on a majority of the project site (NRCS 2024); Figure 4). Yolo loam over gravel is a well-drained soil, occurring on 0 to 3 percent slopes on valley floors. Typical horizons include loam, over loam, over gravelly sand. The soil survey report listed minor components on the soil map, including Zamora silt loam (0 to 4 percent slopes), Clear Lake clay (0 to 3 percent slopes), and Danville silt clay loam (3 to 10 percent slope) (NRCS 2024). The remaining areas were mapped as Gravel pits (NRCS 2024).

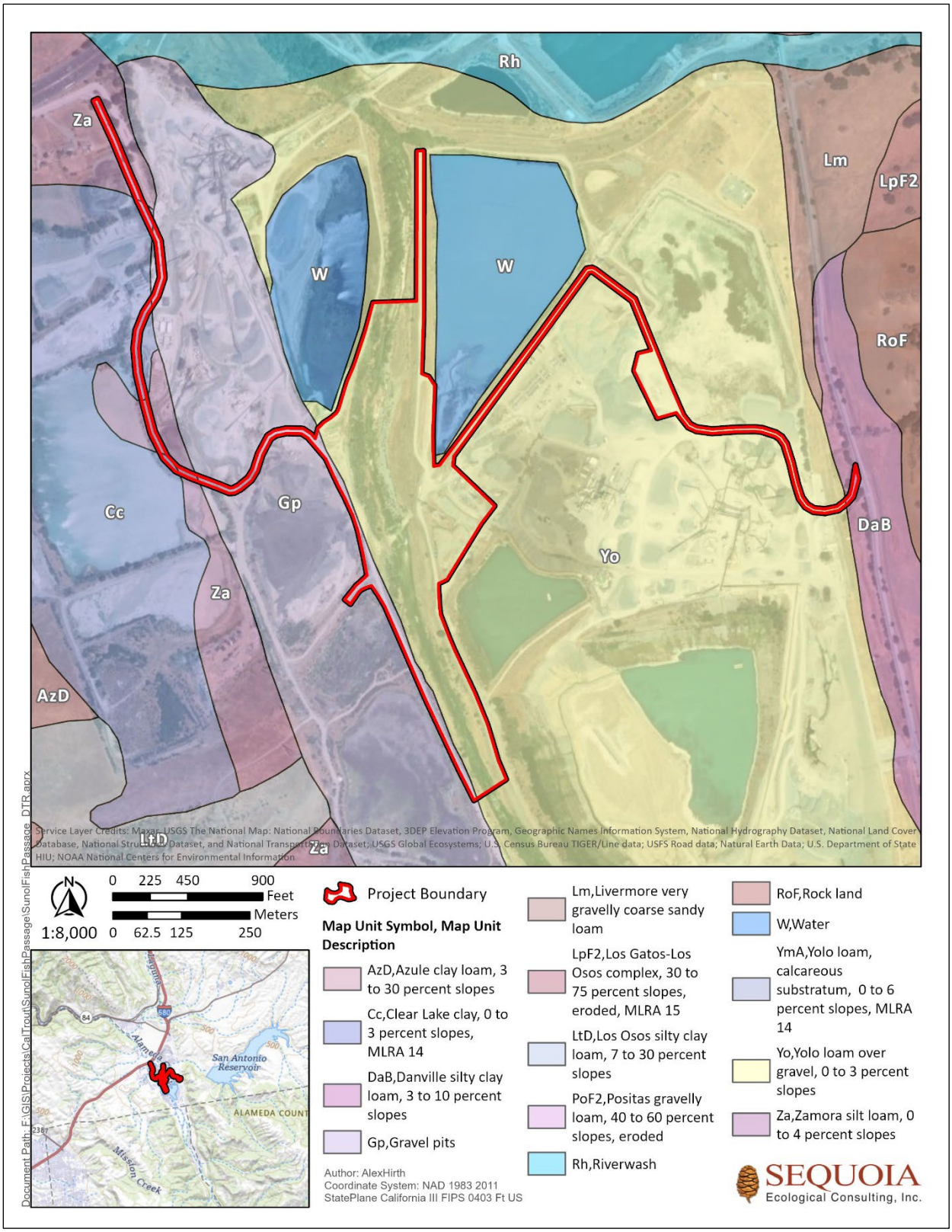

Figure 4. Soil Types on the Sunol Valley Fish Passage Project Site.

6.3 Plant Communities and Wildlife Habitats

Vegetated cover types mapped by McBain Associates, Applied River Sciences in 2023 within the project area include both wetland and upland cover types. Emergent wetland vegetation consists of broad-leaved cattail (*Typha latifolia*), which occurs along the channel margins of Alameda Creek. Riparian cover types within the study area included mature patches of red willow (*Salix laevigata*), Fremont cottonwood (*Populus fremontii*), white alder (*Alnus rhombifolia*), and black cottonwood (*Populus trichocarpa*). Mulefat (*Baccharis salicifolia*) was the predominant riparian shrub species and generally occurred below OHW. Dense patches of mulefat grew on creek banks, alongside channels, and within shallow portions of the stream bed of Alameda Creek. Other riparian shrubs included narrowleaf willow (*Salix exigua*) and arroyo willow (*Salix lasiolepis*). The predominant upland cover types included coyote brush (*Baccharis pilularis*) and non-native grassland. Coyote brush and non-native grassland generally occurred above the delineated OHWM. Less dominant upland cover types included California coffeeberry (*Frangula californica*) and California sagebrush (*Artemisia californica*). Patches of invasive upland plants within the study area included Pampas grass (*Cortaderia selloana*), and fennel (*Foeniculum vulgare*) (McBain 2024a).

On April 15, 2024, Sequoia staff conducted a survey of the project site and characterized vegetation present. During the survey, biologists also documented plant and animal species observed on the project site (Tables 1 and 2), though for the purposes of this report the level of effort is not meant to be construed as a protocol-level floristic botanical survey. Nomenclature used for plant names follows *The Jepson Manual* Second Edition (Baldwin et al. 2012), while nomenclature used for animals follows the CDFW's *Complete list of amphibian, reptile, bird, and mammal species in California* (2016). As shown in Figure 5, several land cover types were mapped on the project site (McBain 2024b, Sawyer and Keeler-Wolf 1995); after ground-truthing, these were consolidated into six distinct habitat types, as described below.

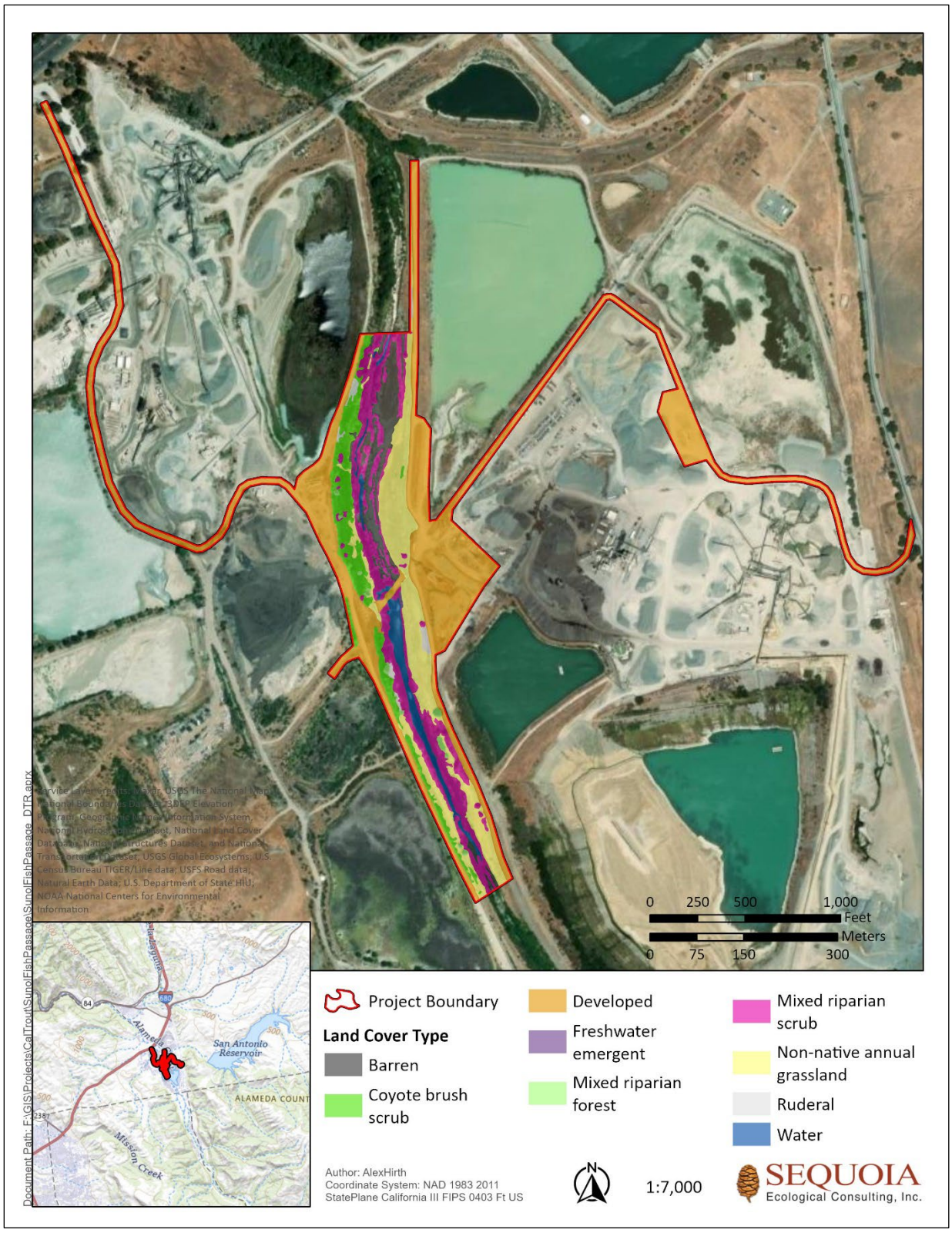

Figure 5. Land Cover Types on the Sunol Valley Fish Passage Project Site.

Table 1. Plant Species Observed on the Sunol Valley Fish Passage Project Site.

Scientific Name	Common Name	Family Name	Native?
Acmispon wrangelianus	bird's foot trefoil	Fabaceae	N
Aesculus californica	California buckeye	Sapindaceae	Y
Alnus rhombifolia	white alder	Betulaceae	Y
Amsinckia menziesii	farmer's fiddleneck	Boraginaceae	Y
Anthemis cotula	stinking chamomile	Asteraceae	N
Artemisia californica	California sagebrush	Asteraceae	Y
Artemisia douglasiana	Douglas's mugwort	Asteraceae	Y
Asclepias fascicularis	narrowleaf milkweed	Apocynaceae	Y
Avena fatua	wild oat	Poaceae	N
Baccharis pilularis ssp. *consanguinea*	coyote brush	Asteraceae	Y
Baccharis salicifolia	mule fat	Asteraceae	Y
Brachypodium distachyon	purple false brome	Poaceae	N
Brassica nigra	black mustard	Brassicaceae	N
Brickellia californica	California brickellbush	Asteraceae	Y
Bromus diandrus	ripgut brome	Poaceae	N
Bromus hordeaceus	soft chess	Poaceae	N
Calystegia purpurea	western false bindweed	Convolvulaceae	Y
Capsella bursa-pastoris	shepherd's purse	Brassicaceae	N
Cardamine californica	milk maids	Brassicaceae	Y
Cardamine oligosperma	Idaho bittercress	Brassicaceae	Y
Carduus pycnocephalus ssp. *pycnocephalus*	Italian thistle	Asteraceae	N
Carduus tenuiflorus	winged plumeless thistle	Asteraceae	N
Carex densa	dense sedge	Cyperaceae	Y
Centaurea melitensis	tocalote	Asteraceae	N
Centaurea solstitialis	yellow star thistle	Asteraceae	N
Cerastium glomeratum	chickweed	Caryophyllaceae	N
Chlorogalum pomeridianum ssp. *pomeridianum*	wavy-leaved soaproot	Agavaceae	Y
Cirsium vulgare	bull thistle	Asteraceae	N

Scientific Name	Common Name	Family Name	Native?
Claytonia parviflora	miner's lettuce	Montiaceae	Y
Claytonia perfoliate	miner's lettuce	Montiaceae	Y
Conium maculatum	poison hemlock	Apiaceae	N
Convolvulus arvensis	field bindweed	Convolvulaceae	N
Cortaderia jubata	jubata grass	Poaceae	N
Cotula coronopifolia	brass buttons	Asteraceae	N
Crassula connata	pygmyweed	Crassulaceae	Y
Crypsis schoenoides	swamp picklegrass	Poaceae	N
Cyperus eragrostis	tall flatsedge	Cyperaceae	Y
Datisca glomerata	Durango root	Datiscaceae	Y
Datura wrightii	jimsonweed	Solanaceae	Y
Diplacus aurantiacus	sticky bush monkeyflower	Phyrmaceae	Y
Erodium botrys	storksbill	Geraniaceae	N
Erodium cicutarium	redstem filaree	Geraniaceae	N
Erodium moschatum	whitestem filaree	Geraniaceae	N
Erythranthe guttata	seep-spring monkeyflower	Phrymaceae	Y
Eschscholzia californica	California poppy	Papaveraceae	Y
Euphorbia peplus	petty spurge	Euphorbiaceae	N
Festuca perennis	Italian ryegrass	Poaceae	N
Foeniculum vulgare	sweet fennel	Apiaceae	N
Galium aparine	common cleavers	Rubiaceae	Y
Geranium dissectum	cutleaf geranium	Geraniaceae	N
Geranium molle	dove's foot geranium	Geraniaceae	N
Geranium robertianum	herb Robert	Geraniaceae	N
Helenium puberulum	rosilla	Asteraceae	Y
Helminthotheca echioides	bristly ox tongue	Asteraceae	N
Heterotheca grandiflora	telegraph weed	Asteraceae	Y
Hirschfeldia incana	shortpod mustard	Brassicaceae	N
Hoita macrostachya	large leatherroot	Fabaceae	Y
Hordeum jubatum	foxtail barley	Poaceae	N

Scientific Name	Common Name	Family Name	Native?
Hordeum marinum ssp. *gussoneanum*	Mediterranean barley	Poaceae	N
Hordeum murinum ssp. *leporinum*	farmer's foxtail	Poaceae	N
Hypochaeris radicata	hairy cat's-ear	Asteraceae	N
Juncus bufonius	toad rush	Juncaceae	Y
Lepidium latifolium	perennial pepperweed	Brassicaceae	N
Logfia gallica	cottonrose	Asteraceae	N
Lupinus bicolor	miniature lupine	Fabaceae	Y
Lupinus nanus	sky lupine	Fabaceae	Y
Lupinus succulentus	arroyo lupine	Fabaceae	Y
Lysimachia arvensis	scarlet pimpernel	Myrsinaceae	N
Lythrum hyssopifolia	hyssop loosestrife	Lythraceae	N
Madia gracilis	grassy madia	Asteraceae	Y
Madia sativa	coast madia	Asteraceae	Y
Matricaria discoidea	pineappleweed	Asteraceae	Y
Medicago polymorpha	California bur clover	Fabaceae	N
Melilotus albus	white sweetclover	Fabaceae	N
Melilotus indicus	annual yellow sweetclover	Fabaceae	N
Mentha pulegium	pennyroyal	Lamiaceae	N
Nasturtium officinale	watercress	Brassicaceae	Y
Nicotiana glauca	tree tobacco	Solanaceae	N
Nicotiana quadrivalvis	Indian tobacco	Solanaceae	N
Pholistoma auritum	fiesta flower	Hydrophyllaceae	Y
Phoradendron leucarpum	oak mistletoe	Viscaceae	Y
Phyla nodiflora	common lippia	Verbenaceae	Y
Plantago lanceolata	English plantain	Plantaginaceae	N
Platanus racemosa	California sycamore	Platanaceae	Y
Poa annua	annual bluegrass	Poaceae	N
Polypogon monspeliensis	rabbitsfoot grass	Poaceae	N
Pseudognaphalium luteoalbum	Jersey cudweed	Asteraceae	N
Psilocarphus oregana	woolly marbles	Asteraceae	Y

Scientific Name	Common Name	Family Name	Native?
Quercus agrifolia	coast live oak	Fagaceae	Y
Quercus lobata	valley oak	Fagaceae	Y
Rorippa curvisiliqua	curvepod yellow cress	Brassicaceae	Y
Rubus armeniacus	Himalayan blackberry	Rosaceae	N
Rumex acetosella	sheep sorrel	Polygonaceae	N
Rumex crispus	curly dock	Polygonaceae	N
Rumex salicifolia	willow dock	Polygonaceae	N
Salix exigua	sandbar willow	Salicaceae	Y
Salix laevigata	red willow	Salicaceae	Y
Salix lasiandra	Pacific willow	Salicaceae	Y
Salix lasiolepis	arroyo willow	Salicaceae	Y
Sambucus mexicana	blue elderberry	Viburnaceae	Y
Sanicula crassicaulis	Pacific sanicle	Apiaceae	Y
Scrophularia californica	California bee plant	Scrophulariaceae	Y
Senecio vulgaris	common groundsel	Asteraceae	N
Silybum marianum	milk thistle	Asteraceae	N
Sisyrinchium bellum	blue-eyed grass	Iridaceae	Y
Solanum americanum	American black nightshade	Solanaceae	Y
Sonchus asper ssp. *asper*	spiny sow thistle	Asteraceae	N
Sonchus oleraceus	common sow thistle	Asteraceae	N
Spergularia rubra	red sandspurry	Caryophyllaceae	N
Stachys ajugoides	bugle hedgenettle	Lamiaceae	Y
Stellaria media	common chickweed	Caryophyllaceae	N
Stipa miliacea var. *miliacea*	smilo grass	Poaceae	N
Stipa pulchra	purple needle grass	Poaceae	Y
Thlaspi arvensis	field pennycress	Brassicaceae	N
Torilis arvensis	hedge parsley	Apiaceae	N
Toxicodendron diversilobum	poison oak	Anacardiaceae	Y
Trifolium dubium	lesser hop clover	Fabaceae	N
Trifolium fragiferum	strawberry clover	Fabaceae	N

Scientific Name	Common Name	Family Name	Native?
Trifolium hirtum	rose clover	Fabaceae	N
Trifolium willdenovii	tomcat clover	Fabaceae	Y
Typha domingensis	southern cattail	Typhaceae	Y
Urtica dioica	stinging nettle	Urticaceae	Y
Verbascum thapsus	woolly mullein	Scrophulariaceae	N
Verbena lasiostachys	western vervain	Verbenaceae	Y
Vicia sativa	common vetch	Fabaceae	N
Vicia villosa	hairy vetch	Fabaceae	N
Vinca major	greater periwinkle	Apocynaceae	N
Xanthium spinosum	spiny cockleburr	Asteraceae	N
Xanthium strumarium	cockleburr	Asteraceae	Y

Table 2. Wildlife Species Observed on Sunol Valley Fish Passage Project Site

Scientific Name	Common Name
Birds	
Aimophila ruficeps	rufous-crowned sparrow
Anas platyrhynchos	mallard
Aphelocoma californica	California scrub-jay
Branta canadensis	Canada goose
Butorides virescens	green heron
Calypte anna	Anna's hummingbird
Cathartes aura	turkey vulture
Charadrius vociferus	killdeer
Circus hudsonius	norther harrier
Corvus corax	common raven
Geothlypis trichas	common yellowthroat
Hirundo rustica	barn swallow
Hydroprogne caspia	Caspian tern
Leiothlypis celata	orange-crowned warbler
Melospiza melodia	song sparrow
Melozone crissalis	California towhee

Scientific Name	Common Name
Mimus polyglottos	northern mockingbird
Molothrus ater	brown-headed cowbird
Petrochelidon pyrrhonota	cliff swallow
Psaltriparus minimus	Bushtit
Sayornis nigricans	black phoebe
Selasphorus sasin	Allen's hummingbird
Stelgidopteryx serripennis	northern rough-winged swallow
Sterna forsteri	Forster's tern
Tachycineta bicolor	tree swallow
Tachycineta thalassina	violet-green swallow
Toxostoma redivivum	California thrasher
Mammals	
Odocoileus hemionus columbianus	Columbia black-tailed deer
Otospermophilus beecheyi	California ground squirrel
Reptiles	
Sceloporus occidentalis	western fence lizard
Thamnophis sp.	unidentified garter snake
Lampropeltis californiae	California kingsnake
Crotalus oreganus	northern Pacific rattlesnake
Fish	
Oncorhynchus sp.	unidentified trout
Invertebrates	
Bombus vosnesenskii	yellow-faced bumble bee

6.3.1.1 Barren

Barren habitat is defined by the lack of vegetation and comprise any habitat with less than 2% total vegetation cover by herbaceous, desert, or non-wildland species and less than 10% cover by tree or shrub species. Barren habitat's structure and composition is determined largely by the region and surrounding environment (Mayer and Laudenslayer 1988).

The barren community accounts for approximately 2.42 acres on the project site (Figure 5).

6.3.1.2 Coyote Brush Scrub

Coyote brush scrub is normally dominated by dense stands of coyote brush and other drought-tolerant plants. This habitat lacks a discernable canopy, but trees such as coast live oak, poison oak (*Toxicodendron diversilobum*), interior live oak (*Quercus wislizeni*), and canyon live oak (*Quercus chrysolepis*) can exist within this habitat. Coyote brush scrub is located along the length of Alameda Creek. Dominant species observed within coyote brush scrub on the project site include coyote brush, mule fat (*Baccharis salicifolia*), sticky bush monkeyflower (*Diplacus aurantiacus*), California sagebrush (*Artemisia californica*) and poison oak. There is a small forb and grass layer which consists of primarily non-native vegetation, including wild oat, ripgut brome, soft chess, purple false brome, docks, and star thistles.

Common wildlife species observed within coyote brush communities on the project site include Anna's hummingbird (*Calypte anna*), California scrub-jay (*Aphelocoma californica*), tree swallow (*Tachycineta bicolor*), violet-green swallow (*Tachycineta thalassina*), western fence lizard, Columbia black-tailed (*Odocoileus hemionus columbianus*), and California ground squirrel (*Otospermophilus beecheyi*). Snakes including gopher snake (*Pituophis catenifer*), California kingsnake (*Lampropeltis californiae*), and northern Pacific rattlesnake (*Crotalus oreganus*) were observed in this habitat.

The coyote brush scrub community accounts for approximately 3.30 acres on the project site (Figure 5).

6.3.1.3 Developed

Developed areas include gravel roads, structures, paved and hardscaped surfaces, landscaped areas, and the Er-con mat. These areas tend to lack vegetation due to impermeable surfaces and lack of a noticeable topsoil layer. Hardy invasive weeds such as Italian thistle, wild oat, and bromes may be found growing in cracks and other weaker surfaces.

Common wildlife species observed within developed areas on the project site include northern mockingbird (*Mimus polyglottos*), bushtit (*Psaltriparus minimus*), cliff swallow (*Petrochelidon pyrrhonota*), turkey vulture (*Cathartes aura*), common raven (*Corvus corax*), and barn swallow.

The developed areas accounts for approximately 18.49 acres on the project site (Figure 5).

6.3.1.4 Freshwater emergent

This habitat type is characterized by erect, rooted, herbaceous hydrophytes, usually perennial monocots. This habitat is flooded frequently enough that the roots of the vegetation are able to prosper in an anaerobic environment and can vary in size from small clumps to areas covering several miles (Mayer and Laudenslayer 1988). In the case of this project, freshwater emergent comprises southern cattails (*Typha domingensis*) as the primary vegetation type.

Typically, this habitat type can support species like native and non-native frogs, native fish, nesting red-winged blackbird (*Agelaius phoeniceus*), among other bird species that require this type of nesting

structure.

The freshwater emergent areas accounts for approximately 0.07 acres on the project site (Figure 5).

6.3.1.5 Mixed Riparian Forest

Mixed riparian forests are a type of woodland or forest habitat that comprise broad-leaved, winter deciduous trees and are located in the transition area between a water body and the uplands. Riparian forests can include a variety of trees and shrubs. Dominant species observed in this habitat on the project site include California sycamore (*Platanus racemosa*), white alder (*Alnus rhombifolia*), coast live oak (*Quercus agrifolia*), and valley oak (*Quercus lobata*).

Common wildlife species observed within mixed riparian scrub communities on the project site include Anna's hummingbird, black phoebe (*Sayomis nigricans*), California scrub-jay, California thrasher (*Toxostoma redivivum*), tree swallow.

The mixed riparian scrub community accounts for approximately 0.24 acres on the project site (Figure 5).

6.3.1.6 Mixed Riparian Scrub

Riparian scrub is a land cover type that is dominated by woody vegetation associated with permanent water sources. They are often transition zones between bodies of water, such as lakes, creeks, rivers, or ponds, and uplands. Dominant species observed in this habitat on the project site include red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), Pacific willow (*Salix lasiandra*), sandbar willow (*Salix exigua*), mule fat, blue elderberry (*Sambucus mexicana*), Himalayan blackberry (*Rubus armeniacus*), and Douglas's mugwort (*Artemisia douglasiana*).

Common wildlife species observed within mixed riparian scrub communities on the project site include Anna's hummingbird, black phoebe, California scrub-jay, Allen's hummingbird (*Selasphorus sasin*), Columbia black-tailed deer, garter snake sp., orange-crowned warbler (*Vermivora celata*), California, tree swallow, and violet-green swallow.

The mixed riparian scrub community accounts for approximately 5.95 acres on the project site (Figure 5).

6.3.1.7 Non-native Annual Grassland

Non-native annual grassland is composed primarily of plant species that mature in spring and early summer before spreading seed and dying in late summer and fall. Non-native annual grassland is found in large patches throughout the project site, primarily interspersed with coastal scrub and ruderal communities. Dominant grass and forb species observed within non-native annual grassland communities on the project site include wild oat, ripgut brome, Italian thistle, and filaree (*Erodium botrys*, *E. cicutarium*, *E. moschatum*). Most of the grasses and forbs found within the non-native grasslands are comparable with those found in the ruderal habitats.

Common wildlife species observed within non-native annual grassland communities on the project site include Anna's hummingbird, rufous-crowned sparrow, golden-crowned sparrow (*Zonotrichia atricapilla*), western fence lizard, Columbia black-tailed deer, and California ground squirrel.

The non-native annual grassland community accounts for approximately 6.26 acres on the project site (Figure 5).

6.3.1.8 Ruderal

Ruderal vegetation is present in upland areas and non-inundated areas of Alameda Creek, including along the edges of quarry roads, developed or hardscaped surfaces, and laydown/storage areas. Ruderal vegetation was also identified as a secondary vegetative community within the Non-native Annual Grassland and as an understory community among coyote brush scrub. Ruderal communities are groupings of plants that thrive in areas disturbed by human activity. Ruderal vegetation is adapted to high levels of disturbance and endures for long periods of time in areas that have continual disturbance. Dominant grass and forb species observed within ruderal communities on the project site include wild oat (*Avena fatua*), black mustard (*Brassica nigra*), shortpod mustard (*Hirschfeldia incana*), bull thistle (*Cirsium vulgare*), yellow star thistle (*Centaurea solstitialis*), willow and curly dock (*Rumex salicifolia*, *R. crispus*), milk thistle (*Silybum marinum*), Italian thistle (*Carduus pycnocephalus*), ripgut brome (*Bromus diandrus*), purple false brome (*Brachypodium distachyon*), and soft chess (*Bromus hordeaceus*).

Common wildlife species observed within ruderal communities on the project site include western fence lizard (*Sceloporus occidentalis*), European starling (*Sturnus vulgaris*), barn swallow (*Hirundo rustica*), cliff swallow (*Petrochelidon pyronnhata*), and rufous-crowned sparrow (*Aimophila ruficeps*).

The ruderal community accounts for approximately 0.35 acres on the project site (Figure 5).

6.3.1.9 Water - Alameda Creek

Hydrology of the project area is driven by rainfall and reflects a "flashy" character that most central California coastal streams exhibit, with short and often intense periods of high flow, followed by a brief recession and long periods of low or intermittent baseflows. After the first few storms of the season, streamflow on Alameda Creek responds quickly to rainfall in the steep upper watershed tributaries, but more substantial antecedent rainfall is required to raise the groundwater table in the lower reaches, especially in the study reach, which is a highly permeable alluvial valley. Alameda Creek reach within the project area has perennial flow due to recent changes in flow management.

The delineation of waters of the U.S. including wetlands (McBain 2024a) identified Alameda Creek as a jurisdictional water in 2023. No non-riparian wetlands were found. Alameda Creek is a perennial stream classified as Riverine Unconsolidated Bottom using Cowardin nomenclature from *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC 2013).

Common wildlife species observed within the creek community on the project site include Anna's hummingbird, green heron (*Butorides virescens*), black phoebe (*Sayornis nigricans*), garter snake (*Thamnophis* sp.), and trout minnows (*Oncorhynchus* sp.).

Alameda Creek accounts for approximately 1.41 acres on the project site (Figure 5).

6.3.2 Wildlife Corridors

Wildlife corridors are habitats that provide connectivity between natural communities otherwise separated by urbanization and other development. Wildlife corridors provide access for animals to travel between these communities for seasonal migration, access to overwintering/summering habitat, breeding, etc. They also allow animals a route to move away from natural disasters and other forms of habitat loss, as well as to recolonize habitats previously extirpated. Wildlife corridors provide opportunities to breed, forage, migrate/emigrate, disperse, and forage (Beier and Loe 1992).

6.3.3 Special-Status Plants

Figure 6 provides a graphical illustration for special-status plant species occurrences within 3 miles of the project site. Table 3 provides an assessment of potential to occur of special-status plant species on the project site. Thirty-three special-status plants have been previously documented within 3 miles of the project site; however, no special-status plants have been observed or mapped there. Sequoia did not note any special-status plants during the April 15 or May 29, 2024, field visits. An additional survey is scheduled for July 12, 2024, to capture all blooming periods. Sequoia analyzed the potential for these plant species to occur, as well as species included in CNPS and IPaC resource lists during the desktop review (Table 2). A number of these species require specialized habitats, such as playas, vernal pools, seeps, chenopod scrub, foothill grasslands, and serpentinite soils that are not found on the project site. Due to lack of suitable habitat and/or lack of known/recent occurrences in the project vicinity, 31 special-status plant species are not expected to occur and are therefore not discussed further in this analysis (see Table 2, Figure 6).

Due to potentially suitable habitat on the project site and known occurrences in the vicinity of the project site, two special-status plant species are assessed in more detail below for potential to occur on the project site.

Table 3. Special-Status Plant Species with Potential to Occur on the CalTrout Sunol Fish Passage Project Site

Scientific Name	Common Name	Listed Status	Habitat Requirements	Potential for Occurrence
Astragalus tener var. *tener*	alkali milkvetch	1B.2	Occurs in playas, vernal pools, and wetland habitats in freshwater wetlands, alkali sink, valley grassland (alkaline and clay), and wetland-riparian plant communities (occasionally occur in non-wetlands) at elevations of 5 to 185 feet.	**No Potential.** Project site is out of elevation range and there are no nearby occurrences.
Atriplex cordulata var. *cordulata*	heartscale	1B.2	Occurs in chenopod scrub, meadows and seeps, and sandy valley and foothill grassland at elevations of 0 to 1,850 feet.	**No Potential.** Riparian scrub and valley grasslands are present on the project site, but there are no nearby occurrences, and it is primarily found in chenopod scrub.
Atriplex depressa	brittlescale	1B.2	Occurs in chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools at elevations of 5 to 1,050 feet.	**No Potential.** Riparian scrub is present on the project site, but there are no nearby occurrences, and it is primarily found in chenopod scrub.
Atriplex minuscula	lesser saltscale	1B.1	Occurs in chenopod scrub, playas, and valley and foothill grassland at elevations of 50 to 655 feet.	**No Potential.** Riparian scrub is present on the project site, but there are no nearby occurrences, and it is primarily found in chenopod scrub.
Balsamorhiza macrolepis	big-scale balsamroot	1B.2	Occurs in chaparral, cismontane woodland, and valley and foothill grassland at elevations of 150 to 5,100 feet.	**No Potential.** There is no suitable habitat or rocky soils present and no occurrences near the project site.
Blepharizonia plumosa	big tarplant	1B.1	Occurs in valley and foothill grasslands (clay) at elevations of 100 to 1,655 feet.	**No Potential.** No clay valley grasslands occur on the project site.
Boechera rubicundula	Mt. Day rockcress	1B.1	Occurs in rocky slopes in chaparral at elevations of up to 3,195 feet.	**No Potential.** No suitable habitat occurs on the project site.

Scientific Name	Common Name	Listed Status	Habitat Requirements	Potential for Occurrence
Calyptridium parryi var. *hesseae*	Santa Cruz Mountains pussypaws	1B.1	Occurs in chaparral and cismontane woodlands at elevations of 1,000 to 5,020 feet.	**No Potential**. No suitable habitat occurs on the project site.
Centromadia parryi ssp. *congdonii*	Congdon's tarplant	1B.1	Occurs in valley and foothill grassland (alkaline) at elevations of 0 to 755 feet.	**Moderate Potential.** There is valley grassland present on the project site, and there is a CNDDB occurrence nearby from 2008.
Chloropyron maritimum ssp. *palustre*	Point Reyes salty bird's-beak	1B.2	Occurs in coastal salt marshes and swamps at elevations of 0 to 35 feet.	**No Potential.** No suitable habitat occurs on the project site.
Chloropyron molle ssp. *hispidum*	hispid salty bird's-beak	1B.1	Occurs in alkaline meadows and seeps, playas, and valley and foothill grassland at elevations of 5 to 510 feet.	**No Potential.** No suitable habitat occurs on the project site.
Chloropyron palmatum	palmate-bracted bird's-beak	CE, FE, 1B.1	Occurs in chenopod scrub and valley and foothill grassland (alkaline) at elevations of 15 to 510 feet.	**No Potential.** There is riparian scrub and valley grassland present on the project site, but no nearby occurrences.
Chorizanthe robusta var. *robusta*	robust spineflower	FE, 1B.1	Occurs in chaparral (maritime), cismontane woodland (openings), coastal dunes, and coastal scrub at elevations of 10 to 985 feet.	**No Potential.** No suitable habitat occurs on the project site.
Deinandra bacigalupii	Livermore tarplant	CE, 1B.1	Occurs in meadows and seeps (alkaline) at elevations of 490 to 605 feet.	**No Potential.** No suitable habitat occurs on the project site.
Delphinium californicum ssp. *interius*	Hospital Canyon larkspur	1B.2	Occurs in openings in chaparral, mesic cismontane woodland, and coastal scrub at elevations of 640 to 3,595 feet.	**No Potential.** No suitable habitat occurs on the project site.
Eryngium aristulatum var. *hooveri*	Hoover's button-celery	1B.1	Occurs in vernal pools at elevations of 10 to 150 feet.	**No Potential.** No suitable habitat occurs on the project site.
Extriplex joaquinana	San Joaquin spearscale	1B.2	Occurs in chenopod scrub, meadows and seeps, playas, and valley and foothill grassland (alkaline) at elevations of 5 to 2,740 feet.	**No Potential.** Valley grasslands occur on the project site, but there are no nearby occurrences.
Fritillaria liliacea	fragrant fritillary	1B.2	Occurs in cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland at elevations of 10 to 1,340 feet.	**No Potential.** No suitable habitat occurs on the project site.

Scientific Name	Common Name	Listed Status	Habitat Requirements	Potential for Occurrence
Helianthella castanea	Diablo helianthella	1B.2	Occurs in broad-leafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland (usually rocky) at elevations of 195 to 4,265 feet.	**No Potential.** Some valley grassland and riparian scrub occurs on the project site, but there are no nearby occurrences, and the most recent occurrence in the vicinity (greater than 3 miles) was from 1974.
Lasthenia conjugens	Contra Costa goldfields	FE, 1B.1	Occurs in cismontane woodland, playas (alkaline), valley and foothill grassland, and vernal pools at elevations of 0 to 1,540 feet.	**No Potential.** Valley grassland occurs on the project site, but there are no nearby occurrences.
Legenere limosa	legenere	1B.1	Occurs in vernal pools at elevations of 5 to 2,885 feet.	**No Potential.** No suitable habitat occurs on the project site.
Leptosyne hamiltonii	Mt. Hamilton coreopsis	1B.2	Occurs in rocky cismontane woodland at elevations of 1,805 to 4,265 feet.	**No Potential.** No suitable habitat occurs on the project site.
Navarretia prostrata	prostrate vernal pool navarretia	1B.2	Occurs in coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), and vernal pools at elevations of 10 to 3,970 feet.	**No Potential.** Valley grassland occurs on the project site, but there are no nearby occurrences or vernal pools in the project site.
Plagiobothrys glaber	hairless popcornflower	1A	Occurs in coastal salt marshes and swamps and alkaline meadows and seeps at elevations of 50 to 590 feet.	**No Potential.** Slightly alkaline meadows occur on the project site, but there are no nearby occurrences, and it is presumed to be extinct.
Polemonium carneum	Oregon polemonium	2B.2	Occurs in coastal prairie, coastal scrub, lower montane coniferous forest at elevations of 0 to 6,005 feet.	**No Potential.** No suitable habitat occurs on the project site. There is a relatively close CalFlora observation but no recent occurrences since 1972.
Puccinellia simplex	California alkali grass	1B.2	Occurs in chenopod scrub, meadows and seeps, valley and foothill grassland, alkaline sinks, and vernal pools at elevations of 5 to 3,050 feet.	**No Potential.** Valley grassland occurs on the project site, but there are no recent nearby occurrences.

Scientific Name	Common Name	Listed Status	Habitat Requirements	Potential for Occurrence
Ravenella exigua	chaparral harebell	1B.2	Occurs in rocky, usually serpentine chaparral at elevations of 900 to 4100 feet.	**No Potential.** No suitable habitat occurs on the project site.
Spergularia macrotheca var. *longistyla*	long-styled sand-spurrey	1B.2	Occurs in marshes and swamps, meadows and seeps (alkaline) at elevations of 0 to 835 feet.	**No Potential.** Slightly alkaline meadows occur sparsely on the project site, but there are no recent nearby occurrences.
Streptanthus albidus ssp. *peramoenus*	most beautiful jewel flower	1B.2	Occurs in chaparral, cismontane woodland, and valley and foothill grassland (serpentinite) at elevations of 310 to 3,280 feet.	**Moderate Potential.** There is suitable valley grassland habitat on the project site but is slightly below normal elevational range.
Stuckenia filiformis ssp. *alpina*	northern slender pondweed	2B.2	Occurs in shallow freshwater marshes and swamps at elevations of 985 to 7055 feet.	**No Potential.** No suitable habitat occurs on the project site.
Suaeda californica	California seablite	1B.1	Occurs in coastal salt marshes and swamps at elevations of 0 to 50 feet.	**No Potential.** No suitable habitat occurs on the project site.
Trifolium hydrophilum	saline clover	1B.2	Occurs in marshes and swamps, valley and foothill grassland (mesic, alkaline), and vernal pools at elevations of 0 to 985 feet.	**No Potential.** Valley grassland occurs on the project site, but there are no recent nearby occurrences or vernal pools.
Tropidocarpum capparideum	caper-fruited tropidocarpum	1B.1	Occurs in valley and foothill grassland (alkaline hills) at elevations of 5 to 1495 feet.	**No Potential.** Slightly alkaline valley grasslands occur sparsely on the project site, but there are no recent nearby occurrences.

Key to status:
FT=Federally listed as threatened species
CE=California listed as endangered species
CNPS Rare Plant Rank
1A=Plants presumed extirpated in California and either rare or extinct elsewhere
1B=Plants rare, threatened, or endangered in California or elsewhere
2A=Plants presumed extirpated in California but common elsewhere

2B=Plants rare, threatened, or endangered in California but more common elsewhere
3=Plants about which more information is needed
Note: CNPS ranks below 3 were excluded from this analysis.

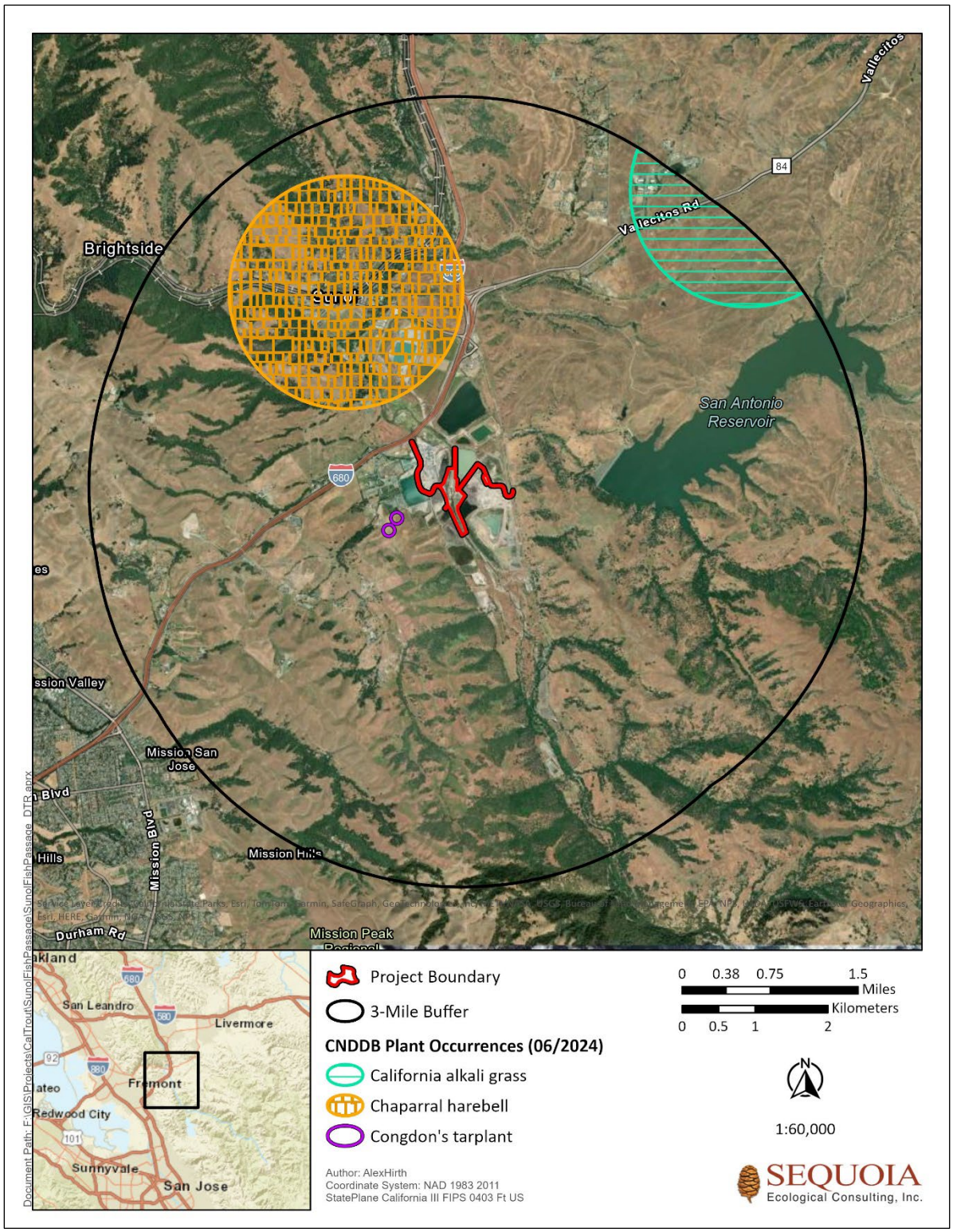

Figure 6. Closest Known Records for Special-Status Plant Species within 3 Miles of the Sunol Valley Fish Passage Project Site

6.3.3.1 Congdon's Tarplant

Congdon's tarplant is an annual herb in the family Asteraceae. It occurs in grassland habitats, alkaline soils, flood plains, swales, and generally in disturbed areas. This species typically blooms between June and October (Baldwin 2012). There is a CNPS record from the Niles and Calaveras Reservoir quadrangles to the west and south, and the nearest extant CNDDB record was from 2008 and was located on the west side of Sunol Valley, just east of Andrade Road, west of Alameda Creek, and south of Sunol. These specimens were separated into two distinct polygons, one with 25 plants and the other with 35 plants. They were located on a flat valley bottom in full sun, with non-native grass encroachment. The CNDDB occurrence was located approximately 0.43 mile west of the nearest project boundary (CNDDB 2024a).

The project comprises annual grasses in mid-channel bars, flood plains, and areas adjacent to existing unpaved roads, however annual grassland habitat is patchy and interspersed with scrub and ruderal communities. Habitat potential is moderate for this species within the project area. The species was not observed during floristic surveys conducted during the blooming period in October 2015 or September 2017 (Swaim 2017). It was also not observed during surveys in April or May of 2024, although these surveys occurred outside of the blooming period. An additional survey is scheduled for July 2024, which will capture the blooming period for this species. No *Centromadia* species were observed at any time during previous site visits, wetland delineations, and habitat assessments that occurred between Fall 2015 and Spring 2024. Accordingly, Congdon's tarplant is not known on the project site and not anticipated to occur on the project site.

6.3.3.2 Most Beautiful Jewel Flower

Most beautiful jewel flower is a flowering plant in the Brassicaceae family. It is endemic to California and commonly occurs in serpentinite soils and grassland habitats. This annual herb typically blooms between April and September (Calflora 2024). CNPS records exist in the La Costa Valley quadrangle in which the assessment area is located, as well as the Niles and Calaveras Reservoir quadrangles to the west and south. The CNDDB record appears to coincide with CNPS record from Niles and was seen in 1999 at an unspecified location within Mission Peak, approximately 3.6 miles south of the nearest project boundary (CNDDB 2024a).

Serpentine soils were not observed within the project area; however the species has been mapped in the 9-quad search area on soils mapped by the NRCS as "Gravel Pit" (Swaim 2017, NRCS 2024). Gravel pit soil type occurs along with grassland habitat in the project area; therefore, the species was determined to have a moderate potential to occur. The species was not observed during floristic surveys conducted during the blooming period in April 2017 (Swaim 2017), September 2017 (Swaim 2017), April 2024, or May 2024, and no *Streptanthus* species were observed at any time during site visits, wetland delineations, and habitat assessments that occurred between Fall 2015 and Spring 2024. Accordingly, most beautiful jewel flower is not anticipated to occur on the project site.

6.3.4 Special-Status Animals

Figure 8 provides a graphical illustration for special-status animal species occurrences within 3 miles of the project site. Table 4 provides an assessment of potential to occur for special-status animal species on the project site. Thirty special-status animal species have been previously documented as CNDDB occurrences within 3 miles or identified through IPaC or other means via the desktop review. Sequoia analyzed the potential to occur for these animal species, as well as species included in NMFS and IPaC resource lists during the desktop review (Table 3). Due to lack of suitable habitat and/or lack of recent occurrences in the project vicinity, 14 special-status animal species are not expected to occur and are therefore not discussed further in this analysis. Descriptions and potential for occurrence of the remaining 16 special status- animal species are provided in more detail below (Figure 8, Table 3).

USFWS-Designated Critical Habitat for the Alameda whipsnake and California red-legged frog occurs on either side of, but not within, the project site (Figure 7). NMFS-Designated Critical Habitat for CCC DPS steelhead (70 FR 52488, 9/2/2005) is not present within the Alameda Creek watershed. However, Alameda Creek, which occurs on site, is designated as EFH for coho and chinook salmon (USGS Hydrologic Unit Code 18050004, NMFS 2024).

Table 4. Special-Status Animal Species with Potential to Occur on the Sunol Valley Fish Passage Project Site

Scientific Name	Common Name	Listed Status	Habitat Requirements	Potential for Occurrence
Mammals				
Antrozous pallidus	pallid bat	SSC	Occurs in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky area for roosting. Roost must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	Low. Marginal foraging habitat present, but no roosting habitat occurs on the project site. There is a nearby CNDDB occurrence, but it is from 2001.
Corynorhinus townsendii	Townsend's big-eared bat	SSC	Occurs in rocky crevices, caves, derelict buildings, tunnels, mineshafts, spaces under loose tree bark, hollow trees, and buildings. Forages in edge habitats such as streams, wooded habitats, and others.	Low. Foraging habitat is present and marginal, but no roosting habitat is present, and the last CNDDB observation was from 1943.

Scientific Name	Common Name	Listed Status	Habitat Requirements	Potential for Occurrence
Myotis yumanensis	Yuma myotis	-	Occurs in a wide variety of habitats up to 11,000 feet. Optimal habitats are open forests and woodlands with sources of water over which to feed. Requires buildings, mines, caves, or crevices for roosting. The species also has been seen roosting in abandoned swallow nests and under bridges.	Low. Foraging habitat is present and marginal. Marginal roosting habitat occurs on the project site.
Neotoma fuscipes annectens	San Francisco dusky-footed woodrat	SSC	Occurs abundantly in forest habitats of moderate canopy and moderate to dense understory with year-round greenery, a brushy understory, and suitable nestbuilding materials.	High. Riparian shrub habitat is brushy with suitable nestbuilding materials. No middens observed on site. Closest known occurrence 2 miles away.
Reithrodontomys raviventris	salt marsh harvest mouse	FE, CE, FP	Occurs in pickleweed-dominated vegetation in coastal and brackish flats and marshes.	None. No suitable habitat occurs on the project area.
Vulpes macrotis mutica	San Joaquin kit fox	FE, CT	Occurs in deserts and grasslands of California's San Joaquin Valley.	None. No suitable habitat occurs on the project area.
Amphibians/Reptiles				
Ambystoma californiense pop. 1	California tiger salamander—central California DPS	FT, CT	Occurs in vernal and seasonal pools and associated grasslands, oak savanna, woodland, and coastal scrub. Needs underground refuges (i.e., small mammal burrows, pipes) in upland areas such as grassland and scrub habitats.	High. 2018 occurrence of egg masses on site with many being relocated between 2009 and 2017. Few burrows and low-quality dispersal habitat occur on the project site.
Emys marmorata	western (=northwestern) pond turtle	FC, SSC	Occurs in rivers, ponds, and freshwater marshes, and nests in upland areas (sandy banks or grassy open fields) up to 1,640 feet from water.	Moderate. 2016 occurrence in project area across from pond. Boulders and rocky shorelines for basking, plunge pools, and variable flow areas occur throughout the project site.

Scientific Name	Common Name	Listed Status	Habitat Requirements	Potential for Occurrence
Masticophis lateralis euryxanthus	Alameda whipsnake	FT, CT	Occurs in mixed chaparral, coastal scrub, annual grassland with rock piles, open streams and arroyos, and oak woodland habitats in the California inner Coast Range of Contra Costa County, most of Alameda County.	Moderate. 2017 occurrence a few miles south of project site. Low-quality coyote brush scrub habitat present.
Rana boylii pop. 4	foothill yellow-legged frog—central coast DPS	FT, CE	Occurs in foothill and mountain streams from the Pacific Coast to the western Sierra Nevada and Cascades mountains, up to approximately 5,000 feet in elevation. Requires shallow, rocky, and at least partially exposed to direct sunlight stream habitat for breeding.	Moderate. Vegetated, open sunny banks and rocky, shallow stream habitats occur throughout the project site. Closest known occurrence 3 miles away.
Rana draytonii	California red-legged frog	FT, SSC	Occurs in semi-permanent or permanent water at least 2 feet deep, bordered by emergent or riparian vegetation, and upland grassland, forest, or scrub habitats for aestivation and dispersal.	Moderate. No aquatic breeding habitat occurs on the project site, but moderate aquatic non-breeding habitat does. Closest known occurrence less than a mile from site in 2017.
Spea hammondii	western spadefoot	FC, SSC	Occurs throughout the Central Valley and adjacent foothills. Requires shallow temporary pools formed by heavy winter rains for breeding and egg laying.	None. No suitable habitat occurs on the project area.
Fish				
Entosphenus tridentatus	Pacific lamprey	SSC	Occurs in freshwater and ocean habitats. In freshwater, prefers low-gradient rivers and streams with sandy or muddy bottoms.	High. Suitable habitat present on the project site. Detected during electrofishing and trapping within watershed (SFPUC 2023).

Scientific Name	Common Name	Listed Status	Habitat Requirements	Potential for Occurrence
Lampreta ayresii	Western river lamprey	SSC	Occurs in freshwater and ocean habitats. In freshwater, prefers low-gradient rivers and streams with sandy or muddy bottoms.	High. Suitable habitat present on the project site, *Lampreta* spp. detected during electrofishing and trapping within watershed (SFPUC 2023).
Lampreta richardsoni	Western brook lamprey	SSC	Occurs in freshwater and ocean habitats. In freshwater, prefers low-gradient rivers and streams with sandy or muddy bottoms.	High. Suitable habitat present on the project site. *Lampreta* spp. detected during electrofishing and trapping within watershed (SFPUC 2023).
Oncorhynchus kisutch	coho salmon—central California coast ESU	FE, CE	Occurs in rivers south of Punta Gorda, California to Aptos Creek and tributaries to the San Francisco Bay. Cool, clear, well-oxygenated water with unobstructed and consistent water flow.	Moderate. Fast-moving gravel- and cobble-filled cool stream habitat with occasional deep pools occurs in the project site, but no CNDDB record within the vicinity of the project site.
Oncorhynchus mykiss irideus pop. 8	steelhead—central California coast DPS	FT, SSC	Occurs in fresh water, fast-flowing, highly oxygenated, clear, cool streams where riffles tend to predominate pools and small streams with high elevation headwaters close to the ocean that have no impassible barriers; spawning in high-elevation headwaters.	Presumed present. Fast-moving gravel- and cobble-filled cool stream habitat with occasional deep pools occurs in the project site. Closest confirmed steelhead occurrence located downstream in Niles Canyon *O. mykiss* detected within watershed during electrofishing and trapping (SFPUC 2023).
Oncorhynchus tshawytscha pop. 11	chinook salmon—California Central Valley spring-run ESU	FT, CT	Occurs in rivers and streams south of the Klamath River to the Russian River. Spawn in larger, deeper waters than other salmon.	None. Out of range and no suitable spawning habitat.
Birds				
Agelaius tricolor	tricolored blackbird	CT, SSC	Constructs nests in dense stands of tule, cattail, or other dense marshland vegetation. Requires protected nesting substrate and foraging areas within a few miles of the colony.	Unlikely. Some small areas of cattails occur in the project area, but not suitable for nesting. Moderate foraging habitat occurs on the project site. Closest known occurrence of individuals on site in 1999.

Scientific Name	Common Name	Listed Status	Habitat Requirements	Potential for Occurrence
Aquila chrysaetos	golden eagle	FP	Inhabits a variety of habitats, including forests, canyons, shrub lands, grasslands, and oak woodlands. For nesting, they use cliffs, tall trees, or human-made structures such as towers that provide a good view of surroundings. Forages in open grasslands and oak savanna, occasionally in oak woodland and open shrubland.	Unlikely. Limited foraging habitat occurs on project site, but no nesting habitat. No nearby occurrences on record.
Gymnogyps californianus	California condor	FE, CE, FP	Requires large trees, snags, or rocky outcrops for roosting. Foraging habitat includes open grasslands, oak savanna foothills, and beaches adjacent to coastal mountains.	None. No suitable habitat occurs on the project area.
Haliaeetus leucocephalus	bald eagle	CE, FP	Occurs in estuaries, large lakes, reservoirs, rivers, and some seacoasts. Nests in the tops of large trees to build nests, but also uses cliffs, the ground, and humanmade structures like cell phone towers.	Unlikely. Foraging habitat occurs on the project area, but no roosting or nesting habitat and there are no nearby occurrences.
Lanius ludovicianus	loggerhead shrike	SSC	Occurs in open grasslands, shrublands, agricultural fields, and coastal areas. Nests in shrubs and bushes.	High. Suitable foraging and nesting habitat is available on site.
Sternula antillarum browni	California Least tern	FE, CE, FP	Nests on beaches, mudflats, and sand dunes, usually near shallow estuaries and lagoons with access to the near open ocean.	None. No suitable habitat occurs on the project area.
Invertebrates				
Bombus crotchii	Crotch's bumble bee	CCE	Occurs in a variety of habitats, including open grasslands, shrublands, chaparral, desert margins, including Joshua tree and creosote scrub, and semi-urban settings between San Diego and Redding.	Moderate. Suitable upland habitat for nesting and foraging occurs on the project site.

Scientific Name	Common Name	Listed Status	Habitat Requirements	Potential for Occurrence
Bombus occidentalis	western bumble bee	CCE	Formerly widespread, now occurs in patchy areas of the coast ranges and Sierra Nevada wherever suitable nesting and overwintering habitat exists.	Unlikely. Suitable upland habitat for nesting and foraging occurs on the project site, but the range of the species no longer overlaps with the project site. Closest known occurrence 2.5 miles away, but it was in 1969.
Branchinecta conservatio	Conservancy fairy shrimp	FE	Occurs in vernal pools.	None. No suitable habitat occurs on the project area.
Branchinecta lynchi	vernal pool fairy shrimp	FT	Occurs in vernal pools.	None. No suitable habitat occurs on the project area.
Danaus plexippus plexippus pop. 1	monarch – California overwintering population	FC	Occurs in prairies, meadows, and grasslands and along roadsides. Requires milkweed for breeding. Overwinter in tall trees such as eucalyptus or pine.	None. No host plants observed, no nearby occurrences.
Lepidurus packardi	vernal pool tadpole shrimp	FE	Occurs in vernal pools.	None. No suitable habitat occurs on the project area.

Key to status:
FE=Federally listed as endangered species
FT=Federally listed as threatened species
FC=Federally listed as a candidate species for listing
CE=California listed as endangered species
CT=California listed as threatened species
CCE=California listed as a candidate species for endangered listing
FP=California listed as fully protected
SSC=California Species of Special Concern

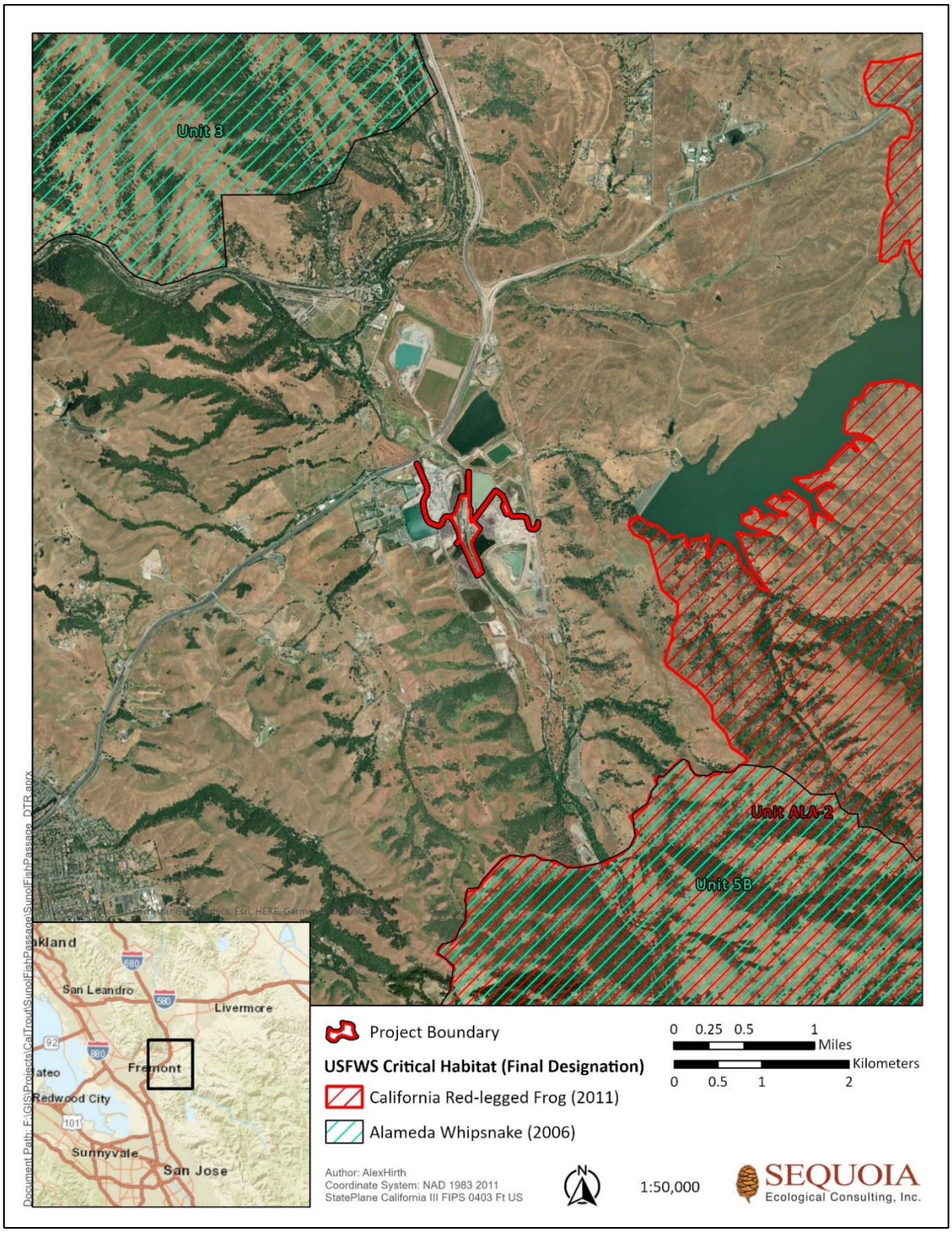

Figure 7. USFWS-Designated Critical Habitat in the Vicinity of the Sunol Valley Fish Passage Project Site.

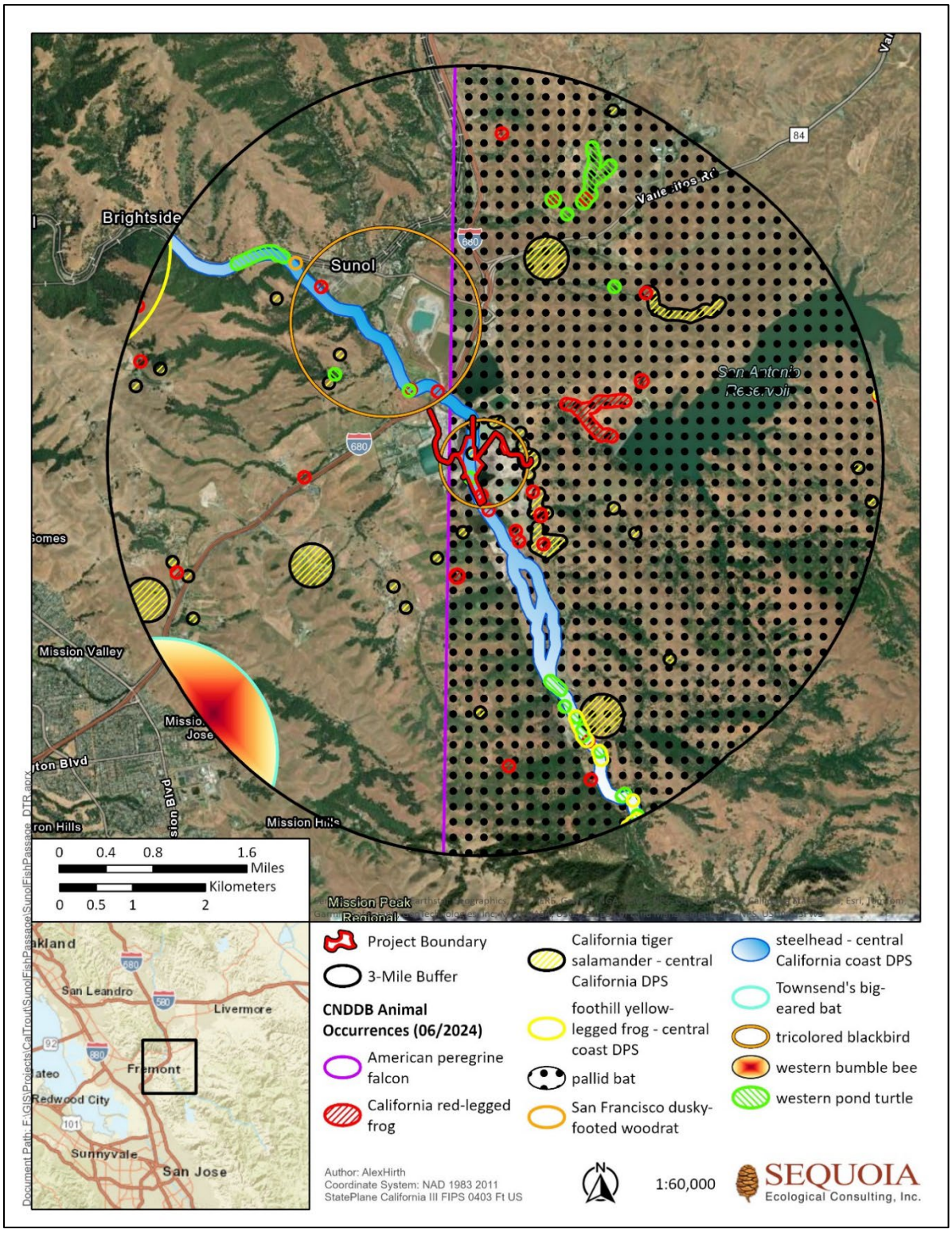

Figure 8. Closest Known Records for Special-Status Animal Species within 3 Miles of the Sunol Valley Fish Passage Project Site.

6.3.4.1 Pallid Bat

The pallid bat is a California Species of Special Concern and does not have a federal listing (CNDDB 2024c). Pallid bats have a head and body length of approximately 2.75 inches, forearm length of approximately 2.1 inches, a tail of approximately 1.75 inches, and a wingspan of 15–16 inches. They weigh 0.5 – 0.9 ounces. These bats are large, with long, forward-pointing ears (over an inch). Fur is pale at the roots and brown on their back, with a light underside. Pallid bats have a blunt piglike snout. Pallid bats are typically found in arid or semi-arid habitats, often in mountainous or rocky areas near water. They are also found over open, sparsely vegetated grasslands. During the daytime, pallid bats typically roost in cracks and crevices, which may include tile roofs, exfoliating bark of trees, or rocky outcrops. During the night, this species will often use a night roost that is closer to their foraging grounds than their day roost. A night roost is usually less protected than a day roost; open porches may be used as night roosts by this species. In the winter, this species may dip into shallow bouts of torpor, often in buildings, caves, or cracks in rocks (Arroyo-Cabrales and De Grammont 2017).

The mating season ranges from October to February, when the bats are in hibernation. The female bat gives birth to one or two pups during early June. The pallid bat is a locally common species of low elevations in California. A wide variety of habitats is occupied, including grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests. The species is most common in open, dry habitats with rocky areas for roosting. The bat is a yearlong resident in most of the range ((Zeiner et al. 1988).

The CNDDB has one record for pallid bat in the La Costa Valley quadrangle where the project is located, but the exact location is suppressed. The Alameda Creek corridor contains suitable foraging habitat for pallid bat. **There is low potential for this species to occur in the assessment area for nighttime foraging, but the project site has no day roosting or hibernation habitat.** Mitigation measures will be implemented (see Section 7.0) to avoid impacts to the species.

6.3.4.2 Townsend's Big-Eared Bat

The Townsend's big-eared bat (*Corynorhinus townsendii*) is a California Species of Special Concern and does not have a federal listing (CNDDB 2024c). Townsend's big-eared bat is a medium-sized bat (0.2 – 0.4 ounces) with extremely long, flexible ears and small yet noticeable lumps on each side of the snout. Its total length is around 4 inches, its tail measures around 2 inches, and its wingspan is about 11 inches. This bat requires large cavities for roosting; these may include abandoned buildings and mines, caves, and basal cavities of trees. During summer, these bats inhabit rocky crevices, caves, and derelict buildings. In winter, they hibernate in a variety of dwellings, including rocky crevices, caves, tunnels, mineshafts, spaces under loose tree bark, hollow trees, and buildings. During the summer, males and females occupy separate roosting sites; males are typically solitary, while females form maternity colonies, where they raise their pups (Fellers and Pierson 2002).

The mating season for the Townsend's big-eared bat takes place in late fall, and gestation lasts from 50 to 60 days. The Townsend's big-eared bat occurs throughout the west and is distributed from the

southern portion of British Columbia south along the Pacific coast to central Mexico and east into the Great Plains, with isolated populations occurring in the south and southeastern United States.

The CNDDB has one record for Townsend's big-eared bat within 3 miles of the assessment area. This is a historical record—a 1943 collection from Mission San Jose in Fremont (3.8 miles southwest). The Alameda Creek corridor contains suitable foraging habitat for Townsend's big-eared bat. **There is low potential for this species to occur in the assessment area for nighttime foraging, but there is no roosting or hibernation habitat in the assessment area.** Mitigation measures will be implemented (see Section 7.0) to avoid impacts to the species.

6.3.4.3 Yuma myotis

The Yuma myotis (*Myotis yumanensis*) is a relatively small species of myotis, measuring approximately 1.5 to 1.9 inches and weighing approximately 0.21 ounces. Individuals vary in color throughout their range but can be dark brown to pale tan to grey. They have short and dull fur and are significantly pale or even whiteish on their underside. This species is nocturnal and feeds primarily on insects above the surface of slow-moving water or in vegetation near the water's edge.

This species typically prefers to roost in caves, rock crevices, and hollow trees, however they can be commonly found today in artificial structures near water and in colonies of up to 10,000. Mating for this species occurs in the fall, and young are born between late May and late June.

The CNDDB has one record for Yuma myotis within 3 miles of the assessment area from 2006. The Alameda Creek corridor contains suitable foraging habitat for Yuma myotis. **There is low potential for this species to occur in the assessment area for nighttime foraging, and marginal roosting habitat is available onsite.** Mitigation measures will be implemented (see Section 7.0) to avoid impacts to the species.

6.3.4.4 San Francisco Dusky-Footed Woodrat

The San Francisco dusky-footed woodrat is a California Species of Special Concern and does not have a federal listing (CNDDB 2024c). Dusky-footed woodrats are medium-sized rodents known for their well-constructed stick nests, often referred to as "middens." These nests are built using sticks and other plant material and serve as shelter against predators and environmental elements. The San Francisco dusky-footed woodrat is a subspecies that is largely restricted to the Santa Cruz Mountains and a few areas within the greater Bay Area of California. Dusky-footed woodrats are primarily nocturnal, being more active during the night (Zeiner et al. 1988).

Woodrats build extensive nests in trees, on the ground, and on bluffs with dense vegetation or rock cover. The conical shaped nests can be 2 to 8 feet tall and are made of sticks, bark, and various plant matter. One nest can house successive generations of woodrats, with offspring adding to nests, making them larger. The nests can have many rooms used for food storage, resting, nurseries, and protection.

Nests can be built in harsh, inaccessible places such as thorny brush or poison oak patches (Linsdale and Tevis 2020).

Only one CNDDB record exists for this species within the 9-quad search area, 2 miles northwest of the project area, though this is not likely representative of the species' actual abundance and distribution. More common species, like dusky-footed woodrat, are often underreported in systems like CNDDB. Habitat on site is suitable for woodrats, but no middens were observed during the site assessment. It is assumed that nesting may be discouraged by seasonal flooding as evidence by flash flood debris piles. That said, it is possible that middens were overlooked during the preconstruction surveys, as they can be easily confused with these same debris piles, can be hidden or not readily identifiable within anthropogenic debris, and may also be located in dense stands of vegetation that are difficult to traverse on foot. **As such, there is high potential for the species to occur on the project site.** Mitigation measures will be implemented (see Section 7.0) to avoid impacts to the species.

6.3.4.5 California Tiger Salamander

The Central California DPS of the California tiger salamander (*Ambystoma californiense*) is a state and federally threatened species (CNDDB 2024c). The project site is located within the known range of the Central California DPS of this species. Critical habitat for the Central California, Sonoma County, and Santa Barbara distinct populations were designated for this species on August 23, 2005; August 31, 2011; and November 24, 2004, respectively. A recovery plan for the Central California, Sonoma County, and Santa Barbara populations were published for this species on June 6, 2017; May 31, 2016; and December 12, 2016 (USFWS 2017, 2016a, 2016b). The project site is located outside of USFWS-designated critical habitat for California tiger salamander (Figure 7).

California tiger salamanders inhabit lowland grasslands, oak savannah, and mixed woodland habitats and require vernal pools, seasonal ponds, or semi-permanent calm waters that pond water for a minimum of three to four months in duration for breeding and larval maturation and adjacent upland refugia and foraging habitat with small mammal burrows (Storer 1925, Barry and Shaffer 1994, Stebbins & McGinnis 2018). Migration to breeding sites begins with the onset of autumn rains, typically in November. California tiger salamanders have been reported to travel distances up to one mile (Austin and Shaffer 1992), but Trenham and Shaffer (2005) estimate that optimal upland habitat is within approximately 2,000 feet of breeding ponds. Outside of the breeding season, juveniles and adults remain in subterranean habitat typically in small mammal burrows provided by California ground squirrels and pocket gophers (*Thomomys* spp.) (Shaffer et al. 1993, Barry and Shaffer 1994, Jennings and Hayes 1994, Stebbins and McGinnis 2018).

California tiger salamanders are present in the Alameda Creek corridor, where the project will occur. Past monitoring reports indicate that 10 California tiger salamanders were observed during fence/coverboard inspections in December 2014 and six California tiger salamanders were observed in 2015 (Swaim 2017). Thirty occurrences of California tiger salamander are reported in CNDDB within 3 miles of the project site. The most recent occurrence was in 2018 and was located approximately 500

feet south of the access road to the quarry (CNDDB Occurrence No.934; Figure 8). Suitable habitat for this species is present onsite, including the Er-Con mat, which acts as suitable refugia for the species. **As such, the California tiger salamander has high potential to occur on the project site.** Mitigation measures will be implemented (see Section 7.0) to avoid impacts to the species.

6.3.4.6 Western Pond Turtle

The western pond turtle is designated as a California Species of Special Concern by CDFW and became a candidate for federal listing as a threatened species under the FESA in September of 2023 (CNDDB 2024c). This species occurs in both permanent and intermittent waters, including marshes, streams, rivers, ponds, and lakes. It requires basking sites (emergent logs or boulders) and upland habitat such as sandy or grassy fields for egg-laying. Their diet includes aquatic invertebrates, as well as fish, carrion, and plant material. Females may travel some distance from water for egg-laying, moving as much as 0.5 miles away from and up to 300 feet above the nearest source of water, but most nests are within 300 feet of water. The female usually leaves the water in the evening and may wander far before selecting a nest site, often in an open area of sand or hardpan that is facing southwards. The nest is flask-shaped with an opening of about 2 inches. Females spend considerable time covering up the nest with soil and adjacent low vegetation, making it difficult for a person to find unless it has been disturbed by a predator.

Nine occurrences of western pond turtle are known within 3 miles of the project site. The most recent occurrence was in 2016 and is located on the project site (CNDDB Occurrence No.1377, Figure 8). Moderately suitable breeding and/or nonbreeding habitat is present in and within vicinity of the project site. Quarry ponds in the project vicinity, as well as Alameda Creek itself, provide potentially suitable aquatic habitat. Alameda Creek's low terraces and upland banks could provide suitable nesting habitat. **As such, western pond turtle has moderate potential to occur on the project site.** Mitigation measures will be implemented (see Section 7.0) to avoid impacts to the species.

6.3.4.7 Alameda Whipsnake

The Alameda whipsnake (*Masticophis lateralis euryxanthus*) is a state and federally threatened species (CNDDB 2024c). This snake is a subspecies of the California whipsnake and is a slender non-venomous snake native to California. The Alameda whipsnake's back is a sooty black or dark brown, and they have a distinct yellow-orange stripe down each side. The front part of their underside is orange-rufous colored. The midsection of the underside is cream colored. The underside of the rear section and tail are pinkish. The Alameda whipsnake is a slender, fast-moving snake with a broad head, large eyes and slender neck. Adults reach a length of 24 to 36 inches (USFWS 2024d).

Alameda whipsnakes live in the California inner Coast Range. This area consists of mixed chaparral, coastal scrub, annual grassland with rock piles and oak woodland habitats. Rocky outcropsare an important habitat feature for Alameda whipsnakes because they provide the snake with coverage from predators and are also home to the snake's favorite food—lizards. The primary habitat that the Alameda whipsnake inhabits is chaparral scrubland, which can include coyote scrub brush habitat. They can also

inhabit open woodlands, open spaces in canyons, pond and stream edges, and rocky hillsides (CalHerps 2024). The species is known to occur in five populations throughout Contra Costa County, most of Alameda County, and small portions of northern Santa Clara and western San Joaquin counties (Miller and Alvarez 2016).

The project is approximately 2 miles from Critical Habitat Unit 5B to the southeast and approximately 2.5 miles from Critical Habitat Unit 3 to the northwest. One occurrence of Alameda whipsnake is known within 5 miles of the project site. It was located approximately 3.27 miles from the project site (CNDDB Occurrence No.182, Figure 8). The Er-Con mat currently located at the project site could act as suitable refugia for the species, especially during the dry season. **Alameda whipsnake's preferred habitat does not occur within the project site, however the project site could be used for dispersal if surrounding areas with more suitable habitat are occupied by the species. Therefore, Alameda whipsnake has moderate potential to occur on the project site.** Mitigation measures will be implemented (see Section 7.0) to avoid impacts to the species.

6.3.4.8 Foothill Yellow-Legged Frog

The foothill yellow-legged frog is divided into six distinct clades (or DPSs) in California based on genetic divergence and conservation concern. The project site is located within the known range of the West/Central Coast clade of this species. The West/Central Coast clade of foothill yellow-legged frog is designated as federally threatened and state endangered (CNDDB 2024c). Historically, this species occurred from west of the crest of the Cascade Mountains in Oregon south to the Transverse Ranges in Los Angeles County, and in the Sierra Nevada foothills south to Kern County (Zweifel 1955, Stebbins 2003). The current range now excludes coastal areas south of northern San Luis Obispo County and foothill areas south of Fresno County, where the species is considered extirpated (Jennings and Hayes 1994). In a 1994 report (Fellers 1994), healthy, reproducing populations were reported in suitable habitat throughout the Diablo Range in Alameda, western Stanislaus, Santa Clara, San Benito, and western Fresno counties. Foothill yellow-legged frogs are found in or near rocky streams in a variety of habitats, including valley foothill hardwood, valley-foothill riparian, coastal scrub, mixed conifer, mixed chaparral, and wet meadows (Zeiner et al. 1988). This species and aquatic habitat are considered sympatric, and these frogs rarely migrate far from perennial or intermittent streams (Stebbins 2003). Foothill yellow-legged frogs require shallow, flowing water in small to moderate-sized streams containing some cobble-sized substrate and portions of open canopy important for basking (Hayes and Jennings 1988, Jennings 1988, Bourque 2008). This species deposits its egg masses on the downstream side of cobbles and boulders over which a relatively thin, gentle flow of water exists (Storer 1925, Fitch 1936, Zweifel 1955, Kupferberg 1996).

Five occurrences of foothill yellow-legged frog are known within 3 miles of the project site. The most recent occurrence was in 2019 (CNDDB Occurrence No.42, Figure 8), and the closest occurrence to the project site was in 2016 and was located approximately 2.2 miles south of the project site (CNDDB Occurrence No.46, Figure 8). Moderately suitable breeding and/or nonbreeding habitat is present in and within vicinity of the project site. Marginally suitable upland habitat is present, including the Er-Con mat,

which acts as suitable refugia for the species. **As such, foothill yellow-legged frog has moderate potential to occur on the project site.** Mitigation measures will be implemented (see Section 7.0) to avoid impacts to the species.

6.3.4.9 California Red-Legged Frog

The California red-legged frog was listed as a federally threatened species on May 23, 1996 (USFWS 1996; 61 FR 25813) and is designated as a California Species of Special Concern (CNDDB 2024c). A recovery plan was published for the California red-legged frog on September 12, 2002 (USFWS 2002). The California red-legged frog is distributed throughout 26 counties in California. California red-legged frogs predominately inhabit permanent water sources such as streams, lakes, marshes, natural and man-made ponds, and ephemeral drainages in valley bottoms and foothills up to 4,921 feet in elevation (Jennings and Hayes 1994). Adults breed in a variety of aquatic habitats, while larvae and metamorphs use streams, deep pools, backwaters of streams and creeks, ponds, marshes, sag ponds, dune ponds, and lagoons. Stock ponds are frequently used for breeding when they provide suitable hydroperiod, pond structure, and vegetative cover and are managed to control of non-native predators such as bullfrogs and exotic fish. Breeding occurs between November and April within still or slow-moving water with light to dense, riparian or emergent vegetation, such as cattails, tules, or overhanging willows (Hayes and Jennings 1988). Egg masses are attached to vegetation below the surface and hatch after 6 to 14 days. Larvae undergo metamorphosis 3.5 to 7 months following hatching and reach sexual maturity 2 to 3 years of age (Jennings and Hayes 1994). During the dry season, California red-legged frogs may use refugia in upland habitat, such as small mammal burrows or adjacent moist vegetation, for aestivation (USFWS 2002).

California red-legged frog could be present in both upland grassland habitats and in the creek channel during low flows, finding cover and food availability among dense vegetation. Annual monitoring reports from the DeSilva Gates quarry to the wildlife agencies report that one California red-legged frog was encountered during a fence/coverboard inspection in March 2014 (Swaim 2017). Eighteen occurrences of California red-legged frog are known within 3 miles of the project site. The most recent occurrence was in 2018 and is located approximately 2.44 miles north of the project site (CNDDB Occurrence No.398, Figure 8). Moderately suitable breeding and/or nonbreeding habitat is present in and within vicinity of the project site. Suitable upland habitat is present as well, including ground squirrel burrows and the Er-Con mat, which both act as refugia for the species. California red-legged frogs move throughout upland habitats more frequently during the wet season, which coincides with their breeding season, although the majority of frogs are resident to their breeding sites (Bulger et al. 2003). Project activities that may be disruptive to this species, such as clearing and grubbing, ground disturbance, and other active construction are generally scheduled to occur within the dry season for this project, when this species will not be as mobile. However, there is still the possibility of resident frogs within the project site, whether they are inhabiting wetted areas or temporarily utilizing upland habitat. **As such, California red-legged frog has moderate potential to occur on the project site.** Mitigation measures will be implemented (see Section 7.0) to avoid impacts to the species.

6.3.4.10 Lamprey – Pacific Lamprey, Western River Lamprey, and Western Brook Lamprey

The Pacific lamprey (*Entosphenus tridentatus*) is designated as a California Species of Special Concern (CNDDB 2024c). It has no federal status. Pacific lampreys grow to about 31 inches as adults. They have slender, elongated bodies with two dorsal fins arising far back on the body. The anal fins are rudimentary, and the lower lobe of the caudal fin is larger than the upper lobe and both lobes are continuous with the dorsal fin and the anal fin. Adults living in the sea are a bluish-black or greenish color above and pale below, but those in fresh water are brown. This species is distinguished by having three (or occasionally two) sharp teeth on the supraoral bar above the mouth and three sharp points on each lateral plate. Pacific lampreys are often found at sea or often far offshore. At sea, they are found at depths near surface to 4,946 feet (Close et al. 2002). This species requires cold, clear water for spawning and incubation, however their habitats across life stages varies greatly (Moyle et al. 2015).

The western river lamprey (*Lampetra ayresi*) is a California Species of Special Concern (CNDDB 2024c) with no federal status. This species is small, growing up to only 17-18 cm in total size. This predatory lamprey species has teeth in the oral disc that are noticeably pointed, except for on spawning adults who sometimes have blunt teeth. As adults, western river lamprey often have dark backs and sides, with a silver or yellow underside and a dark-colored tail. Very little is known about this species and it's habitat requirements, but it is assumed they need similar habitat to other lamprey species (Moyle et al. 2015).

The western brook lamprey (*Lampetra richardsoni*) is a California species of special concern (CNDDB 2024c) with no federal status. This small, nonpredatory species is typically less than 18 cm in length. This species has tooth plates in the oral disc that are not well developed. Adult western brook lamprey are dark on either side and on the back, with a yellow or white belly. Adults require gravel riffles for spawning, and their spawning behavior is similar to that of the Pacific lamprey. They require clear, cold water in watersheds with little disturbance, as well as low flow velocities and fine sediments (Moyle et al. 2015).

There are no CNDDB records within 3 miles of the assessment area for any of these listed lamprey species, but all three species have been reported in lower Alameda Creek, according to CalFish (CalFish 2017a), and distributions overlap with or are in the vicinity of the project area (Attachment D). Pacific lamprey was recorded in 6 of 21 electrofishing sampling events as well as during a 2023 fish trapping event in Alameda Creek by the SFPUC in Alameda Creek in 2023 (SFPUC 2023). Unidentified *Lampetra* species were recorded in 7 of 21 electrofishing sampling events as well as during the same 2023 fish trapping event in Alameda Creek (SFPUC 2023). Suitable creek habitat exists within the project site for all three species. **As such, there is high potential for Pacific lamprey, western river lamprey, and western brook lamprey to occur and nest within the project area.** Mitigation measures will be implemented (see Section 7.0) to avoid impacts to the species.

6.3.4.11 Coho Salmon—Central California Coast ESU

The coho salmon (*O. kisutch*)—Central California Coast ESU population is listed as endangered at both the federal and state level (CNDDB 2024c). Coho salmon is a medium to large salmon, with spawning adults typically measuring 8.5 to 10.9 -inch fork length and weighing from 14.6 to 29.1 pounds (Moyle 2002). Spawning males are characteristically dark red on the sides, with the head and back dark green and the belly gray to black. Females are less colorful than males and often appear dull in comparison, with dark pink on the sides.

Most spawning males are characterized by a hooked jaw and slightly humped backs. The jaw is less hooked in jacks (2-year-olds) and only very slightly hooked in females. Both sexes have small black spots on the dorsal (back) fin and upper lobe of the caudal (tail) fin, with no spots on the lower lobe of the caudal fin. The gums of the lower jaw are usually gray, except for the upper area at the base of the teeth, which is white.

Coho salmon parr (juveniles) have 8–12 narrow parr marks centered along the lateral line. The parr marks are narrow and widely spaced. The top half of the body is spotted, and the adipose fin is finely speckled, giving it a gray or dusky color. The other fins lack spots and are usually tinted orange. The anal fin is pigmented between the rays, often producing a black and orange banding pattern. The anal fin is also described as large and sickle-shaped, with a white leading edge, which, along with the large eyes, distinguishes them from other juvenile Salmonids.

There are no existent CNDDB records for coho—Central California Coast ESU within 3 miles of the project site. Suitable habitat for this species is present, and historic downstream barriers have been removed allowing coho access to the watershed. **As such, the site has moderate potential for coho salmon.** Mitigation measures will be implemented (see Section 7.0) to avoid impacts to the species.

6.3.4.12 Steelhead—Central California Coast DPS

In 2006, the population of steelhead once described as the Central California Coast ESU was recategorized as the Central California Coast DPS (NOAA 2006) and is federally threatened. Critical habitat for the CCC DPS was designated by NMFS on September 2, 2005, and includes all river reaches and estuarine areas accessible to listed steelhead in coastal river basins, from the Russian River in Sonoma County to Aptos Creek in Santa Cruz County, and inland to the Napa River in Napa County. This DPS covers “all naturally spawning anadromous populations of *O. mykiss* (steelhead) below natural and manmade impassable barriers in California streams from the Russian River (inclusive) to Aptos Creek (inclusive), and the drainages of San Francisco, San Pablo, and Suisun bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin rivers” (NOAA 2006).

The project is located within the range of CCC DPS steelhead, but Alameda Creek was removed from the final critical habitat designation. CCC DPS steelhead are found throughout the San Francisco Bay estuarine complex. CCC DPS steelhead includes those found within the counties of Lake, Mendocino,

Sonoma, Napa, Marin, San Francisco, San Mateo, Alameda, Contra Costa, San Joaquin, Monterey, San Benito, Santa Clara, Santa Cruz, and San Luis Obispo.

The Alameda Creek watershed historically supported populations of anadromous steelhead and resident trout. Activities such as water supply projects, gravel mining, urban development, and flood control modifications have altered habitat and reduced this historical fishery (Swaim 2017); however, populations of these and other fish species still exist in certain reaches of Alameda Creek and its tributaries and recent changes to flow management have resulted in perennial flow, which are more suitable to steelhead and other salmonid species.

One occurrence of CCC DPS steelhead in CNDDB is within 3 miles of the project site. The exact location is unknown, but 40–100 adults were observed below Sunol Dam in 1999 (CNDDB Occurrence No.2, Figure 8). San Francisco Public Utility Commission (SFPUC) detected steelhead and/or resident rainbow trout (*O. mykiss*) in 20 of 21 sampling events in Alameda Creek in 2023 and caught a total of 25 steelhead (*O. mykiss*) during a 2023 fish trapping event (SFPUC 2023). Suitable habitat for this species is present. **As such, species is presumed extant on the project site.** Mitigation measures will be implemented (see Section 7.0) to avoid impacts to the species.

6.3.4.13 Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is designated as a California Species of Special Concern (CNDDB 2024c). It has no federal status. This species can be found across North America in a wide range of habitats, including open grasslands, shrublands, agricultural fields, and coastal areas. Where resident, this species usually lives in pairs on permanent territories. Trees, shrubs, and fence posts are used as hunting perches and territory announcement sites. Nesting occurs in a variety of trees and shrubs but low shrubs with dense layers of protective branches or thorns are common.

The loggerhead shrike has a distinctive appearance, with grayish-brown plumage on its back and wings and a white underbelly. It has a black mask that extends across its face and a hooked bill, which it uses to impale and consume its prey. Despite being a songbird, the loggerhead shrike displays predatory behavior similar to that of raptors. Their diet mainly consists of insects, small mammals, birds, reptiles, and even other shrikes, which they impale on thorns or barbed wire fences for later consumption.

There are no CNDDB records within 3 miles of the assessment area, but the species is likely underreported in the database due to being somewhat common. Suitable foraging and nesting habitat is abundant within the project area. As such, there is **high potential for loggerhead shrike to occur and nest within the project area.** Mitigation measures will be implemented (see Section 7.0) to avoid impacts to the species.

6.3.4.14 Crotch's Bumble Bee

Crotch's bumble bee (*Bombus crotchii*) is a candidate state endangered species (CNDDB 2024c). It has no federal status. Crotch's bumble bee, like other bumble bee species, is sexually dimorphic and has two

distinct female castes: the reproductive queen and the mostly sterile female workers. Morphologically, there are no differences between queens and workers, except that queens are substantially larger than workers. Males are differentiated from the females by having a more elongated slender body and no stinger (Pfaff and Joels 2016). Crotch's bumble bee has multiple different color morphs across queens and workers that includes a combination of black, yellow, orange, and yellowish reddish (Koch 2012). Crotch's bumble bee can be found in a variety of habitats, including meadows, fields, gardens, and other open spaces. This species prefers to feed on plants of the genera *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia,* and *Eriogonum*. Queens typically emerge in March–April to establish a colony. The colony includes worker bees that forage for nectar and pollen, and males and new queens to start new colonies in the following spring. During the fall, new queens locate an overwintering spot typically underground, but can overwinter in other locations such as abandoned nests or piles of wood. Bumble bees can only use existing cavities that they locate and do not create or dig their nests (Koch 2012).

No documented observations of Crotch's bumble bee occur within the project site. However, the proposed project could potentially impact Crotch's bumble bee because the site is within the range for this species. Annual grassland areas, suitable flower resources, and some small mammal burrows suitable for underground nesting were observed on site. If Crotch's bumble bee colonies or overwintering queens are present in underground nests in work areas, work activities related to the proposed project could adversely affect this species and its habitat. **As such, Crotch's bumble bee has moderate potential to occur on the project site.** If Crotch's bumble bee is identified on or immediately adjacent to the project site, mitigation measures will be implemented (see Section 7.0).

7.0 RECOMMENDED AVOIDANCE AND MINIMIZATION MEASURES

This project is expected to fall within the scope of a number of existing programmatic permits that provide AMMs that will be adopted as standard conditions of the proposed project to protect, minimize, and avoid impacts to special-status species and other sensitive resources resulting from project-related activities. These permits were issued by entities and agencies, including the SFPUC, SWRCB, USFWS, and NMFS. The AMMs in the permits generally pertain to resource protection on stream restoration projects and may overlap with each other. In the event of overlapping measures, the most conservative approach should be taken. See Attachment F for the full list of measures provided to Sequoia. Preconstruction surveys and other avoidance measures shall be implemented to avoid injury to individual animals that may be in the areas affected by the proposed project. All surveys should be conducted according to accepted agency protocols.

Upon review of the AMMs, Sequoia has identified several species that are either newly listed, are anticipating listing, or were not covered in the AMMs listed in the permits, including bats (pallid bat, Townsend's big-eared bat, and Yuma myotis), bumble bees (Crotch's bumble bee, western bumble bee), and San Francisco dusky-footed woodrat. Below is a summary of proposed AMMs to ensure protection of these species during the course of the project. Of note, steelhead salmon, Coho salmon, Pacific lamprey, western river lamprey, and western brook lamprey are not specifically mentioned in the AMMs, but their protection measures are implied under fish rescue measures in the NMFS Biological Opinion, namely "Capture and Relocation of Salmonids Guidelines for a Qualified Biologist", "Fish Relocation using Electrofishing", "Fish Relocation using Seines", and "Relocation of Salmonids using either Electrofishing or Seining."

7.1 Special-Status Bats

A qualified biologist shall be hired to conduct surveys for special-status bats (specifically, pallid bat, Townsend's big-eared bat, and Yuma myotis) no more than two weeks prior to the planned commencement of construction activities that have the potential to disturb bat day roosts or maternity roosts through elevated noise levels or removal of trees. If a visual survey is not sufficient to determine the presence/absence of bats, acoustic equipment (e.g., AnaBat) shall be used to determine potential occupancy type of species present. If an active maternity roost is detected, a qualified biologist shall determine an appropriate avoidance buffer to be maintained from April 1 until young are flying (typically through August). If an active day roost is detected in a tree or structure planned for removal, or within a zone of influence (i.e., noise, vibration) that could result in roost abandonment, as determined by a qualified biologist, the bats shall be safely evicted under the guidance of a qualified biologist. Day roosts shall not be removed unless the daytime temperature is at least 50 degrees Fahrenheit and there is no precipitation. Mitigation for day roosts impacted by the project will be achieved through the installation of bat houses on site to replace lost roosts at a 1:1 ratio. Replacement roosts will be placed at the discretion of the qualified biologist.

7.2 Special-Status Bumble Bees

To minimize the potential take of Crotch's bumble bee, a qualified biologist shall conduct a take avoidance survey for active bumble bee colony nesting sites in any previously undisturbed area prior to any vegetation removal or ground-disturbing activities, if the work will occur during the flying season (March 1—September 1). Survey results, including negative findings, shall be submitted to CDFW prior to implementing vegetation- or ground-disturbing activities. Surveys shall take place during flying season when the species is most likely to be detected above ground. The surveys shall occur when temperatures are above 60 degrees Fahrenheit (°F), on sunny days with wind speeds below 8 miles per hour, and at least 2 hours after sunrise and 3 hours before sunset. Surveyors shall conduct transect surveys focusing on detection of foraging bumble bees and underground nests using visual aids such as binoculars. At minimum, a survey report should provide the following declaration: If no western bumble bees or potential western bumble bees are detected, no further mitigation is required. If potential Crotch's bumble bees are seen but cannot be identified, the applicant shall obtain authorization from CDFW to use nonlethal netting methods to capture bumble bees to identify them to species. If protected bumble bee nests are found, a plan to protect bumble bee nests and individuals to ensure no take of western bumble bee species shall be developed by a qualified biologist in consultation with the CDFW. CDFW shall approve the plan prior to implementation.

7.3 San Francisco Dusky-Footed Woodrat

Dusky-footed woodrats are semi-arboreal and may build nests on the ground in dense vegetation as well as in trees (most often evergreens like coast live oaks). A qualified biologist shall conduct a preconstruction survey to identify woodrat nests. Nests will be flagged for avoidance. Any nests identified should be avoided by a minimum of 5 feet. If active woodrat middens are discovered onsite and are unavoidable, a relocation plan shall be developed and implemented.

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Attachment A

USFWS Information for Planning and Consultation System Report

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Alameda County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building

2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Salt Marsh Harvest Mouse Reithrodontomys raviventris Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/613	Endangered
San Joaquin Kit Fox Vulpes macrotis mutica Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2873	Endangered

Birds

NAME	STATUS
California Condor Gymnogyps californianus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8193	Endangered
California Least Tern Sternula antillarum browni Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8104	Endangered

Reptiles

NAME	STATUS
Alameda Whipsnake (=striped Racer) Masticophis lateralis euryxanthus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5524	Threatened

Northwestern Pond Turtle Actinemys marmorata — Proposed Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/1111

Amphibians

NAME	STATUS

California Red-legged Frog Rana draytonii — Threatened
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/2891

California Tiger Salamander Ambystoma californiense — Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/2076

Foothill Yellow-legged Frog Rana boylii — Threatened
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/5133

Western Spadefoot Spea hammondii — Proposed Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/5425

Insects

NAME	STATUS

Monarch Butterfly Danaus plexippus — Candidate
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9743

Crustaceans

NAME	STATUS

Conservancy Fairy Shrimp Branchinecta conservatio — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/8246

Vernal Pool Fairy Shrimp Branchinecta lynchi — Threatened
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/498

Vernal Pool Tadpole Shrimp Lepidurus packardi — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/2246

Flowering Plants

NAME	STATUS

Contra Costa Goldfields Lasthenia conjugens — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/7058

Lassics Lupine Lupinus constancei — Endangered
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/7976

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

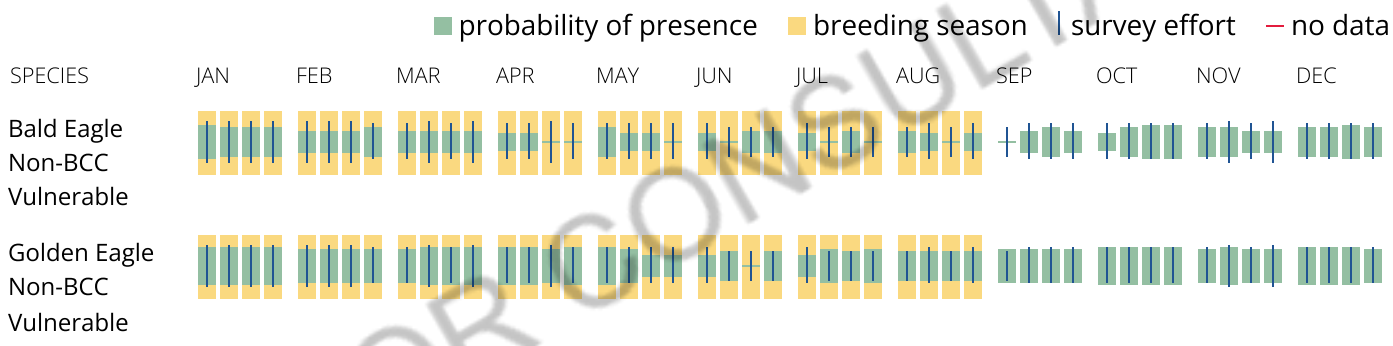
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid

cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around

your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Allen's Hummingbird Selasphorus sasin This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Belding's Savannah Sparrow Passerculus sandwichensis beldingi This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Black Swift Cypseloides niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878	Breeds Jun 15 to Sep 10
Bullock's Oriole Icterus bullockii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull Larus californicus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31

California Thrasher Toxostoma redivivum — Breeds Jan 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Clark's Grebe Aechmophorus clarkii — Breeds Jun 1 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Heermann's Gull Larus heermanni — Breeds Mar 15 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Lawrence's Goldfinch Spinus lawrencei — Breeds Mar 20 to Sep 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Marbled Godwit Limosa fedoa — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9481

Northern Harrier Circus hudsonius — Breeds Apr 1 to Sep 15
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/8350

Nuttall's Woodpecker Dryobates nuttallii — Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Santa Barbara Song Sparrow Melospiza melodia graminea — Breeds Mar 1 to Sep 5
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/5513

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Western Grebe aechmophorus occidentalis — Breeds Jun 1 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/6743

Western Gull Larus occidentalis — Breeds Apr 21 to Aug 25
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Western Screech-owl Megascops kennicottii cardonensis — Breeds Mar 1 to Jun 30
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Willet Tringa semipalmata — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Yellow-billed Magpie Pica nuttalli — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9726

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

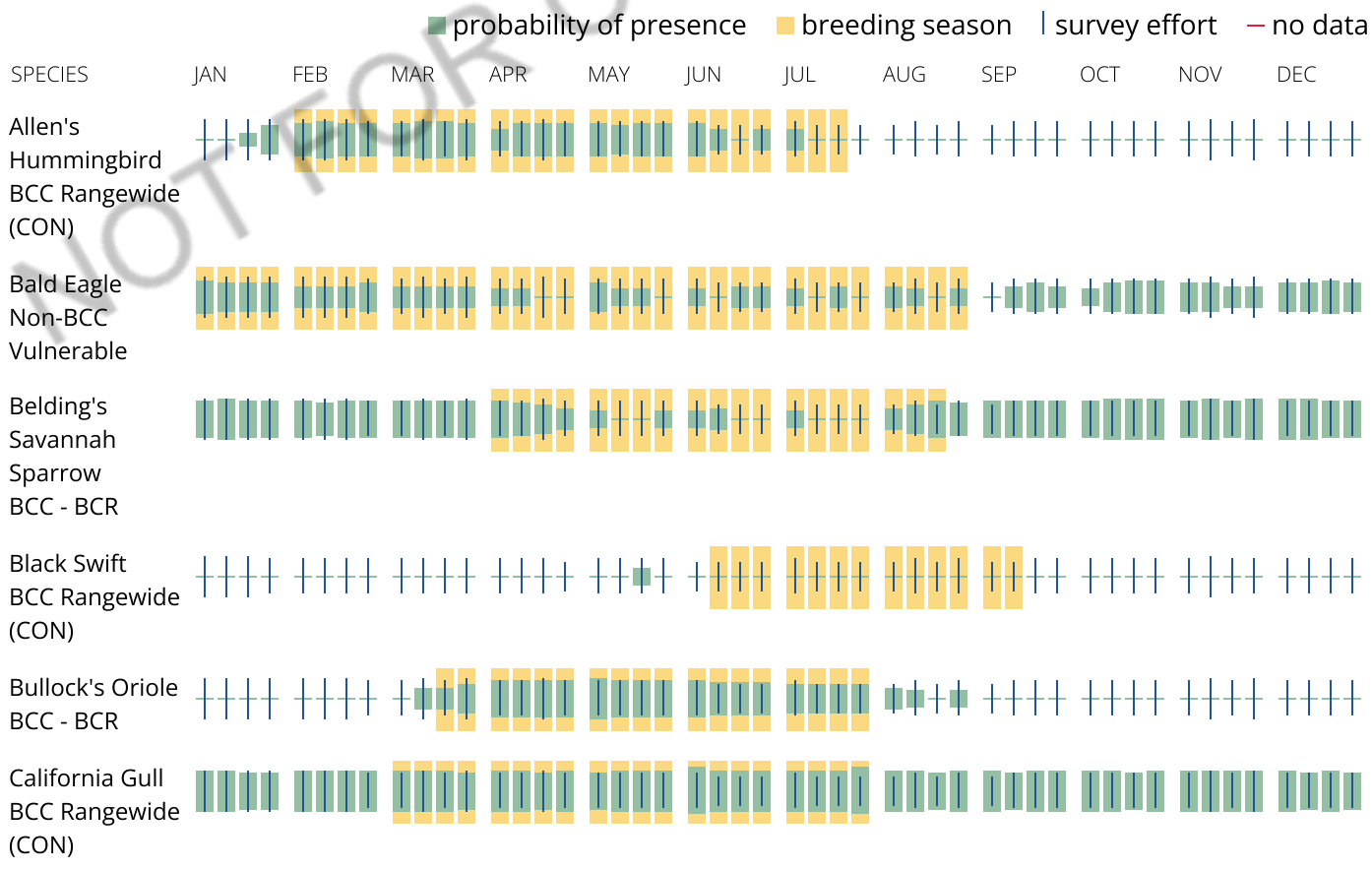
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

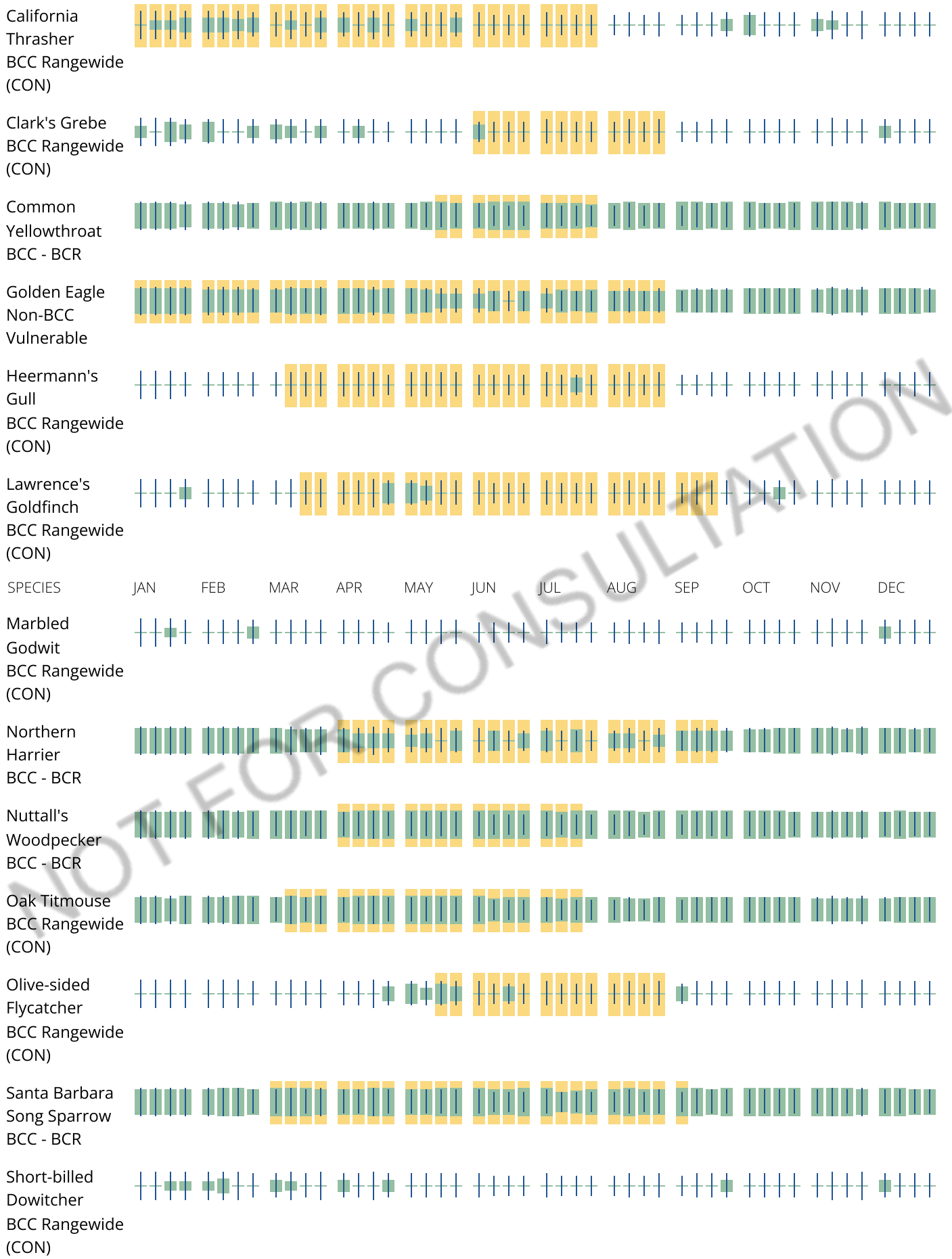
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

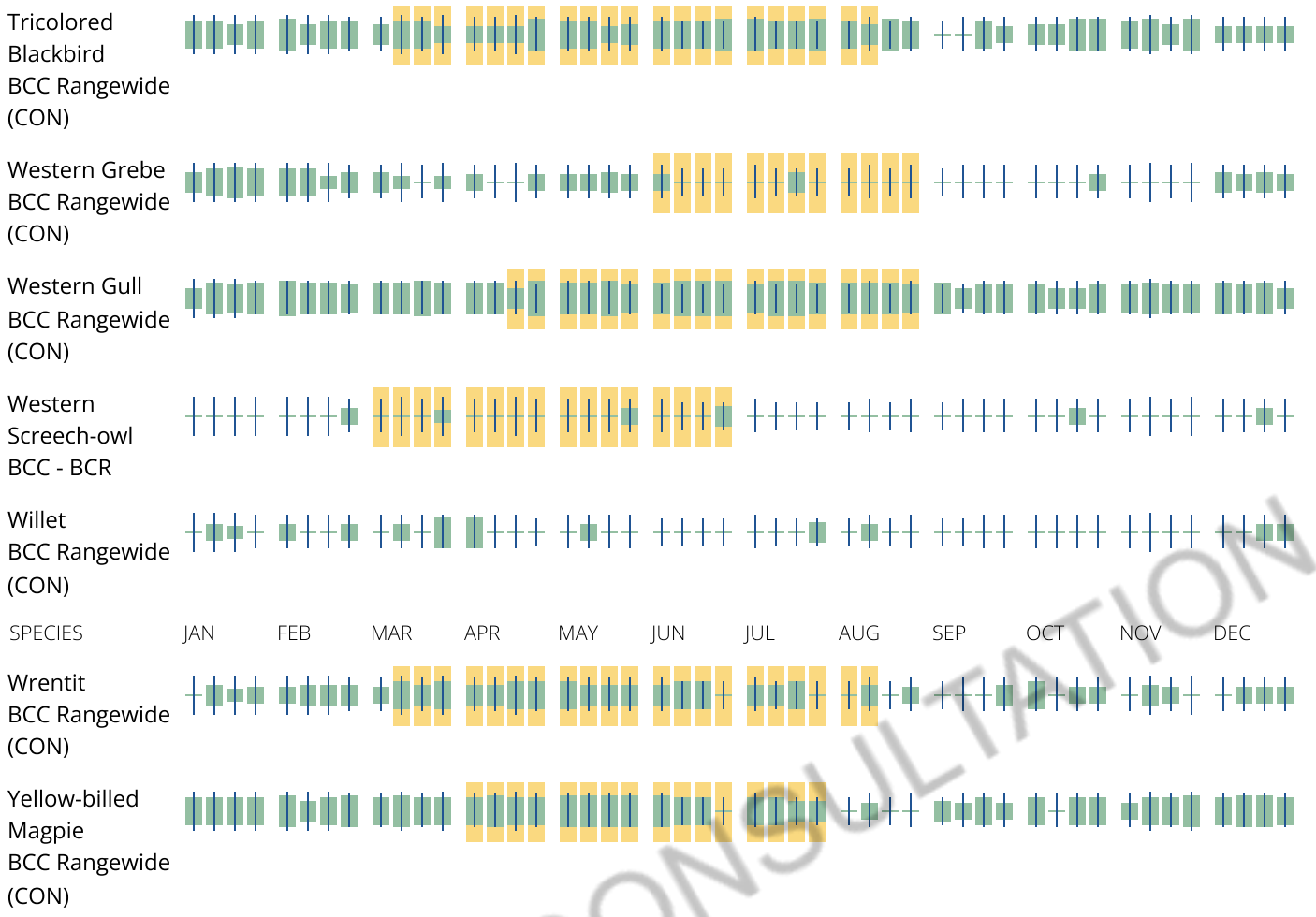
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.







Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1C
- PEM1Cx

FRESHWATER POND

- PUBHx

LAKE

- L1UBHx

RIVERINE

- R4SBC
- R3UBH
- R4SBA

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Attachment B

NMFS Online Species List Query Report

Quad Name **La Costa Valley**
Quad Number **37121-E7**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) - **X**
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) -
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat -
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH - **X**
Chinook Salmon EFH - **X**
Groundfish EFH -
Coastal Pelagics EFH -
Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds
See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

Attachment C

CalFish Species List, Lower Alameda Creek

California Fish Website

Fish Species

Fish Species by Watersheds : 'Lower Alameda Creek-180500040603'

Freshwater native and non-native fish species present currently and/or historically, determined from the PISCES database (Feb. 26, 2014). Some species, such as salmon or steelhead, may no longer be present upstream of dams that lack fish passage.

Yes/No corresponds to California native species

Bigscale Logperch

Percina macrolepida

No

Black Bullhead

Ameiurus melas

No

Black Crappie

Pomoxis nigromaculatus

No

Bluegill

Lepomis macrochirus

No

Brown Bullhead

Ameiurus nebulosus

No

Central California Coast Winter Steelhead

Oncorhynchus mykiss

Yes

Central Coast Coho Salmon

Oncorhynchus kisutch

Yes

Channel Catfish

Ictalurus punctatus

No

Coastal Rainbow Trout

Oncorhynchus mykiss irideus

Yes

Coastrange Sculpin

Cottus aleuticus

Yes

Common Carp

Cyprinus carpio

No

Goldfish

Carassius auratus

No

Green Sunfish

Lepomis cyanellus

No

Hardhead

Mylopharodon conocephalus

Yes

Largemouth Bass

Micropterus salmoides

No

Pacific Lamprey

Entosphenus tridentata

Yes

Redear Sunfish

Lepomis microlophus

No

Riffle Sculpin

Cottus gulosus

Yes

River Lamprey

Lampetra ayersi

Yes

Sacramento Blackfish

Orthodon microlepidotus

Yes

Sacramento Perch

Archoplites interruptus

Yes

Sacramento Pikeminnow

Ptychocheilus grandis

Yes

Sacramento Sucker

Catostomus occidentalis occidentalis

Yes

Sacramento Tule Perch

Hysterocarpus traskii traskii

Yes

Smallmouth Bass

Micropterus dolomieu

No

Spotted Bass

Micropterus punctulatus

No

Threadfin Shad

Dorosoma petenense

No

Western Brook Lamprey

Lampetra richardsoni

Yes

Western Mosquitofish

Gambusia affinis

No

White Catfish

Ameiurus catus

No

White Crappie

Pomoxis annularis

No

Attachment D

Pacific Lamprey, Western River Lamprey, and Western Brook Lamprey Range Maps

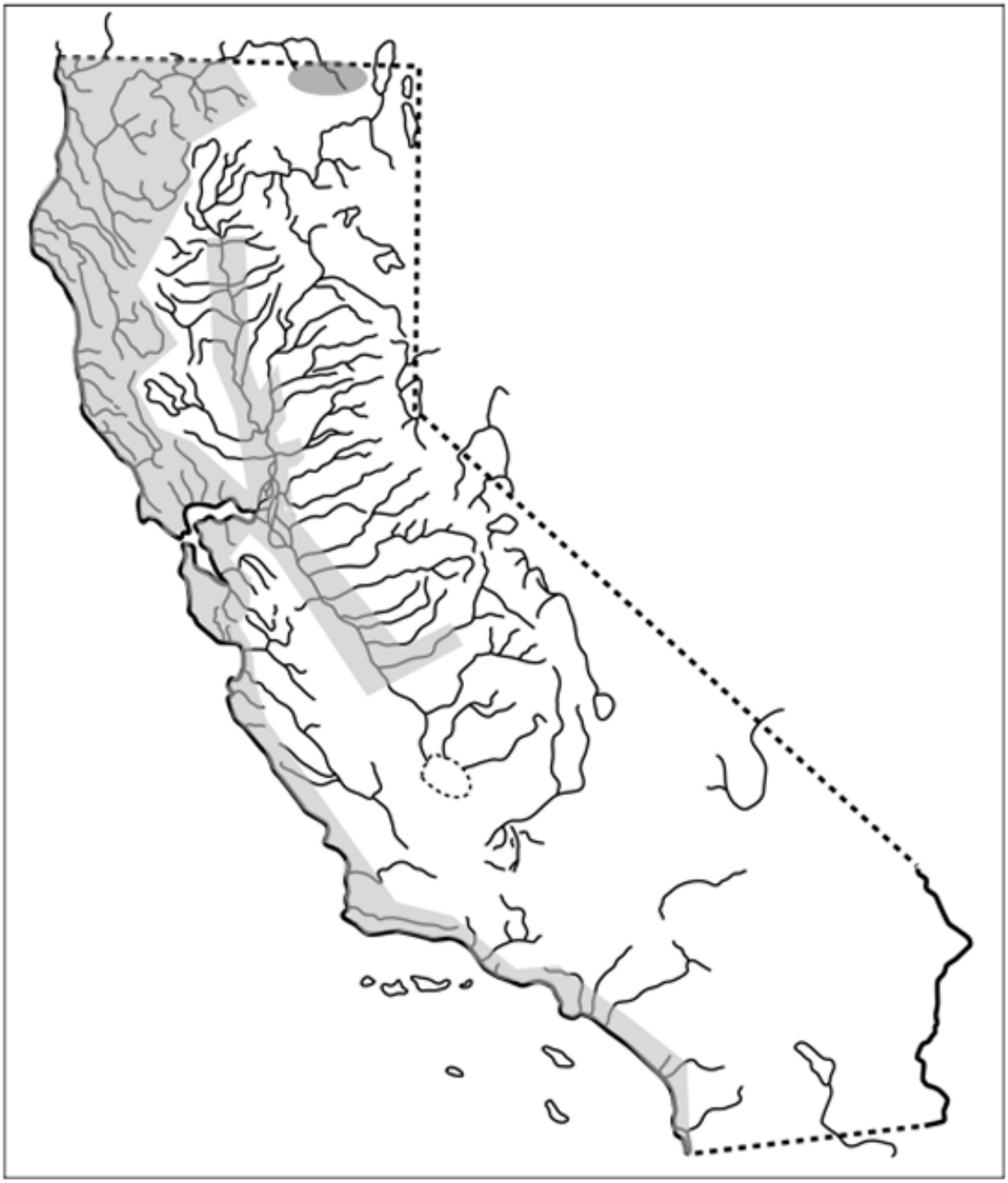


Figure 1. General distribution of Pacific lamprey in California (Moyle et al. 2015).

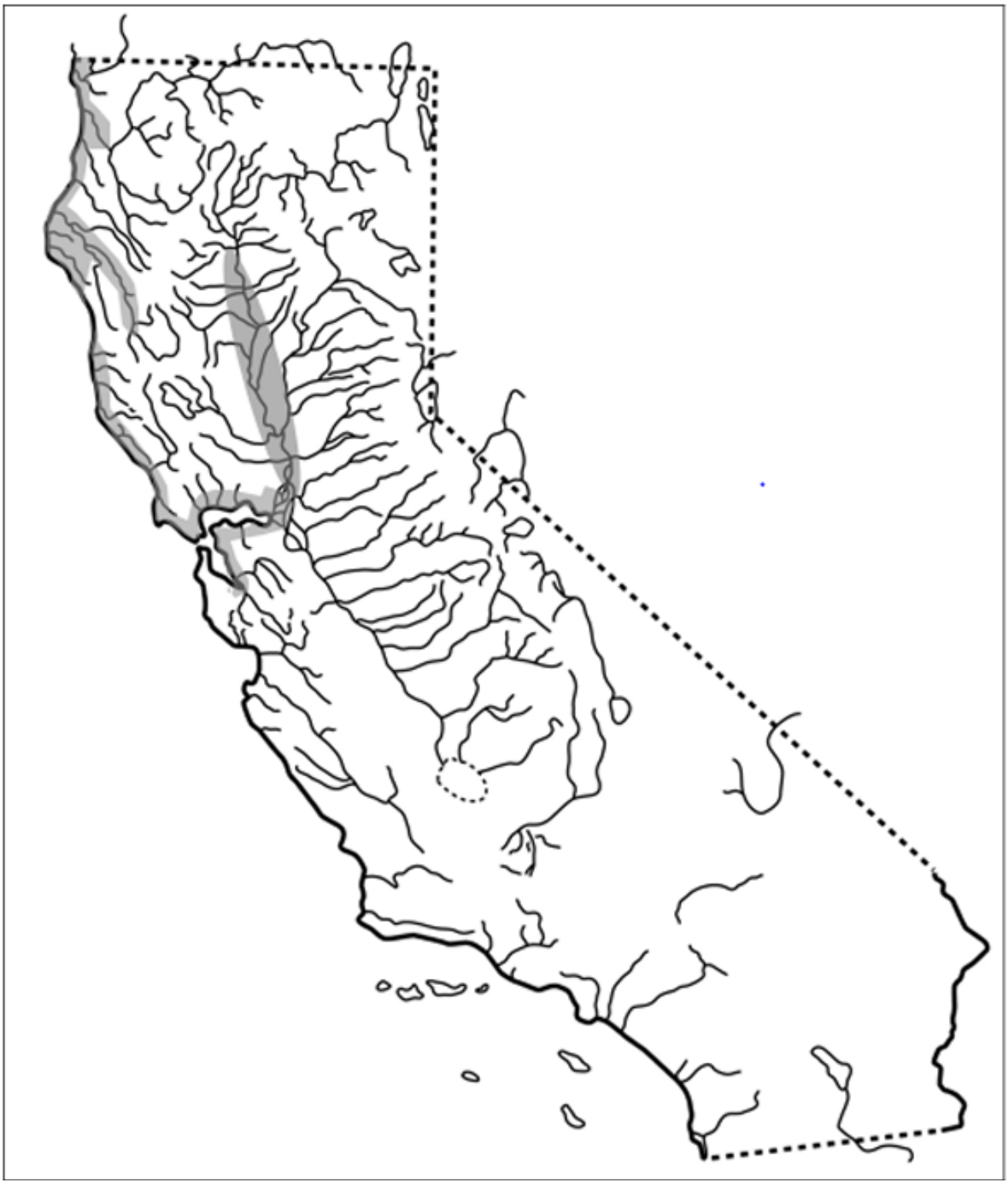


Figure 2. Presumed distribution of western river lamprey in California (Moyle et al. 2015).

Figure 3. Presumed distribution of western brook lamprey in California (Moyle et al. 2015).

Attachment E

Project Avoidance and Minimization Measures by Entity and Permit

ID	Title	Description
SFPUC-1	Construction Staging	PG&E and CalTrout will coordinate with SFPUC to locate temporary construction staging areas outside of the quarries (contact Miranda Maupin, Alameda and Tuolumne Watershed Resources Manager, at mmaupin@sfwater.org and Clayton Koopmann, Rangeland Manager, at ckoopmann@sfwater.org).
SFPUC-10	5-day Start of Work Notification	Prior to mobilization for all locations, the project sponsors and contractors will contact SFPUC at least 5 days prior to onset of work and verify that watershed conditions are appropriate for the work and verify site access and road conditions (contact Miranda Maupin, Alameda and Tuolumne Watershed Resources Manager, at mmaupin@sfwater.org or Dave Baker, Alameda Watershed Forester, at dbaker@sfwater.org or (415) 518-4285).
SFPUC-11	24-hr Start of Work Notification; Fire Prevention Plan	The project sponsors and/or contractors will contact SFPUC-NRLMD 24-hours in advance of work to confirm that conditions are suitable for construction, (please contact Dave Baker, Alameda Watershed Forester, at dbaker@sfwater.org). In addition, the project sponsor and/or its contractor will submit fire prevention measures, particularly for any hot work (e.g. welding) to SFPUC-NRLMD at least five business days in advance of work for review and approval. During construction, the project sponsor and/or its contractor will contact the National Weather Service daily to confirm that local weather conditions are suitable for construction activity. The project sponsor and/or its contractor will cease all construction activities during declared Red Flag days or if directed to do so by SFPUC-NRLMD during high fire hazard periods.
SFPUC-12	Millbrae Dispatch Daily Calls	The project sponsors and contractors will notify SFPUC Millbrae Dispatch twice each day, at (650) 872-5900, when entering and leaving SFPUC property. Please be prepared to provide the following information when asked by the dispatcher: a. Gate number b. Organization name Page 3 of 7 c. Name of person on site d. Phone number of person on site e. Number of vehicles and type of vehicles f. Destination in watershed g. Time in and time out expect'
SFPUC-13	Biological Resources Assessment and Wildlife Fencing	The project sponsors shall complete and submit for review and approval a biological resources assessment, including any relevant field surveys, and a comprehensive impact avoidance and minimization plan for the project. This shall include, but is not limited to, any plans for wildlife exclusion fencing (for more information, contact Mia Ingolia, Senior Biologist, at mingolia@sfwater.org, Scott Simono, Biologist, at ssimono@sfwater.org, Ben Dudek, Biologist, at bdudek@sfwater.org and Scott Chenue, Senior Biologist, at schenue@sfwater.org).

SFPUC-14	Rare Plant Surveys	As part of the update for a biological assessment, a preconstruction sensitive biological resources/species survey by a qualified biologist, including a seasonally appropriate survey (May) for rare plants, is required, Biological resources to be accounted for include but are not limited to nests and refugia such as burrows, Special status plant species include State and federally listed species, along with the species with a rare plant ranking (CRPR) per the California Native Plant Society (CNPS). The project sponsor will provide electronic copies of any biological survey report for the project to SFPUC biologists (contact Mia Ingolia, Senior Biologist, at mingolia@sfwater.org, Scott Simono, Biologist, at ssimono@sfwater.org, Ben Dudek, Biologist, at bdudek@sfwater.org and Scott Chenue, Senior Biologist, at schenue@sfwater.org).
SFPUC-15	Pre-construction Nesting Bird Surveys	The project sponsors will arrange for a qualified biologist to conduct pre-construction nesting bird surveys, including for ground nesting birds, if work occurs between February 15 and August 31, within two-weeks of commencing the project or activity in order to implement appropriate avoidance measures. The project sponsor will provide electronic copies of any biological survey report for the project to SFPUC biologists (for more information, contact Mia Ingolia, Senior Biologist, at mingolia@sfwater.org, Scott Simono, Biologist, at ssimono@sfwater.org, or Ben Dudek, Biologist, at bdudek@sfwater.org).
SFPUC-16	Biological Monitor during Construction	It is the responsibility of the project sponsor to arrange for at least one qualified biological monitor on site during the proposed project and activities on SFPUC property. The size of the project may require more than one biomonitor. This will be further discussed with the SFPUC when an updated biological assessment and an impact avoidance and minimization plan is submitted for review. The biological monitor will be present on site for the duration of project activities. Each morning before the start of work, a biological monitor will check in work crew, inspect newly arriving vehicles, equipment, tools, etc., inspect the project work locations to verify that no special status species are present within designated work areas and ensure that parking, staging, work, etc. is occurring in preapproved, designated areas. The biological monitor will have the authority to stop any action that may result in take of special status species or unanticipated impacts on their habitats. The project sponsor will cover any holes or voids, or provide escape ramps, to prevent special status species from becoming trapped. In addition, the biological monitor will submit a weekly report (via email) regarding the implementation of the "Required Measures" in the SFPUC's Project Review Certificate to the NRLMD Ecology Group (please contact Scott Simono, Biologist, at ssimono@sfwater.org and Ben Dudek, Biologist, at bdudek@sfwater.org).
SFPUC-17	Environmental Awareness Training	The project sponsor or biological monitor will hold special status species environmental tailboard trainings for employees and contractors performing construction on SFPUC property. All personnel visiting the job site or performing work on or through SFPUC property will attend an environmental tailboard for the project. No work or access onto SFPUC property (including parking or driving) will be performed by individuals who have not received this training. The training shall include a description of the special status species that have the potential to be impacted by the project; and any SFPUC requirements for the project (for more information, please contact Mia Ingolia, Senior Biologist, at mingolia@sfwater.org, Scott Simono, Biologist, at ssimono@sfwater.org and Ben Dudek, Biologist, at bdudek@sfwater.org).

SFPUC-18	Sunol Native Plant Nursery	The project sponsors will coordinate with the SFPUC for revegetation. Specifically, a revegetation plan shall be submitted for review. Any plant species seed mix shall be reviewed and approved by the SFPUC as well as seed lot analyses, including weed seed content, for any seed to be purchased. Any live plants to be planted must be procured through the SFPUC Sunol Native Plant Nursery. Coordination with the nursery is required at least two years before planting to ensure proper time for seed collection, and plant propagation and establishment. (please contact Scott Simono, Biologist, at ssimono@sfwater.org, Mia Ingolia, Senior Biologist, at migolia@sfwater.com, and Bree Candiloro, SFPUC Nursery Manager, at bcandiloro@sfwater.org).
SFPUC-19	No Imported Soil	The use of imported soil, compost, or other organic amendments on SFPUC watershed land is not allowed. In addition, the installation of container (rooted) plants on SFPUC watershed lands is prohibited, except ass provided above, to prevent the introduction of plant pathogens and other invasive exotic species. Any approved rock, gravel, sand or other type of aggregate or fill shall be virgin quarried material, not recycled. Any exceptions to this policy are subject to prior review and approval by the SFPUC-NRLMD's Planning and Regulatory Compliance staff (for more information, contact Mia Ingolia, Biologist, at mingolia@sfwater.org or (415) 554-1872).
SFPUC-2	SERP Slides	Pete McHugh, Senior Environmental Scientist at the California Department of Fish and Wildlife (CDFW), will email SFPUC his presentation slides on the Statutory Exemption for Restoration Projects (SERP) – (contact Casey Rando, Senior Environmental Compliance Planner, at crando@sfwater.org).
SFPUC-20	Decontamination + Inspection	All conditions of the SFPUC Decontamination Standard Operating Procedures will be incorporated into the project and will include, but will not be limited to: Before entering SFPUC property: a. All equipment, tools, clothing, and personal protective equipment or PPE (including boots and shoes) shall be thoroughly cleaned of all visible dirt and plant material prior to working on SFPUC property. All equipment, tools, and PPE (including boots and shoes) should be decontaminated with a ?70% Ethyl or isopropyl alcohol by thoroughly wetting the surface and allowing to air dry before entering SFPUC watershed property. b. Vehicles and Large Equipment must arrive highway legal – Before entering SFPUC Watersheds, the exterior and interior of all vehicles and large equipment (including tires, tracks, and undercarriage) must be cleaned and washed such that all debris, organic matter, and soil is removed. In some instances (as designated by NRLMD staff), cleaning and washing must be followed by sanitizing to eliminate pathogens. c. Vehicles, equipment, tools and PPE (including boots and shoes) must be inspected by SFPUC NRLMD staff prior to commencing work on SFPUC property. Inspections are performed between 8:00 a.m. and 12:00 noon and must be scheduled at least five business days before the start of work (contact Miranda Maupin, Alameda and Tuolumne Watershed Resources Manager, at mmaupin@sfwater.org). d. After completing work and before moving on to the next site, PG&E crews and contractors will repeat step "a" above to decontaminate equipment, tools, clothing, and PPE.

SFPUC-21	7-day Decontamination Dry Period	All equipment, watercrafts, barges, tools, diving and/or other personal protective gear, etc. that may encounter the water must be thoroughly cleaned, decontaminated, and stored dry for 7 days prior to entering SFPUC property. Project sponsors and all contractors must consult and comply with the SFPUC Field Procedures for Decontamination for Aquatic Surveys and complete the Decontamination Checklist. Please also see Aquatics Decontamination Procedures for Contractors Summary. An SFPUC (NRLMD) representative must be on site to witness cleaning and decontaminations. This should be coordinated with NRLMD with at least one week's notice. In addition, an SFPUC representative will need to be present onsite when the equipment, watercrafts, barges, tools, diving and/or other personal protective gear is brought onto SFPUC property/watershed lands to do a final day-of inspection prior to launch of vessels or deployment of equipment/gear. This inspection must be coordinated at least five business days before the scheduled work (contact Scott Chenue, Senior Biologist, schenue@sfwater.org or 925-789-7278 and Miranda Maupin, Alameda and Tuolumne Watershed Resources Manager, mmaupin@sfwater.org or 415-654-3907).
SFPUC-22	Fire Prevention	Depending on when the project/work occurs in the Watershed, the project sponsor will maintain the following fire prevention and extinguishing equipment at the work site: a. I If work occurs from December 15th through May 31st, then the project sponsor will provide at least one 300-gallon water buffalo fully filled with water; a minimum of 200-feet of 1-inch fire hose, (and at least enough hose to reach all portions of the project area from the parking location of the water buffalo) and shovels on the project site always for fire safety. The water buffalo will be moved periodically so that it is located no more than 200 feet from any active project site (or as directed by the NRLMD Watershed Forester). b. If work occurs from June 1st through December 14th, then the project sponsor will comply with all PG&E Fire Season protocols and have at the minimum a 300-gallon water buffalo fully filled with water; a minimum of 200-feet of 1-inch fire hose (and at least enough hose to reach all portions of the project area from the parking location of the water buffalo); shovels and two 5-gallon backpack fire pumps on the project site always for fire safety. All vehicles will carry a shovel and a fully charged 10 lb. fire extinguisher. The water buffalo will be moved periodically so that it is located no more than 200 feet from any active project site (or as directed by the NRLMD Watershed Forester). If vehicular overland travel is required and as directed by the NRLMD forester, a 2,000- gallon water truck may be required to pre-wet the access route to reduce potential ignition hazard. Should topography be too steep or unsafe for water truck access, alternative equipment may be proposed by PG&E but must be approved by the Watershed Manager or the Watershed Forester prior to implementation (see contact info below). Work may be severely limited or stopped altogether during High Fire Danger and/or Red Flag conditions (for more information, please contact Dave Baker, Alameda Watershed Forester, at dbaker@sfwater.org or (415) 518-4285). PG&E will provide contact information (mobile phone and email address) for the on-site Project Manager to receive iINFO advisories and be able to stop work as needed.
SFPUC-23	15 mph speed limit	The speed limit within the Watershed is limited to 15 m.p.h.
SFPUC-24	No Parking off roads unless approved	No travel, parking, or staging off improved roadways is permissible unless specifically approved in advance by the SFPUC.
SFPUC-25	Irrigation Required	If work occurs from June 1st through December 14th, then the project sponsor will irrigate the trees in the dewatered portion of the creek to prevent tree death and in a frequency that sustains their health and wellness.

SFPUC-26	Debris Removal and Inspection	Except for locations where SFPUC-NRLMD staff approval has been previously provided, the project sponsor and/or its contractors will ensure that all debris is removed from SFPUC property and disposed of properly and legally. In addition, the project sponsor will arrange for a post-project/restoration site inspection by SFPUC staff (contact Dave Baker, Alameda Watershed Forester, at dbaker@sfwater.org).
SFPUC-3	BCR	Claire Buchanan, Senior Project Manager for CalTrout, will send SFPUC the 2017 Biological Constraints Report (contact Casey Rando, Senior Environmental Compliance Planner, at crando@sfwater.org).
SFPUC-4	Tribal Coordination	If SF Planning is designated the lead agency on the project's CEQA exemption, the SFPUC-NRLMD requests to be kept updated especially as it involves communications with Native American Tribes near to the project area (contact Casey Rando, Senior Environmental Compliance Planner, at crando@sfwater.org).
SFPUC-5	Water Releases	Casey Rando will communicate with PG&E the existing protocol for communicating planned and unplanned water releases upstream of the worksite (contact Casey Rando, Senior Environmental Compliance Planner, at crando@sfwater.org).
SFPUC-6	Access Permit Required	The project sponsors and PG&E contractor will obtain an approved SFPUC-NRLMD Access Permit (and keys, if necessary) 30 days prior to entering SFPUC property to perform work (contact John Fournet, Water Operations Analyst, at jfournet@sfwater.org and Gloria Ng, NRLMD secretary, at gng@sfwater.org).
SFPUC-7	Pipeline Easement	To obtain a new or modified easement to offset the new pipeline, PG&E will provide SFPUC RES with an easement proposal, legal description, KMZ, and land rights map for the proposed easement boundaries (contact Jonathan Mendoza, Principal Administrative Analyst, at JSMendoza@sfwater.org).
SFPUC-8	Quarry Access	PG&E will work with Martin Marietta and DeSilva quarries to establish access to the work locations, and finalize workspace and staging area maps. PG&E will provide copies of the quarry approved maps to SFPUC RES (contact Jonathan Mendoza, Principal Administrative Analyst, at JSMendoza@sfwater.org).
SFPUC-9	Staging Revocable Licenses	PG&E will send a detailed exhibit which highlights the proposed staging areas outside of PG&E's easement and will work with SFPUC RES to obtain revocable licenses for the work (contact Jonathan Mendoza, Principal Administrative Analyst, at JSMendoza@sfwater.org).
SWRCB-AMP-02	Rain Event Limitations	To the maximum extent practicable, construction activities will be restricted to periods of low rainfall (less than 1" per 24-hour period) and periods of dry weather (with less than a 50% chance of rain). During these restricted periods, under no circumstances will construction activities occur between 30 minutes prior to sunset and 30 minutes after sunrise (i.e., no night work during rain events). If rain exceeds 0.5 inch during a 24-hour period, work will cease until no further rain is forecast. Construction activities halted due to precipitation may resume when precipitation ceases and the National Weather Service 72-hour weather forecast indicates less than a 50% chance of 0.5 inch of rain or less during a 24-hour period. Prior to construction activities resuming, an agency-approved biologist will inspect the project area and all equipment/materials for the presence of special-status amphibians.

SWRCB-AMP-03	Pre-Construction Survey	If covered amphibians are known or assumed to be present, no more than 24 hours prior to the date of initial ground disturbance and vegetation clearing, an agency-approved biologist will walk within the project site to investigate all potential areas that could be used by the special-status amphibians for feeding, breeding, sheltering, movement, and other essential behaviors. If a special-status amphibian species is encountered during the survey the project proponent will refer to and follow procedures described below in AMP-0011 and AMP-0012 for passively allowing the species to move out of the work area or actively relocating the species out of harm's way. Proposed projects that may need to actively relocate amphibians out of harm's way will require the project proponent to submit a project-specific species relocation plan for agency review and approval, as described in AMP-0012.
SWRCB-AMP-04	Disease Prevention and Decontamination	To prevent disease conveyance among work sites during project implementation, the agency-approved biologist will ensure that the decontamination protocols described in CDFW, Aquatic Invasive Species Disinfection/Decontamination Protocols (CDFW 2016, or latest version) will be implemented prior to gear and equipment arriving at or moving between work sites and will be followed at all times. A copy of the code of practice must be available at the project site.
SWRCB-AMP-05	Lighting	In addition to GCM-3, Construction Hours (general protection measures in Appendix E), artificial lighting at a project site will be prohibited to the maximum extent practicable during the hours of darkness, except when necessary for driver or pedestrian safety.
SWRCB-AMP-06	Pump Screens	The agency-approved biologist will be present during all vegetation clearing and grubbing activities in areas within the currently occupied range of special-status amphibians where suitable habitat is present. Prior to vegetation removal, the agency-approved biologist will thoroughly survey the area for these species (measure AMP-003). Vegetation in sensitive areas will either be cleared with handheld motorized tools (e.g., weed eaters, chainsaws) or by hand pulling, or an agency-approved biologist will walk in front of vegetation clearing equipment. Where dense brush occurs (e.g., blackberry, periwinkle), the biologist may direct an equipment operator to lift and shake dense vegetation with an excavator or backhoe so that the biologist can look underneath and search for amphibians. Tree stumps and roots will be left in place where possible to avoid any ground disturbance and preserve refugia habitat, with the exception of non-native invasive plants that could propagate from remaining vegetative material. Native branches, leaf litter, mulch, woody debris, and other vegetative trimmings may be retained and spread on site to enhance habitat as appropriate.
SWRCB-AMP-07	Removal of Non-native Invasive Species	If a water body is to be temporarily dewatered by pumping, intakes will be completely screened consistent with NMFS (1997) and CDFW (2001) screening guidelines, or latest updates to those guidelines. The intake will be placed in a perforated bucket or other method to attenuate suction to prevent special-status amphibians from entering the pump system. Water will be returned to the water body when diversions or coffer dams are removed and flow is restored. If no diversion or coffer dams were used during dewatering, the water body will be allowed to refill naturally from precipitation, runoff, or hydrological processes refilling the water body naturally.
SWRCB-AMP-08	Placement of Suitable Erosion Control Material	To prevent amphibians from becoming entangled, trapped, or injured, erosion control materials with plastic or synthetic monofilament netting will not be used. This includes products that use photodegradable or biodegradable synthetic netting, which can take several months to decompose. Acceptable materials include natural fibers such as jute, coconut, twine, or other similar fibers. Following site restoration, erosion control materials, such as straw wattles, will not block the movement of special-status amphibians.

SWRCB-AMP-09	Placement of Suitable Erosion Control Material	To prevent amphibians from becoming entangled, trapped, or injured, erosion control materials with plastic or synthetic monofilament netting will not be used. This includes products that use photodegradable or biodegradable synthetic netting, which can take several months to decompose. Acceptable materials include natural fibers such as jute, coconut, twine, or other similar fibers. Following site restoration, erosion control materials, such as straw wattles, will not block the movement of special-status amphibians.
SWRCB-AMP-10	Encounters with Species	Each encounter with a special-status amphibian will be treated on a case-by-case basis. If any life stage of the special-status amphibian species is found and these individuals may potentially be killed or injured by work activities, the following will apply: - If a special-status amphibian is detected in the project area, work activities within 50 feet of the individual that may potentially be harmed, injured, or killed will cease immediately and the agency-approved biologist will be notified. Based on the professional judgment of the agency-approved biologist, if project activities can be conducted without harming or injuring the species, it may be left at the location of discovery and monitored by the agency-approved biologist. All project personnel will be notified of the finding and at no time will work occur within 50 feet of a species without agency-approved biologist present. - Where practicable, contact with the special-status amphibian will be avoided and it will be allowed to move out of the potentially hazardous situation of its own volition. Allowing a special-status amphibian to move out of the potentially hazardous situation of its own volition may not be appropriate for multi-day projects because they could stay or move back into the project site. If there is an immediate hazard or if there is no suitable, accessible habitat nearby for the amphibian to relocate to, it will be moved following approved handling protocol (AMP-0011).
SWRCB-AMP-11	Species Observations and Handling Protocol	If a special-status species does not or cannot leave the work area, the agency-approved biologist will implement the species observation and handling protocols outlined below for the various species' guilds. Separate permits are needed prior to any capture, handling, and relocation of special-status species. Only agency-approved biologists will participate in activities associated with the capture, handling, relocation, and monitoring of a special-status amphibian. In addition to measures described in AMP-005 (which refers to CDFW [2016] decontamination protocols), to prevent the spread of pathogens among sites, special care should be taken to prevent transferring potential pathogens among individual animals.
SWRCB-BIRD-01	Habitat Assessment	A habitat assessment will be conducted by a qualified biologist to determine whether suitable habitat (e.g., including foraging, nesting, and dispersal habitat) for the special-status bird(s) occurs in the project area, as applicable. If suitable habitat for special-status species is identified in the project area and the proposed project may affect suitable habitat, the project proponent will implement measures BIRD-002 through 5 in areas with suitable habitat. Alternatively, the project proponent may propose to conduct surveys and/or monitoring to confirm presence or absence of the species.
SWRCB-BIRD-02	Nest Protection Work Window	Project activity in known or potentially occupied migratory bird habitat will be conducted outside of the nesting season to the maximum extent practicable. If project activities must occur during the nesting season see BIRD-005.

SWRCB-BIRD-03	Work Area Limits	Work site boundaries in suitable habitat will be clearly marked with flagging or other visible materials, which will be removed at the conclusion of the project.
SWRCB-BIRD-04	Site Access Restrictions	If the site conditions allow, access to work sites in occupied habitat will be by foot travel, otherwise heavy equipment will be allowed within suitable nesting habitats only with the presence of an agency-approved biologist. Access routes and work areas will be limited to the minimum amount necessary to achieve the project goals.
SWRCB-BIRD-05	Monitoring	If project activities must occur during the nesting season, preconstruction nest surveys will be conducted by an agency-approved biologist, buffers will be established to protect active nests, and disturbance in the vicinity of active nests will be monitored to ensure that it does not disrupt an active nest.
SWRCB-FISH-01	Habitat Disturbance Avoidance and Minimization	Disturbance to aquatic habitat for special-status fish species will be avoided and/or minimized to the maximum extent practicable unless the purpose of the project is to provide overall benefits to the species and the benefits are greater than any temporary impacts to habitat.
SWRCB-FISH-02	Habitat Assessment and Surveys	For projects that may result in impacts to aquatic habitat within the range of special-status fish species, no less than 30 days prior to construction of the project, the project proponent will evaluate the potential for special-status fish species to be present in the project area. The evaluation may be based on existing information if sufficiently available, or the project proponent may conduct a habitat assessment or focused survey for those species, if appropriate. The habitat assessment and/or survey will be conducted in potentially suitable aquatic habitat within 300 feet of the project area. The agency-approved biologist will conduct the habitat assessment and/or fish survey and will adhere to the standards provided in the CDFW California Salmonid Stream Habitat Restoration Manual 4th Edition Volume I: Section IV (CDFW 2010) or most current regulatory agency guidance document. If special-status fish species are observed during the survey or the habitat is otherwise potentially occupied, based on the results of the habitat assessment or existing information, the project proponent will implement FISH-003, Fish Capture and Relocation, as described below.

SWRCB-FISH-03	Fish Capture and Relocation	For projects that require dewatering or other work in suitable habitat for the special-status fish species, if fish capture and relocation would be the most protective approach to managing fish during construction, then a fish capture and relocation plan will be developed and submitted to NMFS, USFWS, and/or CDFW, as applicable, for approval. The plan will describe the biologist qualifications, capture methods, capture and relocation work areas, and reporting requirements including details in the list below. If capture and relocation is not feasible or would not be the most protective approach to managing fish in the work area (e.g., if dewatering is not needed or appropriate; or if fish are in a large, unconfined water body), other methods to protect covered fish species (e.g., timing restrictions around season and tide, or bubble curtains) should be detailed in a plan and submitted to FWS for approval. - This plan will incorporate the latest agency guidance relating to the capture and relocation of fish, as applicable. - Procedures for decontamination of any equipment used in the capture and relocation of fish will be identified. - Prior to the implementation of capture and relocation activities, relocation (or release) sites will be identified by the agency-approved biologist based on proximity, access, habitat suitability, and potential to be affected by construction-related disturbance. Suitable habitat for relocation site(s) will be within the same watershed/sub-watershed fish were originally captured. - Fish relocation will only be conducted (or led) by an agency-approved biologist. If an agency-approved biologist is needed, the project proponent will submit the biologist's qualifications to the appropriate agency office for approval 30 days prior to project construction. The biologist will have knowledge and experience in fish biology and ecology, fish/habitat relationships, and biological monitoring, and handling, collecting, and relocating fish or other relevant experience. - Residual surface water associated with the diverted or dewatered habitat will be monitored or sampled for the presence of fish by an agency-approved biologist as soon as the waters are isolated. If a special-status fish is observed in the isolated habitat, they will be immediately captured and relocated to the suitable habitat outside of the construction area, but within the same watershed/sub-watershed, by the agency-approved biologist in accordance with the approved fish capture and relocation plan.

		- The agency-approved biologist will relocate any special-status fish species that may become stranded to an appropriate place depending upon the life stage of the fish, consistent with the approved rescue and relocation plan. - The agency-approved biologist will note the number of individuals observed in the affected area, the number of individuals relocated, the approximate size of individuals, the location of capture and release, any instances of injury or mortality, and the date and time of the collection and relocation. The agency-approved biologist will also identify and record the species observed and relocated and the life stage for anadromous species. This information will be reported to the appropriate agency office within 7 days of completion of the fish capture and relocation effort. - One or more of the following methods will be used to capture protected fish species: electrofishing, dip net, seine, throw net, minnow trap, and hand capture.
SWRCB-FISH-04	Reporting	An agency-approved biologist will provide a written summary of work performed (including biological survey and monitoring results), protection measures implemented (e.g., use of biological monitor, flagging of work areas, erosion and sedimentation controls) and supporting photographs of each stage to the appropriate agency office. Furthermore, the documentation describing surveys and relocation efforts (if appropriate) will be completed in accordance with the requirements of FISH-003: Fish Capture and Relocation.

SWRCB-PLANT-01	Habitat Assessment and Surveys	If the project area can potentially support special-status plant species, an agency-approved biologist will conduct a survey for special-status plant species within 1 year prior to commencement of ground-disturbing activities. Surveys should follow USFWS's General Rare Plant Survey Guidelines (USFWS 2002); and CDFW's Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (2018) or their most recent equivalents.
SWRCB-PLANT-02	Seasonal Avoidance of Vernal Pool Plant Species and Other Annual and Perennial Species	- For Vernal Pool Plant Species: Work within 250 feet of suitable special-status vernal pool plant habitat (e.g., vernal pools, seasonal wetlands) will be performed under dry site conditions to the maximum extent possible, to minimize potential adverse impacts to aquatic habitats. If any construction activities must occur during the wet period, exclusion fencing and erosion control materials will be placed around vernal pools and other seasonal wetlands as determined by the agency-approved biologist to reduce sedimentation into vernal pool habitat. The fencing will provide a buffer between construction activities and the vernal pools and other seasonal wetlands. The agency-approved biologist will oversee, monitor, inspect and maintain the exclusion fencing. - For Other Annual Plant Species: To avoid impacts to other annual species, schedule work to occur after plants have set seed and senesced, avoid soil disturbance, and avoid actions that have potential to reduce habitat quality.
SWRCB-PLANT-03	Exclusion Buffer Establishment	An agency-approved biologist will clearly delineate with flagging or other field markers a minimum 50-foot avoidance buffer around all special-status plants or their suitable habitat. A larger exclusion buffer may be established if determined by the agency-approved biologist to be necessary for the protection of the special-status plants. No work activity will occur within the exclusion buffer, except as permitted under Measure PLANT-004, Work Restrictions in the Exclusion Buffer. Additionally, a buffer of at least 300 feet from any vernal pool, vernal pool grassland, or seasonal wetland will be established for the protection of special status plants.
SWRCB-PLANT-04	Work Restrictions in the Exclusion Buffer	If agency-approved biologist determines that some work activities can take place within the exclusion buffer described in Measure PLANT-003 without causing any adverse direct or indirect impacts to special-status plants identified for avoidance, those approved work activities may be conducted within the exclusion buffer. Special-status vernal pool plants will be clearly marked by an agency-approved biologist prior to worker entry into the exclusion buffer. Workers may only enter the exclusion buffer when accompanied by an agency-approved biologist, and all work within the exclusion buffer will be monitored by an agency-approved biologist.
SWRCB-PLANT-05	Biological Monitoring	An agency-approved biologist will monitor all construction activities and also within the buffers established under PLANT-003, Exclusion Buffer Establishment. Any non-disturbance exclusion zones will be established, maintained and monitored. The biologist will ensure that loss of special-status plants or destruction of their habitat does not occur outside of the project footprint.

SWRCB-PLANT-06	Herbicide Application, Clearing, and Ground Disturbance	If mechanical removal is not effective, or could damage sensitive habitats, limited herbicide application may occur as noted below and in accordance with General Protection Measures VHDR-6 through VHDR-8 (Appendix E), wind speed limitations during herbicide application. - To avoid impacts to other special-status species (non-vernal pool species), the following protections will be applied: - Backpack and hand-held herbicide application, if applied in dry conditions, is prohibited within 5 feet of any special-status plant. Protect special-status plants from herbicide drift (e.g., cover with plastic when spraying or use a wick applicator). - Broadcast and power spray herbicide application is prohibited; and - Ground disturbing activities are prohibited within 5 feet of senesced annual and perennial plants and within 10 feet of perennial plants. Ground disturbance should occur outside of the dripline of any woody species identified for avoidance.
SWRCB-REP-01	Pre-Construction Survey	An agency-approved biologist will conduct preconstruction surveys for the target reptile species within 72 hours prior to any initial ground disturbance within all suitable habitat within or adjacent to the project site and accessible to the project proponent, to identify locations where special-status reptiles may be present, evaluate current activity status in the project area, and protect the species and its habitat from avoidable construction-related disturbance. The intent of this survey is to assess current special-status reptile habitat and use locations in the project area immediately prior to construction. Preconstruction surveys may be phased across a construction site if construction in different areas will occur at different times; only areas where disturbance is imminent need be surveyed. The project area will be re-inspected by the agency-approved biologist whenever a lapse in construction activity of 5 days or greater has occurred.

SWRCB-REP-02	Environmentally Sensitive and Wildlife Exclusion Area	Prior to the start of construction, SPM-002, Environmentally Sensitive and Wildlife Exclusion will be implemented. In addition, the following applies: - For the giant garter snake, fencing and/or monitoring will be implemented in coordination with the agency-approved biologist prior to the start of ground-disturbing activities. If fencing is used the fencing will be inspected by the agency-approved biologist before the start of each work day and maintained by the project proponent until completion of the project. The fencing will be removed after all construction equipment is removed from those segments of the project. To prevent reptiles from becoming entangled, trapped, or injured, fencing materials that use plastic or synthetic monofilament netting will not be used. Acceptable materials include natural fibers such as jute, coconut, twine, or other similar fibers.
SWRCB-REP-03	Clearing and Grubbing Vegetation	An agency-approved biologist will be present during all vegetation clearing and grubbing activities in areas where the special-status reptiles are confirmed to occur, or where measures are being implemented based on presence of suitable habitat. Prior to vegetation removal, the agency-approved biologist will thoroughly survey the area for these species. Vegetation in sensitive areas will be cleared by handheld motorized tools (e.g., weed eaters, chainsaws) or hand pulling unless alternate methods are proposed by the project proponent and approved by agency(ies). Tree stumps and roots will be left in place where possible to avoid any ground disturbance and preserve refugia habitat, with the exception of non-native invasive plants that could propagate from remaining vegetative material. Native branches, leaf litter, mulch, woody debris, and other vegetative trimmings may be retained and spread on site to enhance habitat as appropriate.
SWRCB-REP-04	Prohibited Use of Rodenticides	No rodenticides will be used at the project site during construction in areas that support suitable habitat for special-status reptiles.

SWRCB-REP-05	Species Observations and Encounters	Each proposed project with the potential to encounter a special-status reptile species will submit a rescue and relocation plan to agency(ies) for review and approval prior to initiating construction. General guidance to be considered during plan development is as follows: 1) leave the uninjured animal if it is not in danger, or 2) move the animal to a nearby location if it is in danger as described in REP-006, Species Handling and Relocation, below. These options are further described as follows: - When a special-status reptile is encountered in the project area, the priority is to stop all activities in the surrounding area that have the potential to result in the harm, injury, or death of the individual. The agency-approved biologist then needs to assess the situation to select the course of project that will minimize adverse effects to the individual. - Avoid contact with the animal and allow it to move out of the project footprint and hazardous situation on its own to a safe location. This guidance only applies to situations where an animal is encountered while moving through habitat and under conditions that will allow it to escape. This does not apply to animals that are uncovered or otherwise exposed or in areas where there is not enough adjacent habitat to support the life history of the special-status reptiles if they move outside the construction footprint. - Avoidance is the preferred option if the animal is not moving or is within some sort of burrow or other refugia. In this case, the area will be well marked for avoidance by construction and an agency-approved biologist will be assigned to the area when work is taking place nearby. If avoidance is not practicable or safe for the special-status reptile, the project proponent will implement REP-006, below.

SWRCB-REP-06	Species Handling and Relocation	A special-status reptile will only be captured and relocated when it is the only option to prevent its death or injury, and after all attempts to avoid interaction of the species have been exhausted as described in REP-006, Species Observation and Encounters. Project-specific rescue and relocation plans will be approved by the agency(ies) prior to starting construction. General guidance for handling and relocation is as follows: - If appropriate habitat is located immediately adjacent to the capture location, then the preferred option is short distance relocation to that habitat. A snake will not be moved outside of the area where it could have traveled on its own. Captured snakes will be released in appropriate cover as close to their capture location as possible for their continued safety. Under no circumstances will an animal be relocated to another property without the owner's written permission. It is the project proponent's responsibility to arrange for that permission. - The release locations must be pre-identified in the project-specific rescue and relocation plan approved by the agency(ies); they will depend on where the individual was found and the opportunities for nearby release. In most situations the release location is likely to be into the mouth of a small burrow, other suitable refugia, or suitable habitat. - Only agency-approved biologists for the project can capture special-status reptiles.
SWRCB-SPM-01	Preconstruction Surveys	If special-status plants are present and/or special-status terrestrial animal species habitat is present (e.g., stationary habitat such as burrows, bird nests, cavities for bats, etc.), where appropriate, based on project-specific requirements, a qualified, agency-approved biologist with experience on the identification of all applicable life stages of the special-status species will conduct reconnaissance-level preconstruction surveys and implement additional measures, as appropriate, to protect the species from construction-related disturbance before work begins. The intent of the survey is to assess current species habitat and use locations in the project area immediately prior to construction. Special-status plant species surveys shall be conducted in the appropriate blooming period, as applicable, prior to the start of construction for proper plant identification. If construction activities cease for more than five consecutive days, and there is potential for special-status species to re-occupy the site, the agency-approved biologist will re-survey the project area and implement measures, as appropriate. A project proponent can choose to assume animal species presence, forgo preconstruction surveys, and implement additional protection measures, as appropriate, to protect special status species from construction-related disturbance. Additional species guild-specific pre-construction requirements are described below and may supersede this general species protection measure, as applicable.

SWRCB-SPM-02	Environmentally Sensitive Areas and/or Wildlife Exclusion	Monitoring, flagging, and/or fencing will be used to minimize disturbance to environmentally sensitive areas (e.g., waters and wetlands). This measure augments GPM-7 (Appendix E), which applies to sensitive aquatic resources. If fencing is used: - The agency-approved biologist or resource specialist will determine the location of the fencing prior to the start of construction (e.g., between active work area(s) and sensitive resources). - Fencing will remain in place throughout the duration of the construction activities, and will be inspected and maintained regularly by the agency-approved biologist or resource specialist until completion of the project. - Repairs to the fencing will be made within 24 hours of discovery. - Fencing will be removed when all construction equipment is removed from the site, and the area cleared of debris and trash, and returned to natural conditions.
SWRCB-SPM-03	Species Protection Construction Work Windows	Construction work windows may be required, depending on whether or not the project involves in-water construction and/or whether special-status species have potential to occur onsite.
SWRCB-SPM-04	Species Capture, Handling and Translocation	Special-status species capture, handling, and translocation will only be conducted by an agency-approved biologist(s). Required permitting will be needed prior to any capture, handling, and relocation. If translocation of special-status species is needed, the project proponent will prepare a special-status species translocation plan to be reviewed and approved by the agency(ies), as appropriate, prior to project implementation. The plan will include capture and translocation methods, translocation site, and post translocation monitoring, if applicable. If capture, handling, and translocation is necessary due to dewatering activities, refer to the protective measures for Dewatering Activities, under general protection measure IWW 6 and follow the agency-approved translocation plan.
SWRCB-SPM-05	Special-Status Species Entrapment Prevention	All excavated, steep-walled holes or trenches will be covered with appropriate covers (e.g., thick metal sheets or plywood) at the end of each workday. Covers will be placed so that trench edges are fully sealed with rock bags, sand, or other appropriate material. Alternatively, one or more escape ramps such as fill dirt or wood planking will be installed at an angle no greater than 30 degrees, to allow wildlife to escape. Before holes or trenches are filled, sealed, or collapsed, the holes or trenches will be thoroughly inspected for trapped animals. Any animals discovered will be allowed to escape voluntarily or will be relocated by an agency-approved biologist.

SWRCB-SPM-06	Airborne Noise Reduction	Equipment, including noise abatement systems, will be maintained in good working order. If construction noise has the potential to adversely affect special-status species, the project proponent will include site specific measures for construction activities to minimize impacts. Muffler (or spark arrester) damage must be promptly remedied, to the degree practicable, to meet sound attenuation standards.
SWRCB-SRGO-GPM-01	Receipt and Copies of All Permits and Authorizations	Work will not begin until all necessary permits and authorizations have been received (e.g., USACE, USFWS, NMFS, State and Regional Boards, CDFW). The project proponent will ensure that a readily available copy of the applicable agency permits and authorizations (e.g., USFWS Biological Opinion, NMFS Biological Opinion, Section 404 permit, etc.) is maintained by the construction foreman/manager on the project site for the duration of project activities.
SWRCB-SRGO-GPM-02	Construction Work Windows	Construction work windows may be required in order to avoid impacts to aquatic resources and associated beneficial uses during the wet season. Project proponents must also follow the applicable Regional Board's construction work windows, unless otherwise approved.
SWRCB-SRGO-GPM-03	Construction Hours	Construction activities will generally be limited to daylight hours, to the extent feasible. If nighttime construction is necessary, including in tidally influenced waters where tides may limit daylight access and work schedules, all project lighting (e.g., staging areas, equipment storage sites, roadway, and construction footprint) will be selectively placed and directed onto the roadway or construction site and away from aquatic habitats. Light glare shields will be used to reduce the extent of illumination into aquatic habitats. If the work area is near surface waters, the lighting will be shielded so that it does not shine directly into the water.
SWRCB-SRGO-GPM-04	Environmental Awareness Training	For projects occurring in aquatics resources (e.g., wetlands, riparian areas, etc.), prior to engaging existing or new personnel in construction activities, new construction personnel will participate in environmental awareness training conducted by an agency-approved biologist or resource specialist.* Construction personnel will be informed regarding the identification, potential presence, legal protections, avoidance and minimization measures, and applicable general protection measures for all aquatic resources with the potential to occur within or immediately adjacent to the project site. Construction personnel will be informed of the procedures to follow should aquatic resources be disturbed during construction activities. For projects where the agency-approved biologist or resource specialist is not regularly on the project site, training may be provided via online/web-based meeting with an interactive portion (e.g., web-based or in-person discussion) to be included during remote training sessions. For projects that may continue over an extended duration and require excessive training events, a training video developed under the supervision of the FWS-approved biologist or resource specialist may be used to train new personnel, as long as an FWS-approved biologist or resource specialist is available via phone to answer questions about the training or that may arise during construction. Footnote: * Agency-approve monitor refers to monitors who demonstrate qualifications and can be approved by CDFW, NMFS, and/or USFWS and accepted by approving Water Board.

SWRCB-SRGO-GPM-05	Environmental Monitoring	As required in the NOA, a resource specialist will ensure that all applicable protective measures are implemented during project construction. The resource specialist will have authority to stop any work if they determine that any permit requirement is not fully implemented. The resource specialist will prepare and maintain a monitoring log of construction site conditions and observations, which will be kept on file.
SWRCB-SRGO-GPM-06	Work Area and Speed Limits	Construction work and materials staging will be restricted to designated work areas, routes, staging areas, temporary interior roads, or the limits of existing roadways. Prior to initiating construction or grading activities, brightly colored fencing or flagging or other practical means will be erected to demarcate the limits of the project activities, including the boundaries of designated staging areas; ingress and egress corridors; stockpile areas for spoils disposal, soil, and materials; and equipment exclusion zones. Flagging or fencing will be maintained in good repair for the duration of project activities. Vehicles will obey posted speed limits on public roadways and will limit speeds to 20 miles per hour (mph) within the project area on unpaved surfaces and unpaved roads (to reduce dust and soil erosion) or in areas where special-status species have the potential to occur. Speeds greater than 20 mph may be permitted in the project area where special-status species are not expected to occur (e.g., within areas from which special-status species have been excluded) and where there is no risk of generating excessive dust (e.g., surfaces are paved, saturated, or have been treated with other measures to prevent dust).
SWRCB-SRGO-GPM-07	Environmentally Sensitive Areas	Monitoring, flagging, or fencing will be used, where appropriate, to minimize disturbance to environmentally sensitive areas (e.g., waters and wetlands). If fencing is used: - Fencing used must be approved by CDFW and/or USFWS for compatibility with species under their jurisdiction, as applicable, that may occur on site. - The agency-approved biologist or resource specialist will determine the location of fencing prior to the start of construction (e.g., between active work area(s) and sensitive resources). - Fencing will remain in place throughout the duration of the construction activities and will be inspected and maintained regularly by the agency-approved biologist or resource specialist until completion of the project. - Repairs to the fencing will be made within 24 hours of discovering any failure.

		- Fencing will be removed when all construction equipment is removed from the site, the area is cleared of debris and trash, and the area is returned to natural conditions.
SWRCB-SRGO-GPM-08	Prevent Spread of Invasive Species	The spread or introduction of invasive exotic plant species by arriving vehicles, equipment, imported gravel, and other materials, will be avoided to the maximum extent possible. When practicable, invasive exotic plants in the project areas will be removed and properly disposed of in a manner that will not promote their spread. Equipment will be cleaned of any sediment or vegetation at designated wash stations before entering or leaving the project area to avoid spreading pathogens or exotic/invasive species. Isolated infestations of noxious weeds identified in the project area will be treated with approved eradication methods at an appropriate time to prevent further formation of seed and destroy viable plant parts and seed. Wash sites must be in confined areas that limit run-off to any surrounding habitat and on a flat grade. Upland areas will use rice straw or invasive species-free local slash/mulch for erosion control, while the remainder of the project area will use certified, weed-free erosion control materials. Mulch must be certified weed-free. The project proponent will follow the guidelines in the CDFW's California Aquatic Invasive Species Management Plan (CDFW 2008) and Aquatic Invasive Species Disinfection/Decontamination Protocols (CDFW 2016), where relevant. Construction supervisors and managers will be educated on weed identification and the importance of controlling and preventing the spread of noxious weeds. The project proponent will follow any applicable local guidance to prevent the spread of invasive animal species. Construction supervisors and managers will be responsible for implementation of appropriate protocols (e.g., disinfection of equipment and footwear) to prevent the spread of invasive animals.
SWRCB-SRGO-GPM-09	Practices to Prevent Pathogen Contamination	The project proponent will review and implement restoration design considerations and best management practices as published by the Working Group for Phytophthoras in Native Habitats (www.calphytos.org), when there is a risk of introduction and spread of plant pathogens in site plantings. (http://www.suddenoakdeath.org/ welcome-to-calphytos-org-phytophthoras-in-native-habitats/resources/#restoration.)

SWRCB-SRGO-GPM-10	Equipment Maintenance and Materials Storage	Vehicle traffic will be confined to existing roads and the proposed access route(s). All machinery must be in good working condition, showing no signs of fuel or oil leaks. Oil, grease, or other fluids will be washed off at designated wash stations prior to equipment entering the construction site. Inspection and evaluation for the potential for fluid leakage will be performed daily during construction. Where possible, and where it would not result in greater impact to aquatic resources, no equipment refueling, or fuel storage will take place within 100 feet of a body of water. All fuel and chemical storage, servicing, and refueling will be done in an upland staging area or other suitable location (e.g., barges) with secondary containment to prevent spills from traveling to surface water or drains. Project proponents will establish staging areas for equipment storage and maintenance, construction materials, fuels, lubricants, solvents, and other possible contaminants in coordination with resource agencies. Staging areas will have a stabilized entrance and exit and will be located in upland areas to the extent possible and at least 100 feet from bodies of water unless site-specific circumstances do not provide such a setback or would result in further damage to sensitive resources, in which case the maximum setback possible will be used. Fluids will be stored in appropriate containers with covers and properly recycled or disposed of offsite. Machinery stored on site will have pans or absorbent mats placed underneath potential leak areas as a precautionary measure to further reduce the potential for impact from an unintended or previously undetectable leak.
SWRCB-SRGO-GPM-11	Material Disposal	All refuse, debris, unused materials, and supplies that cannot reasonably be secured will be removed daily from the project work area and deposited at an appropriate disposal or storage site. All construction debris will be removed from the project work area immediately upon project completion. The Water Quality and Hazardous Materials measures (below), will be implemented as applicable to ensure proper handling and disposal of hazardous materials.
SWRCB-SRGO-GPM-12	Fugitive Dust Reduction	To reduce dust, construction vehicles will be speed restricted as described in GPM-6, Work Area and Speed Limits when traveling on non-paved surfaces. Stockpiled materials susceptible to wind-blown dispersal will be covered with plastic sheeting or other suitable material to prevent movement of the material. During construction, water (e.g., trucks and portable pumps with hoses) or other approved methods will be used to control fugitive dust, as necessary. Dust suppression activities must not result in a discharge to waters of the state unless such discharges are approved by the State or Regional Board.
SWRCB-SRGO-GPM-13	Trash Containment and Removal	During project activities all trash will be properly contained within sealed containers and removed from the work site and disposed of as necessary to maintain a trash-free work area (e.g., trash containers will not be used beyond capacity and fully close/seal).
SWRCB-SRGO-GPM-14	Project Cleanup after Completion	Work pads, temporary falsework, and other construction items will be removed from the 100-year floodplain by the end of the construction window. Removal of materials must not result in discharge to waterbodies.

SWRCB-SRGO-GPM-15	Revegetate Disturbed Areas	All temporarily disturbed areas will be de-compacted and seeded/planted with an assemblage of native riparian, wetland, and/or upland plant species suitable for the area. The project proponent will develop a revegetation plan, including (as applicable) a schedule; plans for grading of disturbed areas to pre-project contours; planting palette with plant species native to the project area; invasive species management; performance standards; success criteria; and maintenance requirements (e.g., watering, weeding, and replanting). Plants for revegetation will come primarily from active seeding and planting; natural recruitment may also be proposed if site conditions allow for natural recruitment to reestablish vegetation and avoid potential negative risks associated with erosion and impacts to water quality. Plants imported to the restoration areas will come from local stock, and to the extent possible, local nurseries. Only native plants (genera) will be used for restoration efforts. Certified weed-free native mixes and mulch will be used for restoration planting or seeding. Revegetation activities within and adjacent to waters of the state will commence as soon as is practicable after construction activities at a site are complete.
SWRCB-SRGO-IWW-01	Appropriate In-Water Materials	Selection and use of gravels, cobble, boulders, and instream woody materials in streams, and other materials (e.g., oyster shells, other substrates) for reef/bed restoration will be performed to avoid and/or minimize adverse impacts to aquatic resources, special-status aquatic species, and their habitats. On-site gravels will be screened and sorted; gravels imported from a commercial source will be clean-washed and of appropriate size. As necessary to protect aquatic species, placement will be overseen by an agency-approved Monitor; implementation timing will be determined based on the least amount of overlap, or impact on, all aquatic natural resources that may be affected and the timing of their use of the receiving area. Imported gravel from outside the project watershed will not be from a source known to contain historic hydraulic gold mine tailings, dredger tailings, or mercury mine waste or tailings. Materials that may foul or degrade spawning gravels, such as sand or soil eroding from sand bag or earthen dams will be managed to avoid release and exposure in salmonid streams. Oyster shells or other substrates for reef/bed restoration will be cured and inspected to be free of pathogens and/or non-native species.
SWRCB-SRGO-IWW-02	In-Water Vehicle Selection and Work Access	If work requires that equipment enter wetlands or below the bank of a waters of the state, equipment with low ground-pressure (typically less than 13 to 20 pounds per square inch (psi)) should be selected where feasible to minimize soil compaction. Low ground-pressure heavy equipment mats should be used if needed to lessen soil compaction. Hydraulic fluids in mechanical equipment working in the waters of the state, will not contain organophosphate esters. Vegetable based hydraulic fluids are preferred, where feasible. The amount of time this equipment is stationed, working, or traveling in the waters of the state will be minimized. All equipment will be removed from the aquatic feature during non-work hours where appropriate or returned to the agency-approved staging area in the aquatic feature.

SWRCB-SRGO-IWW-03	In-Water Placement of Materials, Structures, and Operation of Equipment	Material used for bank stabilization or in-water restoration will minimize discharge sediment or other forms of waste to waters of the state. Where feasible, construction will occur from the top of the stream bank, or on a ground protection mat underlain with filter fabric, or a barge. All materials placed in streams, rivers or other waters will be nontoxic. Any combination of wood, plastic, cured concrete, steel pilings, or other materials used for in-channel structures will not contain coatings or treatments, or consist of substances toxic to aquatic organisms (e.g., zinc, arsenic, creosote, copper, other metals, pesticides, or petroleum-based products) that may leach into the surrounding environment in amounts harmful to aquatic organisms. Except for the following conditions, equipment must not be operated in standing or flowing waters without site-specific approval from State or Regional Board staff: - All construction activities must be effectively isolated from water flows to minimize the potential for runoff. This may be accomplished by working in the dry season or dewatering the work area in the wet season. - When work in standing or flowing water is required, structures for isolating the in-water work area and/or diverting the water flow must not be removed until all disturbed areas are cleaned and stabilized. The diverted water flow must not be contaminated by construction activities. - All open flow temporary diversion channels must be lined with filter fabric or other appropriate liner material to prevent erosion. Structures used to isolate the in-water work area and/or divert the water flow (e.g., coffer dam or geotextile silt curtain) must not be removed until all disturbed areas are stabilized.
SWRCB-SRGO-IWW-04	In-Water Staging Areas and Use of Barges	Where appropriate and practical, barges will be used to stage equipment and construct the project, while reducing noise, traffic disturbances and effects to terrestrial vegetation. When barge use is not practical, construction equipment and project materials may be staged in designated agency-approved staging areas. Existing staging sites, maintenance toe roads, and crown roads will be used to the maximum extent possible for project staging and access to avoid affecting previously undisturbed areas. For projects that involve in-water work for which boats and/or temporary floating work platforms are necessary, buoys will be installed so that moored vessels will not beach on the shoreline and anchor lines will not drag. Moored vessels and buoys will not be within 25 feet of vegetated shallow waters.

		Cofferdams may be installed both upstream and downstream, and along portions of the cross section of a channel or other waterway if necessary to isolate the extent of the work areas. When feasible, construction of cofferdams will begin in the upstream area and continue in a downstream direction, allowing water to drain and allowing fish and aquatic wildlife species to leave (under their own volition), from the area being isolated by the cofferdam, prior to closure. The flow will then be diverted only when construction of the upstream dam is completed and the work area has been naturally drained of flow, at this point, the downstream dam, if necessary, would be completed and then flow would be diverted around the work area. Cofferdams and stream diversion systems will remain in place and fully functional throughout the construction period. In order to minimize adverse effects to aquatic species, stream diversions will be limited to the shortest duration necessary to complete in-water work. In-water cofferdams will only be built from materials such as sandbags, plastic, clean gravel (possibly wrapped in impermeable material), rubber bladders, vinyl, steel, or earthen fill, in a manner that minimizes siltation and/or turbidity. Sandbags may only be used to build cofferdams upstream of spawning gravels when filled with clean gravel (or other material acceptable to the approving Water Board). Where possible, cofferdams should be pushed into place. If pile driving (sheet piles) is required, vibratory hammers should be used and impact hammer should be avoided. If necessary, the footing of the cofferdam will be keyed into the channel bed at an appropriate depth to capture the majority of subsurface flow needed to dewater the streambed. When cofferdams with bypass pipes are installed, debris racks will be placed at the bypass pipe inlet in a manner that minimizes the potential for fish impingement and/or entrapment. As needed and where feasible, bypass pipes will be monitored for accumulation of debris. All accumulated debris will be removed. When appropriate, cofferdams will be removed so surface elevations of water impounded above the cofferdam will not be reduced at a rate greater than one inch per hour. Cofferdams in tidal waters should be removed during the lowest possible tide and in slack water to the extent feasible to minimize disturbance and turbidity. This will minimize the probability of fish and other aquatic species stranding as the area upstream becomes dewatered. All dewatering/diversion facilities will be installed such that natural flow is maintained upstream and downstream of project areas.
SWRCB-SRGO-IWW-05	Cofferdam Construction	An area may need to be dewatered for long enough to allow special-status species to leave on their own before final clearance surveys and construction can begin.

SWRCB-SRGO-IWW-06	Dewatering/Diversion	The area to be dewatered will encompass the minimum area necessary to perform construction activities. The project proponent will provide a dewatering plan with a description of the proposed dewatering structures, and appropriate types of BMPs for the installation, operation, maintenance, and removal of those structures. The period of dewatering/diversion will extend only for the minimum amount of time needed to perform the restoration activity and to allow special-status species time to leave on their own before final clearance surveys and construction can begin. Where feasible and appropriate, dewatering/diversion will occur via gravity-driven systems, and where water is pumped from within the construction area, it should be pumped to upland areas (where feasible) and to a location where it can infiltrate without return flows to the watercourse. Dewatering/diversion will be designed to avoid direct and preventable indirect mortality of fish and other aquatic species. If special-status fish species may be present in the area to be dewatered, a fish capture and relocation plan will be developed and implemented for review and approval by appropriate agencies (e.g., CDFW, NMFS, USFWS, as applicable). Stream flows will be allowed to gravity flow around or through the work site using temporary bypass pipes or culverts. Bypass pipes will be sized to accommodate, at a minimum, twice the expected construction-period flow, to not increase stream velocity, and will be placed at stream grade. Conveyance pipe outlet energy dissipaters will be installed to prevent scour and turbidity at the discharge location. When use of gravity-fed dewatering is not feasible and pumping is necessary to dewater a work site, a temporary siltation basin and/or use of silt bags may be required. Silt fences or mechanisms to avoid sediment input to the flowing channel will be installed adjacent to flowing water. Water pumped or removed from dewatered areas will be conducted in a manner that does not contribute turbidity to nearby receiving waters. Where possible, pumps will be refueled in an area well away from the stream channel. Fuel absorbent mats will be placed under the pumps while refueling. Equipment working in the stream channel or within 25 feet of a wetted channel will have a double (i.e., primary and secondary) containment system for diesel and oil fluids. All work will comply with the CDFW Fish Screening Criteria (CDFW 2001) and NMFS Fish Screening Criteria for Anadromous Salmonids (NMFS 1997). Pump intakes will be covered with mesh per the requirements of current fish screening criteria to prevent potential entrainment of fish or other aquatic species that could not be removed from the area to be dewatered. The pump intake will be checked periodically for impingement of fish or other aquatic species. Diverted flows must be of sufficient quality and quantity, and of appropriate temperature, to support existing fish and other aquatic life both above and below the diversion. Pre-project flows must be restored to the affected surface water body upon completion of work at that location. Where diversions are planned, contingency plans will be developed that include oversight for breakdowns, fueling, maintenance, leaks, etc.
SWRCB-SRGO-IWW-07	Fish and Aquatic Species Exclusion While Installing Diversion Structures	Fish and other aquatic species will be excluded from occupying the area to be dewatered by blocking the stream channel above and below the area to be dewatered with fine-meshed block nets or screens while coffer dams and other diversion structures are being installed. Block net mesh will be sized to ensure aquatic species upstream or downstream do not enter the areas proposed for dewatering. Mesh will be no greater than 1/8-inch diameter. The bottom of the net must be completely secured to the channel bed. Block nets or screens must be checked at least twice daily at the beginning and end of the workday and cleaned of debris to permit free flow of water. Block nets or screens will be placed and maintained throughout the dewatering period at the upper and lower extent of the areas where aquatic species will be removed. Net placement s temporary and will be removed once dewatering has been accomplished or construction work is complete for the day.

SWRCB-SRGO-IWW-08	Removal of Diversion and Barriers to Flow	Upon completion of construction activities, any diversions or barriers to flow will be removed in a manner that will allow flow to resume with the least disturbance to the substrate and consideration of turbidity levels. Alteration of creek beds will be minimized to the maximum extent possible; any imported material that is not part of the project design will be removed from stream beds upon completion of the project.
SWRCB-SRGO-VHDR-01	Avoidance of Vegetation Disturbance	The project proponent will minimize, to the greatest extent feasible, the amount of soil, terrestrial vegetation, emergent native vegetation, and submerged vegetation (e.g., eelgrass and kelp in marine areas, or submerged aquatic vegetation in brackish and freshwater areas) disturbed during project construction and completion and using methods creating the least disturbance to vegetation. Disturbance to existing grades and native vegetation, the number of access routes, the size of staging areas, and the total area disturbed by the project will be limited to the extent of all temporary and permanent impacts as defined by the final project design. All roads, staging areas, and other facilities will be placed to avoid and limit disturbance to waters of the state and other aquatic habitats (e.g., streambank or stream channel, riparian habitat) as much as possible. When possible, existing ingress or egress points will be used and/or work will be performed from the top of the creek banks or from barges on the waterside of the stream or levee bank, or dry gravel beds. Existing native vegetation will be retained as practicable, emphasizing the retention of shade-producing and bank stabilizing trees and brush with greater than 6-inch diameter branches or trunks. Where possible, vegetation disturbance and soil compaction will be minimized by using low ground-pressure (typically less than 13 to 20 pounds psi) equipment that exerts less pressure per square inch on the ground than other equipment. To minimize impacts to vegetation, select equipment with a greater reach.
SWRCB-SRGO-VHDR-02	Native and Invasive Vegetation Removal Materials and Methods	If riparian vegetation is to be removed with chainsaws or other power equipment, machines that operate with vegetable-based bar oil will be used, as practicable. All invasive plant species (e.g., those rated as invasive by the California Invasive Plant Council or local problem species) will, if feasible, be removed from the project site, using locally and routinely accepted agriculture practices. Invasive plant material will be destroyed using approved protocols and disposed of at an appropriate upland disposal or compost area. Invasive plant materials stockpiled at sites known to experience flash flooding outside the flood season will be removed within 15 days of the initial creation of the stockpile in order to contain the potential spread of invasive plant material. Stockpiling of invasive plant materials is prohibited during the flood season.

SWRCB-SRGO-VHDR-03	Revegetation Materials and Methods	Upon completion of work, site contours will be returned to preconstruction conditions or to contours specified in a Water Board-approved project design that provides enhanced biological and hydrological functions. Where disturbed, topsoil will be conserved (and watered at an appropriate frequency) for reuse during restoration to the extent practicable. Native plant species comprising a diverse community structure (plantings of both woody and herbaceous species, if both are present) that follow an agency-approved plant palette will be used for revegetation of disturbed and compacted areas, as appropriate. See also GPM15: Revegetate Disturbed Areas, which also allows for revegetation through natural recruitment (e.g., in tidal and managed wetlands and working landscapes where disturbed areas typically revegetate more quickly through natural recruitment than through seeding). Any area barren of vegetation as a result of project implementation will be restored to a natural state by mulching, seeding, planting, or other means with native trees, shrubs, willow stakes, erosion control native seed mixes, or herbaceous plant species following completion of project construction. Irrigation may also be required in order to ensure survival of containerized shrubs or trees or other vegetation, depending on rainfall. Soils that have been compacted by heavy equipment will be de-compacted, as necessary, to allow for revegetation at project completion as heavy equipment exits the construction area.
SWRCB-SRGO-VHDR-04	Revegetation Erosion Control Materials and Methods	If erosion control fabrics are used in revegetated areas, they will be slit in appropriate locations as necessary to allow for plant root growth. Only non-monofilament, wildlife-safe fabrics will be used. All plastic exclusion netting placed around plantings will be removed after 2 years or sooner if practicable.
SWRCB-SRGO-VHDR-05	Revegetation Monitoring and Reporting	All revegetated areas will be maintained and monitored for a minimum of 2 years after replanting is complete and until success criteria are met, to ensure the revegetation effort is successful. The standard for success is at least 60% absolute cover compared to pre-project conditions at the project site or at least 60% cover compared to an intact, local reference site (or an available reference site accepted by the approving Water Board). If an appropriate reference site or pre-project conditions cannot be identified, success criteria will be developed for review and approval by the approving Water Board on a project-by-project basis based on the specific habitat impacted and known recovery times for that habitat and geography. The project proponent will prepare a summary report of the monitoring results and recommendations at the conclusion of each monitoring year.

SWRCB-SRGO-WQHM-01	Staging Areas and Stockpiling of Materials and Equipment	Staging, storage, and stockpile areas must be outside of waters of the state. To the extent feasible, staging will occur on access roads or other previously disturbed upland areas, such as developed areas, paved areas, parking lots, areas with bare ground or gravel, and areas clear of vegetation, to avoid aquatic habitats and limit disturbance to surrounding habitats. Similarly, all maintenance equipment and materials (e.g., road rock and project spoil) will be restricted to the existing service roads, paved roads, or other determined designated staging areas. See GPM-10 for more details regarding protection measures for materials storage. Staging areas will be established for equipment storage and maintenance, construction materials, fuels, lubricants, solvents, and other possible contaminants in coordination with resource agencies. Staging areas will have a stabilized entrance and exit and will be located at least 100 feet from bodies of water unless site-specific circumstances do not provide such a setback, in such cases the maximum setback possible will be used. If an off-road site is chosen and if special-status species are potentially present, the Biological Monitor will survey the selected site to verify that no aquatic resources would be disturbed by staging activities. Stockpiling of materials, portable equipment, vehicles and supplies (e.g., chemicals), will be restricted to the designated construction staging areas. If rain is predicted in the forecast during the dry season, and stockpiled soils will remain exposed and unworked for more than 7 days, then erosion and sediment control measures must be used. If there is a high-wind scenario (to be defined by the approving Water Board as appropriate for an individual project site), then soils will be covered at all times. During the wet season, no stockpiled soils will remain exposed, unless properly installed and maintained erosion and sediment controls are in place on and around the stockpile. Temporary stockpiling of material onsite will be minimized. Stockpiled material will be placed in upland areas far enough away from aquatic habitats that these materials cannot discharge to a water of the state.
SWRCB-SRGO-WQHM-02	Storm Water Pollution Prevention Plan	Note: Either this measure, or WQHM-003 Erosion and Sediment Control Measures, would be applicable, but not both. All projects covered by the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) will prepare and implement the required, site-specific, storm water pollution prevention plan (SWPPP).

SWRCB-SRGO-WQHM-04	Hazardous Materials Management and Spill Response Plan	As part of the SWPPP or Erosion Control Plan (WQHM-2 and WQHM-3), project proponent will prepare and implement a hazardous materials management and spill response plan. Project proponent will ensure that any hazardous materials are stored at the staging area(s) with an impermeable membrane between the ground and hazardous material and that the staging area is designed to prevent the discharge of pollutants to groundwater and runoff water. Project proponent will stop work, follow the spill response plan, and arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills. (See WQHM-6. Accidental Discharge of Hazardous Materials for accidental discharges of a reportable quantity of a hazardous material, sewage, or an unknown material.) Project proponent will notify regulatory agencies within 24 hours of any leaks or spills. Project proponent will properly contain and dispose of any unused or leftover hazardous products off-site. Project proponent will use and store hazardous materials, such as vehicle fuels and lubricants, in designated staging areas located away from stream channels and wetlands, according to local, state, and federal regulations, as applicable. Also see GPM-10: Equipment Maintenance and Materials Storage for more detail on spill prevention.
SWRCB-SRGO-WQHM-06	Accidental Discharge of Hazardous Materials	Following an accidental discharge of a reportable quantity of a hazardous material, sewage, or an unknown material, the following applies (Wat. Code, Â§ 13271): As soon as (A) discharger has knowledge of the discharge or noncompliance, (B) notification is possible, and (C) notification can be provided without substantially impeding cleanup or other emergency measures then: - first call - 911 (to notify local response agency) - then call - Office of Emergency Services (OES) State Warning Center at: (800) 852-7550 or (916) 845-8911 - Lastly, follow the required OES procedures as set forth in: http://www.caloes.ca.gov/FireRescueSite/Documents/CalOESSpill_Booklet_ Feb2014_FINAL_BW_Acc.pdf Following notification to OES, the discharger will notify the State or Regional Board (and other agencies requiring notification in their respective permits), as soon as practicable (ideally within 24 hours). Notification may be via telephone, e-mail, delivered written notice, or other verifiable means.

USFWS-GPM-01	Receipt and Copies of All Permits and Authorizations	Work will not begin until all necessary permits and authorizations have been issued (e.g., USACE, USFWS, NMFS, State and/or Regional Boards, or CDFW). The Project Proponent will ensure that a readily available copy of the applicable agency permits and authorizations (e.g., USFWS PBO, NMFS PBO, or Section 404 permit) is maintained by the construction foreperson/manager on the project site for the duration of project activities.
USFWS-GPM-02	Construction Work Windows	Construction work windows may be required, depending on whether the project involves in-water construction and/or whether Covered Species have the potential to occur in the project area. Covered Species work windows are provided in Section 2.1.5.3, Guild- and Species-Specific Protection Measures.* Footnote: * Extended or alternative work windows may be considered on an individual project basis with prior approval from USFWS ES, provided the Project Proponent can demonstrate that measures implemented to avoid or minimize exposure would do so at a level commensurate with the standard work windows.
USFWS-GPM-03	Construction Hours	Construction activities will generally be limited to daylight hours, to the extent practicable. If nighttime construction is necessary, including in tidally influenced waters where tides may limit daylight access and work schedules, all project lighting (e.g., staging areas, equipment storage sites, roadway, and construction footprint) will be selectively placed and directed onto the roadway or construction site and away from sensitive habitats. Light glare shields will be used to reduce the extent of illumination into sensitive habitats. If the work area is near surface waters, the lighting will be shielded so that it does not shine directly into the water.
USFWS-GPM-04	Environmental Awareness Training	For projects occurring where Covered Species are likely to be present, prior to engaging existing or new personnel in construction activities, new construction personnel will participate in environmental awareness training conducted by a Qualified Biologist. Construction personnel will be informed regarding the identification, potential presence, habitat requirements, legal protections, avoidance and minimization measures, and applicable protection measures for Covered Species with the potential to occur in or immediately adjacent to the project site. Construction personnel will be informed of the procedures to follow should a Covered Species be encountered during construction activities. For projects where the Qualified Biologist is not regularly on the project site, training may be provided in an online/virtual meeting. For projects that may continue over an extended duration and require excessive training events, a training video developed under the supervision of the Qualified Biologist may be used to train new personnel, as long as a Qualified Biologist is available by phone to answer questions about the training or to answer questions that may arise during construction.

USFWS-GPM-05	Environmental Monitoring	Where appropriate and based on project-specific requirements, a Qualified Biologist(s) will perform site clearance at the beginning of each day and will monitor construction activities throughout the day in, or immediately adjacent to, sensitive resources and/or Covered Species habitat (including critical habitat as applicable), as necessary. The Qualified Biologist will confirm that all applicable protection measures are implemented during project construction. The Qualified Biologist will have the authority to stop any work if they determine that any permit requirement is not fully implemented or if it is necessary to protect Covered Species, consistent with the information provided in a signed ESA Section 7(a)(2) Review Form by the USFWS Field Office to cover the proposed project by the PBO. The Qualified Biologist will prepare and maintain a biological monitoring log of construction site conditions and observations, which will be kept on file.
USFWS-GPM-06	Work Area and Speed Limits	Construction work and materials staging will be restricted to the smallest area practicable in designated work areas, routes, staging areas, temporary interior roads, or the limits of existing roadways. Prior to initiating construction or grading activities, brightly colored fencing or flagging or other practical means will be erected to demarcate the limits of the project activities, including the boundaries of designated staging areas; ingress and egress corridors; stockpile areas for spoils disposal, soil, and materials; and equipment exclusion zones. Flagging or fencing will be maintained in good repair for the duration of project activities. Posted speed limits on public roadways will be adhered to and speeds will be limited to 20 miles per hour (mph) in the project area on unpaved surfaces and unpaved roads (to reduce dust and soil erosion), or in areas where Covered Species have the potential to occur. Speeds greater than 20 mph may be permitted in the project area where Covered Species are not expected to occur (e.g., in areas where Covered Species have been excluded) and there is no risk of generating excessive dust (e.g., surfaces are paved, saturated, or have been treated with other measures to prevent dust). Additional details are provided in Section 2.1.5.3, Guild- and Species-Specific Protection Measures, where applicable. See also IWW-004, In-Water Staging Areas and Use of Barges.
USFWS-GPM-07	Environmentally Sensitive Areas and/or Wildlife Exclusion	Where appropriate, fencing, flagging, or biological monitoring will be used to minimize disturbance to environmentally sensitive areas and Covered Species habitat. If the project site is suitable for fencing, prior to the start of construction, environmentally sensitive area fencing (ESAF) and/or Wildlife Exclusion Fencing (WEF) will be installed between the active work area(s) and any suitable terrestrial habitat where Covered Species could enter the site. When fencing is not practicable due to project size, topography, soils, or other factors, monitoring by a Qualified Biologist during construction activities can be used to minimize impacts (see GPM-005, Environmental Monitoring). - The Qualified Biologist will determine the location of the ESAF and/or WEF prior to the start of construction. - WEF specifications (e.g., height, installation requirement, or materials) will be determined based on the species the fencing is intended to exclude. ESAF does not require such specifications and may include flagging or monitoring (see GPM-005, Environmental Monitoring).

		- The ESAF and/or WEF will remain in place throughout the duration of the construction activities and will be inspected and maintained regularly by the Qualified Biologist until completion of the project. Repairs to the ESAF and/or WEF will be made within 24 hours of discovery. The fencing will be removed only when all construction equipment is removed from the site, the area is cleared of debris and trash, and the area is returned to natural conditions.
USFWS-GPM-08	Prevent Spread of Invasive Species	The spread or introduction of nonnative, invasive plant and animal species will be avoided. When practicable, nonnative invasive plants in the project areas will be removed and properly disposed of in a manner that will not promote their spread. Equipment will be cleaned of any sediment or vegetation at designated wash stations before entering or leaving the project area, to avoid spreading pathogens or nonnative invasive species. Activities that create new habitat for nonnative invasive species will be avoided. Isolated infestations of nonnative invasive species identified in the project area will be treated with weed management methods at an appropriate time, to prevent further formation of seed and destroy viable plant parts and seed. Wash sites must be in confined areas that limit runoff to any surrounding habitat, and on a flat grade. Upland areas will use rice straw or invasive species-free local slash/mulch for erosion control; the remainder of the project area will use certified, weed-free erosion control materials. Mulch must be certified weed-free. The Project Proponent will follow the guidelines in the CDFW's California Aquatic Invasive Species Management Plan (CDFW 2008) and Aquatic Invasive Species Disinfection/Decontamination Protocols (CDFW 2016). Construction supervisors and managers will be educated on weed identification and the importance of controlling and preventing the spread of invasive weeds.

USFWS-GPM-09	Practices to Prevent Pathogen Contamination	The Project Proponent will review and implement restoration design considerations and best management practices (BMPs) to help prevent pathogen contamination, as published by the "Working Group for Phytophthoras in Native Habitats" (www.calphytos.org), when there is a risk of introduction and spread of plant pathogens in site plantings. The Project Proponent will review and implement decontamination protocols to prevent the spread of pathogens among amphibians or other aquatic animals when working in aquatic habitats that may support native amphibians. Gear and equipment that may contact water will be cleaned and decontaminated to prevent the spread of chytrid fungus, following protocols in Aquatic Invasive Species Disinfection/Decontamination Protocols (CDFW 2016, or latest version). For additional guidance related to amphibians and chytrid fungus, see AMP-4 and AMP-10.
USFWS-GPM-10	Equipment Maintenance and Materials Storage	Vehicle traffic will be confined to existing roads and the proposed access route(s). All machinery must be in good working condition, showing no signs of fuel or oil leaks. Oil, grease, or other fluids will be washed off at designated wash stations prior to entering the construction site. Inspection and evaluation for the potential for fluid leakage will be performed daily during construction. All fuel and chemical storage, servicing, and refueling will be done in an upland staging area or other suitable location (e.g., barges) with secondary containment to prevent spills from traveling to surface water or drains. Project Proponents will establish staging areas for equipment storage and maintenance, construction materials, fuels, lubricants, solvents, and other possible contaminants in coordination with resource agencies. Staging areas will have a stabilized entrance and exit and will be at least 100 feet from waterbodies, unless site-specific circumstances do not provide such a setback; in such cases, the maximum setback possible will be used. Fluids will be stored in appropriate containers with covers and will be properly recycled or disposed of off-site. Machinery stored on site will have pans or absorbent mats placed underneath potential leak areas.
USFWS-GPM-11	Material Disposal	All refuse, debris, unused materials, and supplies that cannot reasonably be secured will be removed daily from the project work area and deposited at an appropriate disposal or storage site. All construction debris will be removed from the work area immediately on project completion. The Water Quality and Hazardous Materials (Section 2.1.5.2, Water Quality and Hazardous Materials) measures will be implemented to ensure proper handling and disposal of hazardous materials.
USFWS-GPM-12	Fugitive Dust Reduction	To reduce dust, construction vehicles will be speed-restricted as described in GPM-006, Work Area and Speed Limits, when traveling on nonpaved surfaces. Stockpiled materials susceptible to wind-blown dispersal will be covered with plastic sheeting or other suitable material to prevent movement of the material. During construction, water (e.g., trucks, and portable pumps with hoses) or other approved methods will be used to control fugitive dust. Dust suppression activities must not result in a discharge to waterbodies.
USFWS-GPM-13	Trash Removed Daily	During project activities all trash, especially food-related refuse that may attract potential predators or scavengers, will be properly contained in sealed containers, removed from the work site, and disposed of daily.
USFWS-GPM-14	Project Cleanup after Completion	Work pads, temporary falsework, and other construction items will be removed from the 100-year floodplain by the end of the construction window. Removal of materials must not result in discharge to waterbodies.

USFWS-GPM-15	Revegetate Disturbed Areas	All temporarily disturbed areas will be de-compacted and seeded/planted with an assemblage of native riparian, wetland, and/or upland plant species suitable for the area. The Project Proponent will develop a revegetation plan. Plants for revegetation will come primarily from active seeding and planting, or from natural recruitment where applicable. Plants imported to the restoration areas will come from local stock. Only native plants (genera) will be used for restoration efforts. Certified weed-free native mixes and mulch will be used for any restoration planting or seeding. Revegetation activities in and adjacent to waterbodies and other aquatic habitat suitable for Covered Species will commence after construction activities at a site are complete.
USFWS-GPM-16	Wildfire Prevention	With the exception of vegetation-clearing equipment, no vehicles or construction equipment will be operated in areas of tall, dry vegetation. A fire prevention and suppression plan will be developed and implemented for all maintenance and repair activities that require welding or otherwise have a risk of starting a wildfire.
USFWS-IWW-01	Appropriate In-Water Materials	Selection and use of gravels, cobble, boulders, and instream woody materials in streams, and other materials (e.g., oyster shells, other substrates) for reef/bed restoration will be performed to avoid and/or minimize adverse impacts to aquatic Covered Species and their habitats. On-site gravels will be screened and sorted; Gravels imported from a commercial source will be clean-washed and of appropriate size. As necessary to protect Covered Species, placement will be overseen by a Qualified Biologist; implementation timing will be determined based on the least amount of overlap (or impact on) all sensitive biological resources that may be affected, and the timing of their use of the receiving area. Imported gravel from outside the project watershed will not be from a source known to contain historical hydraulic gold mine tailings, dredger tailings, or mercury mine waste or tailings. Materials that may foul or degrade spawning gravels (e.g., sand or soil eroding from sandbag or earthen dams) will be managed to avoid release and exposure in salmonid streams. Oyster shells or other substrates for reef/bed restoration will be cured and inspected to be free of pathogens and/or nonnative species.
USFWS-IWW-02	In-Water Vehicle Selection and Work Access	If work requires that equipment enter wetlands or below the banks of a Water of the US, equipment with low ground pressure will be used to minimize soil compaction. Low-ground-pressure heavy equipment mats will be used, if needed to lessen soil compaction. Hydraulic fluids in mechanical equipment working in the waters of the United States or any other aquatic habitat suitable for Covered Species will not contain organophosphate esters. The amount of time this equipment is stationed, working, or traveling in the waters of the United States or other aquatic habitat suitable for Covered Species will be minimized. All equipment will be removed from the aquatic feature during nonwork hours or returned to the staging area approved through the ESA Section 7(a)(2) Review Form process in the aquatic feature.

USFWS-IWW-03	In-Water Placement of Materials, Structures, and Operation of Equipment	Material used for bank stabilization or in-water restoration will minimize discharge sediment or other forms of waste to waters of the United States or other aquatic habitat suitable for Covered Species. Construction will occur from the top of the stream bank, on a ground protection mat underlain with filter fabric, or a barge. All materials placed in streams, rivers, or other waters will be nontoxic. Any combination of wood, plastic, cured concrete, steel pilings, or other materials used for in-channel structures will not contain coatings or treatments, or consist of substances toxic to aquatic organisms (e.g., zinc, arsenic, creosote, copper, other metals, pesticides, or petroleum-based products) that may leach into the surrounding environment in amounts harmful to aquatic organisms. Except for the following conditions, equipment must not be operated in standing or flowing waters without site-specific approval from the USFWS Field Office: - All construction activities must be effectively isolated from water flows, to minimize the potential for runoff. This may be accomplished by working in the dry season or dewatering the work area in the wet season. - When work in standing or flowing water is required, structures for isolating the in-water work area and/or diverting the water flow must not be removed until all disturbed areas are cleaned and stabilized. The diverted water flow must not be contaminated by construction activities. - All open-flow temporary diversion channels must be lined with filter fabric or other appropriate liner material to prevent erosion. Structures used to isolate the in-water work area and/or divert the water flow (e.g., cofferdam or geotextile silt curtain) must not be removed until all disturbed areas are stabilized.
USFWS-IWW-04	In-Water Staging Areas and Use of Barges	Where appropriate and practical, barges will be used to stage equipment and construct the project, to reduce noise, traffic disturbances, and effects on terrestrial vegetation. When barge use is not practical, construction equipment and plant materials will be staged in staging areas approved through the ESA Section 7(a)(2) Review Form process. Existing staging sites, maintenance toe roads, and crown roads will be used for project staging and access to avoid affecting previously undisturbed areas. For projects that involve in-water work for which boats and/or temporary floating work platforms are necessary, buoys will be installed so that moored vessels will not beach on the shoreline and anchor lines will not drag. Moored vessels and buoys will not be within 25 feet of vegetated shallow waters.

USFWS-IWW-05	Cofferdam Construction	Cofferdams may be installed both upstream and downstream, and along portions of the cross section of a channel or other waterway, if necessary to isolate the extent of the work areas. Construction of cofferdams will begin in the upstream area and continue in a downstream direction, enabling water to drain and allowing fish and aquatic wildlife species to leave (under their own volition) the area being isolated by the cofferdam, prior to closure. The flow will then be diverted only when construction of the upstream dam (if necessary) is completed and the work area has been naturally drained of flow; at this point, the downstream dam (if necessary) would be completed, and flow would be diverted around the work area. Cofferdams and stream diversion systems will remain in place and fully functional throughout the construction period. To minimize adverse effects to Covered Species, stream diversions will be limited to the shortest duration necessary to complete in-water work. In-water cofferdams will only be built from materials such as sandbags, clean gravel, rubber bladders, vinyl, steel, or earthen fill, and will be built in a manner that minimizes siltation and/or turbidity. Cofferdams will be pushed into place. If pile driving (sheet piles) is required, vibratory hammers will be used, and impact hammers will be avoided. If necessary, the footing of the cofferdam will be keyed into the channel bed at an appropriate depth to capture the majority of subsurface flow needed to dewater the streambed. When cofferdams with bypass pipes are installed, debris racks will be placed at the bypass pipe inlet in a manner that minimizes the potential for fish impingement and/or entrapment. Bypass pipes will be monitored for accumulation of debris, and accumulated debris will be removed. When appropriate, cofferdams will be removed so that surface elevations of water impounded above the cofferdam will not be reduced at a rate greater than 1 inch per hour. Cofferdams in tidal waters will be removed during the lowest possible tide and in slack water to minimize disturbance and turbidity. This will minimize the probability of fish and other aquatic species stranding as the area upstream becomes dewatered. All dewatering/diversion facilities will be 74 installed so that natural flow is maintained upstream and downstream of project areas. An area may need to be dewatered long enough to allow Covered Species to leave on their own before final clearance surveys and construction can begin.

USFWS-IWW-06	Dewatering/Diversion	The area to be dewatered will encompass the minimum area necessary to perform construction activities. The Project Proponent will provide a dewatering plan with a description of the proposed dewatering structures and appropriate BMPs for the installation, operation, maintenance, and removal of those structures. The period of dewatering/diversion will extend only for the minimum amount of time needed to perform the restoration activity and to allow Covered Species time to leave on their own before final clearance surveys and construction can begin. Dewatering/diversion will occur via gravity-driven systems, where feasible and except as specified below. Dewatering/diversion will be designed to avoid direct and preventable indirect mortality of fish and other aquatic species. If Covered Fish Species may be present in the area to be dewatered, a fish capture and relocation plan will be developed and implemented for review and approval by the appropriate agencies. Stream flows will be allowed to gravity flow around or through the work site, using temporary bypass pipes or culverts. Bypass pipes will be sized to accommodate a minimum of twice the expected construction-period flow and not increase stream velocity and will be placed at stream grade. Conveyance pipe outlet energy dissipaters will be installed to prevent scour and turbidity at the discharge location. When gravity-fed dewatering is not feasible and pumping is necessary to dewater a work site, a temporary siltation basin and/or silt bags may be required to prevent sediment from reentering the wetted channel. Silt fences or mechanisms to avoid sediment input to the flowing channel will be installed adjacent to flowing water. Water pumped or removed from dewatered areas will be conducted in a manner that does not contribute turbidity to nearby receiving waters. Pumps will be refueled in an area well away from the stream channel. Fuel-absorbent mats will be placed under the pumps while refueling. Equipment working in the stream channel or within 25 feet of a wetted channel will have a double (i.e., primary and secondary) containment system for diesel and oil fluids. All work will comply with the CDFW Fish Screening Criteria (CDFW 2001) or NMFS Fish Screening Criteria for Anadromous Salmonids (NOAA 2022). Pump intakes will be covered with mesh, in accordance with the requirements of current fish screening criteria, to prevent potential entrainment of fish or other aquatic species that could not be removed from the area to be dewatered. The pump intake will be checked periodically for impingement of fish or other aquatic species. Diverted flows must be of sufficient quality and quantity, and of appropriate temperature, to support existing fish and other aquatic life both above and below the diversion. Pre-project flows must be restored to the affected surface waterbody on completion of work at that location. Where diversions are planned, contingency plans will be developed that include oversight for breakdowns, fueling, maintenance, leaks, etc.

USFWS-IWW-07	Fish and Aquatic Species Exclusion While Installing Diversion Structures	Fish and other aquatic species will be excluded from occupying the area to be dewatered by blocking the stream channel above and below with fine-meshed block nets or screens, based on the site 75 conditions, while cofferdams and other diversion structures are being installed. Block net mesh will be sized to ensure that aquatic species upstream or downstream do not enter the areas proposed for dewatering. Mesh will be no greater than 1/8-inch diameter. The bottom of the net must be completely secured to the channel bed. Block nets or screens must be checked at least twice daily at the beginning and end of the workday and cleaned of debris to permit free flow of water. Block nets or screens will be placed and maintained throughout the dewatering period at the upper and lower extent of the areas where aquatic species will be removed. Net placement is temporary and will be removed once dewatering has been accomplished, or construction work is complete for the day. Pump intakes will be covered with mesh, in accordance with the requirements of current NMFS fish screening criteria, to prevent potential entrainment of fish or other aquatic species that could not be removed from the area to be dewatered. The pump intake will be checked periodically for impingement of fish or other aquatic species. All work will comply with the CDFW Fish Screening Criteria (CDFW 2001) or NMFS Fish Screening Criteria for Anadromous Salmonids (NOAA 2022).
USFWS-IWW-08	Removal of Diversion and Barriers to Flow	On completion of construction activities, any diversions or barriers to flow will be removed in a manner that will allow flow to resume with the least disturbance to the substrate. Alteration of creek beds will be minimized; any imported material that is not part of the project design will be removed from stream beds on completion of the project.
USFWS-SPM-AMP-01	Wildlife Passage Design	For projects that include the installation, repair, or replacement of permanent or temporary fencing (e.g., security, landscape, or privacy fencing) fencing will be designed to allow for permeability; it will incorporate a minimum 6-inch gap at regular intervals to allow for covered amphibians to disperse between upland and breeding habitat. This measure is not applicable to ESAF or WEF specified as part of construction activities to protect habitats or exclude wildlife from the work areas. Facilities such as curbs, drainages, culverts, and fence "footers" will be designed with gradually sloped sides or intermittent gaps to facilitate wildlife movement.
USFWS-SPM-AMP-02	Rain Event Limitations	To the maximum extent practicable, construction activities will be restricted to periods of low rainfall (less than 0.5 inch per 24-hour period) and periods of dry weather (with less than a 50% chance of rain). During these restricted periods, no construction activities will occur between 30 minutes prior to sunset and 30 minutes after sunrise (no night work during rain events). If rain exceeds 0.5 inch during a 24-hour period, work will cease until no further rain is forecast. Construction activities halted due to precipitation may resume when precipitation ceases and the National Weather Service 72-hour weather forecast indicates less than a 50% chance of 0.5 inch of rain or less during a 24-hour period. Before construction activities resume, a Qualified Biologist will inspect the project area and all equipment/materials for the presence of Covered Species of amphibians.

USFWS-SPM-AMP-03	Preconstruction Survey	If covered amphibians are present or assumed present,* no more than 24 hours prior to the date of initial ground disturbance and vegetation clearing, a USFWS-Approved Biologist will walk in the project site to investigate all potential areas that could be used by the Covered Species of amphibians (as identified in Table 5) for feeding, breeding, sheltering, movement, and other essential behaviors. If a covered amphibian species is encountered during the survey, the Project Proponent will refer to and follow procedures described below in AMP-9, Encounters with Species; and AMP-10, Species Observations and Handling Protocol, for passively allowing the species to move out of the work area or actively relocating the species out of harm's way. Proposed restoration projects that may need to actively relocate amphibians out of harm's way will require the Project Proponent to submit a project-specific species relocation plan for USFWS review and approval, as described in AMP-10. Footnote: * The Project Proponent will assume a species is present in an area when suitable habitat is present within the current range of the species and their absence has not been determined by a negative finding using protocol level surveys.
USFWS-SPM-AMP-04	Disease Prevention and Decontamination	To prevent disease conveyance among work sites during project implementation, the USFWS-Approved Biologist will ensure that the decontamination protocols described in CDFW, Aquatic Invasive Species Disinfection/ Decontamination Protocols (CDFW 2016 or latest version) will be implemented prior to gear and equipment arriving at or moving between work sites and will be followed at all times. A copy of the code of practice must be available at the project site.
USFWS-SPM-AMP-05	Lighting	In addition to GPM-3, Construction Hours, artificial lighting at a project site will be prohibited to the maximum extent practicable during the hours of darkness, except when necessary for driver or pedestrian safety.
USFWS-SPM-AMP-06	Clearing and Grubbing Vegetation	A USFWS-Approved Biologist will be present during all vegetation clearing and grubbing activities in areas within the currently occupied range of Covered Species of amphibians where suitable habitat is present. Before vegetation removal, the USFWS-Approved Biologist will thoroughly survey the area for these species (see AMP-3, Preconstruction Survey). Either vegetation in sensitive areas will be cleared with handheld motorized tools (e.g., weed eaters or chainsaws) or by hand pulling; or a USFWS-Approved Biologist will walk in front of vegetation-clearing equipment. Where dense brush occurs (e.g., blackberry or periwinkle), the USFWS-Approved Biologist may direct an equipment operator to lift and shake dense vegetation with an excavator or backhoe so that the USFWS-Approved Biologist can look underneath and search for amphibians. Tree stumps and roots will be left in place to avoid any ground disturbance and preserve refugia habitat, with the exception of nonnative invasive plants that could propagate from remaining vegetative material. Native branches, leaf litter, mulch, woody debris, and other vegetative trimmings may be retained and spread on site to enhance habitat, as appropriate.

USFWS-SPM-AMP-07	Pump Screens	If a waterbody is to be temporarily dewatered by pumping, intakes will be completely screened, consistent with NMFS (1997) and CDFW (2001) screening guidelines or latest updates to those guidelines (currently, where fry-sized salmonids are present, wire mesh openings no larger than 3/32 inch [2.38 mm] for woven wire or perforated plate screens, or 0.0689 inch [1.75 mm] for profile wire screens, and other relevant criteria such as limited approach velocities), to avoid entrainment or impingement of larval amphibians. The intake will be placed in a perforated bucket or another method to attenuate suction, to prevent Covered Species of amphibians from entering the pump system. Water will be returned to the water body when diversions or cofferdams are removed and flow is restored (consistent with measures in Section 2.1.5.2.2, Dewatering Activities and Aquatic Species Relocation). If no diversion or cofferdams are used during dewatering, the waterbody will be allowed to refill naturally from precipitation, runoff, or hydrological processes.

		Removal of any individuals of nonnative invasive species (e.g., bullfrogs, nonnative crayfish, or nonnative fishes) is encouraged as practicable to facilitate conditions for project success. The Project Proponent is responsible for ensuring that these activities comply with the California Fish and Game Code. Suspected hybrid California tiger salamander will not be removed without specific authorization from USFWS (and CDFW, in accordance with their requirements). More details on nonnative animal removal are provided below. 1. In federally-listed aquatic species occupied habitat, a USFWS-Approved Biologist will be present during removal activities. Less experienced personnel assisting with removal efforts will get confirmation of species identification of all vertebrates prior to collection and removal. 2. All individuals participating in removal activities will have training in identification of Covered Species that might be present and nonnative species proposed for removal and proper techniques for all planned removal methods prior to the initiation of removal activities. 3. Crew size, along with the amount of time spent in any given habitat area, will be kept to the minimum necessary. Repeated disturbance of any given area within a single year will be avoided unless necessary for eradication purposes. 4. To the extent feasible, both native and nonnative fauna will be examined for signs of diseases or parasites soon after capture, and any abnormalities will be photographed and documented. 5. Prior to initiation of electrofishing activities in Covered Species habitat, the names and credentials of all electrofishing crew leaders will be submitted for review and approval by USFWS. 6. The USFWS-approved electrofishing crew leader will provide training to the crew regarding potential risks associated with electrofishing and injury to Covered Species. The crew will also be trained to identify signs of injury and appropriate response.
USFWS-SPM-AMP-08	Removal of Nonnative Invasive Species	7. Electrofishing will be conducted using the minimum pulse rate and width that is effective. Only direct or pulsed direct current will be used. In shallow waters, undercut banks, near algal mats or other areas where Covered Species can be

		concentrated or are more likely to come into close contact with electrofishing equipment, the amount of time spent electrofishing will be minimized. 8. If any Covered Species are immobilized by electrofishing activities, they will be carefully removed from the water body by a USFWS-Approved Biologist until activities are completed. These individuals will be held for the minimum amount of time necessary and monitored until they are completely mobile and then returned to the point of capture. 9. Handling of individuals (e.g., arroyo toad, California red-legged frog) may occur if they are inadvertently collected by net or trap, in accordance with procedures for handling in AMP-11 and FISH 3. These individuals will be released at the place of capture or will be relocated to the nearest available suitable habitat. 10. Gill nets will be used upstream and downstream of occupied stream stretches, but not in stream stretches where Covered Species might occur. Where gill nets are used, they will not be left unattended overnight 11. If traps are used, they will be carefully monitored to minimize the potential for injury and mortality of nontarget species. Fish traps will be used under the following conditions: (a) fish traps will be checked a minimum of once a day; (b) fish traps will be set so that air will be available at the top of the trap; and (c) if predator tracks adjacent to or signs of predator tampering with fish traps occur, these traps will be closed for a period of time until predator activity is no longer detected.
USFWS-SPM-AMP-09	Placement of Suitable Erosion Control Material	To prevent amphibians from becoming entangled, trapped, or injured, erosion control materials that use plastic or synthetic monofilament netting will not be used. Silt fencing can be used because it is not considered a netting and does not entangle species. This includes products that use photodegradable or biodegradable synthetic netting, which can take several months to decompose. Acceptable materials include natural fibers such as jute, coconut, twine, or other similar fibers. Following site restoration, erosion control materials such as straw wattles will not block the movement of Covered Species of amphibians.

USFWS-SPM-AMP-10	Encounters with Species	Each encounter with a covered amphibian will be treated on a case-by-case basis. If any life stage of the Covered Species of amphibian is found and these individuals may potentially be killed or injured by work activities, the following will apply: a. If a Covered Species of amphibian is detected in the project area, work activities within 50 feet of the individual that may potentially be harmed, injured, or killed will cease immediately, and the USFWS-Approved Biologist will be notified. Based on the professional judgment of the USFWS-Approved Biologist, if project activities can be conducted without harming or injuring the species, it may be left at the location of discovery and monitored by the USFWS-Approved Biologist. All project personnel will be notified of the finding, and at no time will work occur within 50 feet of a species without a USFWS-Approved Biologist present. b. Contact with the Covered Species of amphibian will be avoided, and the amphibian will be allowed to move out of the potentially hazardous situation of its own volition. Allowing a Covered Species of amphibian to move out of the potentially hazardous situation of its own volition may not be appropriate for multi-day projects because covered amphibians could stay or move back into the project site. If there is an immediate hazard or if there is no suitable, accessible habitat nearby to which the amphibian may relocate, the amphibian will be moved following approved handling protocol (see AMP-11, Species Observations and Handling Protocol). c. Not to exceed the self-imposed take limits provided in Table 4.

USFWS-SPM-AMP-11	Species Observations and Handling Protocol	The potential need to handle and relocate covered amphibian species should be evaluated during the technical assistance step shown in Figure 2. If a Covered Species of amphibian (as identified in Table 5) does not or cannot leave the work area and handling covered amphibians (as identified in Table 5) is required, capture and relocation will only be allowed in accordance with a plan developed in accordance with the guidance below and submitted to USFWS for review and approval. Although it could be submitted after the ESA Section 7(a)(2) Review Form, to avoid project delays and facilitate timely USFWS review and approval, a draft of the capture and relocation plan may be submitted with the ESA Section 7(a)(2) Review Form. The capture and relocation will be conducted by a USFWS-Approved Biologist. In addition to measures described in GPM-9, Practices to Prevent Pathogen Contamination; and AMP-5, Clearing and Grubbing Vegetation (which refers to CDFW [2016] decontamination protocols), to prevent the spread of pathogens among sites, special care should be taken to prevent transferring potential pathogens among individual animals, as described below. a. Prior to handling and relocation, the USFWS-Approved Biologist will take precautions to prevent the introduction of amphibian diseases, in accordance with the Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander (USFWS 2003). i. All dirt and debris, including mud, snails, plant material (including fruits and seeds), and algae, should be removed from nets, traps, boots, vehicle tires and all other surfaces that have come into contact with water. Cleaned items should be rinsed with clean water before leaving the work area. ii. Boots, nets, traps, etc., should then be scrubbed with either a 70% ethanol solution, a bleach solution (0.5 to 1.0 cup of bleach to 1.0 gallon of water), QUAT 128 (quaternary ammonium, use 1:60 dilution), or a 6% sodium hypochlorite 3 solution and rinsed clean with water between study sites. Cleaning equipment in the immediate vicinity of a pond or wetland should be avoided. Care should be taken so that all traces of the disinfectant are removed before entering the next aquatic habitat. iii. When working at sites with known or suspected disease problems, disposable gloves should be worn and changed between handling each animal. iv. Used cleaning materials (liquids, etc.) should be disposed of safely, and if necessary, taken back to the lab for proper disposal. Used disposable gloves should be retained for safe disposal in sealed bags.

		b. Disinfecting equipment and clothing is especially important when biologists are coming to the project area to handle amphibians after working in other aquatic habitats (see GPM-9 and AMP-5, which reference CDFW [2016] protocols). Covered amphibians will also be handled and assessed according to the Restraint and Handling of Live Amphibians (USGS 2001). Covered amphibians will be captured by hand, dip net, seine net, or other USFWS-Approved methodology, transported and relocated to nearby suitable habitat outside of the work area, and released as soon as practicable the same day of capture. Soaps, oils, creams, lotions, repellents, or solvents of any sort cannot be used on hands within two hours before and during periods when the biologist is capturing and relocating individuals. Individuals will be relocated to areas containing suitable habitat, as identified in the relocation plan. If the animal will be held in captivity for any length of time, they shall be kept in a cool, dark, moist environment with proper airflow, such as a clean and disinfected bucket or plastic container with a damp sponge. Holding/transporting containers will not contain any standing water, objects (except sponges), or chemicals. Holding/transporting containers and dip nets will be thoroughly cleaned, disinfected, and rinsed with fresh water prior to use in the project area (see CDFW 2016 for disinfection protocols). USFWS will be notified (e.g., via phone, email, or text message) as soon as practicable and no longer than 1 week after all capture, handling, and relocation efforts. If an injured covered amphibian is encountered, and the USFWS-Approved Biologist determines that the injury is minor or healing and the individual is likely to survive, the individual will be released immediately, consistent with measures above. The individual(s) will be monitored until it is not imperiled by predators or other dangers. If the USFWS-Approved Biologist determines that a covered amphibian has major or serious injuries as a result of project-related activities, the USFWS-Approved Biologist will take it to a USFWS-Approved facility as soon as practicable, if such a facility is within a reasonable distance from the project site. If taken into captivity, the individual will remain in captivity and not be released into the wild unless it has been kept in quarantine and the release is authorized by USFWS. The circumstances of the injury, the procedure followed, and the final disposition of the injured animal will be documented in a written incident report to USFWS, as described below. Notification to USFWS of an injured or dead covered amphibian (as identified in Table 5) in the project area will be made and reported, whether or not its condition resulted from project-related activities. In addition, the USFWS-Approved Biologist or Project Proponent will follow up with USFWS in writing (e.g., email) within 2 calendar days of the finding. Written notification to USFWS will include the following information: the species; number of animals taken or injured; sex (if known); date, time, and location of the incident or of the finding of a

		dead or injured animal; how the individual was taken; photographs of the specific animal; the names of the persons who observe the take and/or found the animal; and any other pertinent information. Dead specimens will be preserved, as appropriate, and will be bagged and labeled (i.e., species type; who found or reported the incident; when the report was made; when and where the incident occurred; and, if possible, the cause of death). Specimens will be held in a secure location until instructions are received from USFWS regarding the disposition of the specimen.

USFWS-SPM-ASP-01	Qualifications of the Qualified Biologist and USFWS-Approved Biologist	Biological monitoring and construction oversight will be provided by biologists at two different experience levels, depending on the activity. These two levels are described in this measure, below. In general, the Qualified Biologist will complete many tasks across species for a Proposed Restoration Project, and the USFWS-Approved Biologist will only be required for specific tasks that require additional species expertise. In some cases, the Qualified Biologist(s) may work under the guidance, direction, or supervision of the USFWS-Approved Biologist. Unless otherwise indicated in Section 2.1.5.3, Guild- and Species-Specific Protection Measures, general site surveys and biological monitoring can be conducted by a Qualified Biologist. Because the qualifications for the USFWS-Approved Biologist exceed those for the Qualified Biologist, any activity indicated as appropriate for the Qualified Biologist may also be completed by a USFWS-Approved Biologist. - Qualified Biologist: The Qualified Biologist is required to meet certain qualifications, as confirmed by the Project Proponent. Resume review by the USFWS is not required for the Qualified Biologist. Minimum qualifications for the Qualified Biologist include a bachelor's degree in biological or environmental science, natural resources management, or related discipline; field experience in the habitat types that may occur at the project site; familiarity with the Covered Species (or closely related species) that may occur at the project site; and prior preconstruction survey, construction monitoring, or construction oversight experience (if and as relevant to the activity to be conducted). - USFWS-Approved Biologist: For some Covered Species, additional qualifications may be required for biologists who would be responsible for species handling or relocation, or other activities (Section 2.1.5.3, Guild- and Species-Specific Protection Measures). These activities would be completed by the USFWS-Approved Biologist when required by the protection measures. Resume(s) for the USFWS-Approved Biologist(s) with experience in the identification of all life stages and ecology of the applicable Covered Species (or closely related species) and their critical habitat will be submitted to the USFWS Field Office for review and approval at least 30 days prior to any activity for which the protection measures indicate that a USFWS-Approved Biologist is required. Because species handling and relocation of some species for proposed restoration projects would be authorized by USFWS through issuance of the PBO and associated ITS, it may not be a requirement for the USFWS-Approved Biologist to hold a federal Section 10(a)(1)(A) Recovery Permit to implement this role on an approved project under this program. However, it is noted that some presence/absence surveys that may be performed by a USFWS-Approved Biologist may require that the person conducting those surveys hold a Section 10(a)(1)(A) Recovery Permit. For any surveys, securing/confirming necessary 10(a)(1)(A) permits and other authorizations should be coordinated with the respective USFWS Field Office or S7 Delegated Authority Program (DAP).

USFWS-SPM-ASP-02	Preconstruction Surveys	If Covered Species and/or their habitat is present, where appropriate and based on project-specific requirements, a Qualified Biologist will conduct visual preconstruction surveys and implement additional protection measures within 5 days prior to beginning work to protect the species and habitat from avoidable construction-related disturbance. The intent of the survey is to assess current species habitat and species use locations in the project area immediately prior to construction. The preconstruction survey is not intended to be a presence/absence or protocol-level survey; the potential for species presence would have already been evaluated prior to project approval. Pre-construction surveys may be phased across a construction site if construction in different areas will occur at different times; only areas where disturbance is imminent need be surveyed. If construction activities at a given location cease for more than 5 consecutive days, and there is potential for Covered Species to reoccupy habitat at that site, the Qualified Biologist will resurvey the project area prior to resuming construction and implement applicable protection measures. Additional guild- and species-specific preconstruction requirements are provided in Section 2.1.5.3, Guild- and Species-Specific Protection Measures, and may supersede this more GPM, as applicable.
USFWS-SPM-ASP-03	Species Capture, Handling, and Translocation	Covered Species capture, handling, and translocation will only be conducted by a USFWS-Approved Biologist(s). The Project Proponent will prepare a Covered Species translocation plan to be reviewed and approved by the USFWS Field Office as part of the ESA Section 7(a)(2) Review Form. The plan will include capture and translocation methods, translocation site, and post translocation monitoring, if applicable. Additional measures are defined in Section 2.1.5.3, Guild- and Species-Specific Protection Measures. If capture, handling, and translocation are necessary due to dewatering activities, see IWW-6, Dewatering/Diversion, and follow the USFWS-Approved translocation plan. Additional guild- and species-specific capture, handling, and translocation requirements are described in Section 2.1.5.3, Guild- and Species-Specific Protection Measures, and may supersede this more GPM, as applicable.
USFWS-SPM-ASP-04	Covered Species Entrapment Prevention	To prevent the accidental entrapment of Covered Species during construction, all excavated, steep-walled holes or trenches will be covered with appropriate covers (e.g., plywood, thick metal sheets, or similar materials) at the end of each workday. Covers will be placed so that trench edges are fully sealed with rock bags, sand, or other appropriate material. Alternatively, one or more escape ramps (e.g., fill dirt or wood planking) will be installed at an angle no greater than 30 degrees, to allow wildlife to escape. Before holes or trenches are filled, sealed, or collapsed, the holes or trenches will be thoroughly inspected for trapped animals. If pipes are stored on site or in associated staging areas, they will be capped when not in use or stored above ground level at an appropriate height to minimize species entrapment and will be inspected before being moved. Any animals discovered will be allowed to escape voluntarily or will be relocated by a USFWS-Approved Biologist. Additional guild- and species-specific entrapment prevention requirements are described in Section 2.1.5.3, Guild- and Species-Specific Protection Measures, and may supersede this more GPM, as applicable.

USFWS-SPM-ASP-05	Airborne Noise Reduction	Equipment (including the noise abatement systems) will be maintained in good working order. If construction noise has the potential to adversely affect Covered Species, the Project Proponent will include site-specific protection measures for construction activities in the Project ESA Section 7(a)(2) Review Form to minimize impacts. Muffler (or spark arrester) damage must be promptly remedied. Potential adverse effects from project-related noise should be avoided or minimized to the maximum extent practicable by implementing sufficient disturbance buffers between noise-generating project activities and covered amphibian, bird, and mammal species habitat. When applicable, species-specific noise buffer distances are provided in Section 2.1.5.3, Guild and Species-Specific Protection Measures. Noise buffer distances are distinct from other indicated buffer distances in Section 2.1.5.3, which may relate to an area involving dispersal, visual disturbance, or other considerations; however, incorporating the larger of two buffer distances will provide buffer for both purposes. Noise buffer distances may be modified in coordination with the USFWS Field Office based on project specific characteristics or a Project Proponent/Action Agency may choose to submit their own analysis and buffer recommendations for the USFWS's consideration. If sufficient buffers cannot be implemented, the proposed activities may lead to adverse effects, including possible incidental take.
USFWS-SPM-AWS-01	Habitat Avoidance and Work Window	Ground disturbance and vegetation clearing in scrub/chaparral habitat will be avoided to the maximum extent possible. Project activities in suitable habitat in the currently occupied range of the species where Alameda whipsnake is known to be or may be present will be confined to April 1 through October 31.* To the extent practicable, all rock outcrops will be avoided. Not to exceed the self-imposed take limit of injury or mortality to no more than four adults or juveniles/hatchlings annually. The self-imposed take limit also requires no net loss of habitat through the protection measures and/or offsetting impacts with habitat restoration or enhancement. Footnote: * Extended or alternative work windows may be considered on an individual project basis with prior approval from USFWS ES, provided the Project Proponent can demonstrate that measures implemented to avoid or minimize exposure would do so at a level commensurate with the standard work windows.
USFWS-SPM-AWS-02	Daily Timing Restrictions	To avoid or minimize effects on the Alameda whipsnake and its habitat, construction and ground disturbance will occur only during daytime hours, will cease no less than 30 minutes before sunset, and may not begin again earlier than 30 minutes after sunrise. If nighttime work is needed, the Project Proponent should explain in the ESA Section 7(a)(2) Review Form why it is needed, along with any additional protection measures that may be appropriate, for review and approval by the USFWS Field Office. A Qualified Biologist will inspect the site prior to vehicle operation and will monitor construction activities.

USFWS-SPM-CRLF-CTS-01	Work Windows	For the California red-legged frog and California tiger salamander, project activities in uplands will be confined to May 1 through October 31, 8 unless there is a rain event forecast likely to generate measurable fall, rain of 1 inch or greater, at which time work will cease for the fall season. For project activities in occupied aquatic breeding habitat, grading and other disturbance will avoid the breeding season and will be limited to between July 1 and October 31, unless preconstruction surveys and monitoring demonstrate that young-of-year (recently metamorphosed) amphibians have dispersed from the breeding habitat. In that case, based on the recommendation of the USFWS-Approved Biologist, and with written approval from the USFWS (e.g., email), the Project Proponent may proceed with work in aquatic breeding habitat prior to July 1. Work in a pool or wetland may also begin before July 1 if the pool or wetland has been dry for a minimum of 30 days before initiating work. Not to exceed the self-imposed take limits in Table 5 Covered Species - Amphibians.
USFWS-SPM-CRLF-CTS-02	Nonnative Animal Removals	During electrofishing activities, in or near California red-legged frog occupied habitat, a USFWS-Approved Biologist will precede the electrofishing crew and survey for California red-legged frogs. If any California red-legged frogs are detected, they will be captured and held outside the waterbody until the electrofishing activities at that location have been completed. All individuals would then be immediately returned to the point of capture. California red-legged frog tadpoles will not be removed from habitat during electrofishing. If a tadpole is shocked then it should be captured (e.g., placed in shallow container) and monitored until it regains function, and then released at point of capture. If it does not regain function then should be reported as a mortality. If California red-legged frogs are detected but escape capture, the USFWS-Approved Biologist will determine measures for avoiding or minimizing impacts to individuals (i.e., leave the area or limit the duration of shocking pulses).
USFWS-SPM-FISH-01	Habitat Disturbance Avoidance and Minimization	Disturbance to aquatic habitat for covered fish species will be avoided and/or minimized to the maximum extent practicable, unless the purpose of the project is to provide overall benefits to the species and the benefits are greater than any temporary impacts to habitat.
USFWS-SPM-FISH-02	Habitat Assessment and Surveys	For projects that may result in impacts to aquatic habitat within the range of covered fish species, no less than 30 days prior to construction of the project, the Project Proponent will evaluate the potential for covered fish species to be present in the project area. The evaluation may be based on existing information if sufficiently available, or the Project Proponent may conduct a habitat assessment or focused survey for those species, if appropriate. An example where it may not be appropriate to conduct a survey is when electrofishing or seining could result in mortality (e.g., mortality of tidewater goby), and it is preferred to assume species presence. The habitat assessment and/or survey will be conducted in potentially suitable aquatic habitat within 300 feet of the proposed project. The Qualified Biologist will conduct the habitat assessment and/or fish survey and will adhere to the standards provided in the CDFW California Salmonid Stream Habitat Restoration Manual 4th Edition Volume I: Section IV (CDFW 2010). If Covered fish species are observed during the survey or the habitat is otherwise potentially occupied, based on the results of the habitat assessment or existing information, the Project Proponent will implement FISH-3, Fish Capture and Relocation, as described below.

		For projects that require dewatering or other work in suitable habitat for the covered fish species (as identified in FISH-2), if fish capture and relocation would be the most protective approach to managing fish during construction, then a fish capture and relocation plan will be developed and submitted to the appropriate USFWS Office for approval as part of the ESA Section 7(a)(2) Review Form submittal. The plan will describe the biologist's qualifications, capture methods, capture and relocation work areas, and reporting requirements, including details in the list below. If capture and relocation is not feasible or would not be the most protective approach to managing fish in the work area (e.g., if dewatering is not needed or appropriate; or if fish are in a large, unconfined waterbody), other methods to protect covered fish species (e.g., timing restrictions around season and tide, or bubble curtains) should be detailed in a plan and submitted to USFWS for approval. It is recommended that the capture and relocation plan be submitted with the ESA Section 7(a)(2) Review Form to avoid delays. a. This plan will incorporate the latest USFWS and NMFS guidance relating to the capture and relocation of fish, as applicable. b. Procedures for decontamination of any equipment used in the capture and relocation of fish will be identified. c. Prior to the implementation of capture and relocation activities, relocation (or release) sites will be identified by the USFWS-Approved Biologist, based on proximity, access, habitat suitability, and potential to be affected by construction-related disturbance. Suitable habitat for relocation sites will be in the same watershed/sub-watershed basin where fish were originally captured. One or more of the following methods will be used to capture protected fish species: electrofishing, dip net, seine, throw net, minnow trap, and hand. d. Fish relocation will only be conducted (or led) by a USFWS-Approved Biologist. If a USFWS-Approved Biologist is needed, the Project Proponent will submit the biologist's qualifications to the appropriate USFWS Office for approval 30 days prior to project construction. The USFWS-Approved Biologist will have knowledge and experience in fish biology and ecology; fish/habitat relationships; biological monitoring; handling, collecting, and relocating fish; or other relevant experience.
USFWS-SPM-FISH-03	Fish Capture and Relocation	e. Residual surface water associated with the diverted or dewatered habitat will be monitored or sampled for the presence of fish by a USFWS-Approved Biologist as soon as the waters are isolated. If a Covered Species of fish is

		observed in the isolated habitat, they will be immediately captured and relocated to the suitable habitat outside of the construction area, but in the same water basin, by the USFWS-Approved Biologist, in accordance with the approved fish capture and relocation plan. f. The USFWS-Approved Biologist will relocate any stranded covered fish species to an appropriate place, depending on the life stage of the fish and consistent with the USFWS-Approved rescue and relocation plan. g. The USFWS-Approved Biologist will note the number of individuals observed in the affected area, the number of individuals relocated, the approximate size of individuals, the location of capture and release, any instances of injury or mortality, and the date and time of the collection and relocation. This information will be reported to the appropriate USFWS Office within 7 days of completion of the fish capture and relocation effort.
USFWS-SPM-FISH-04	Reporting	The USFWS-Approved Biologist will provide a written summary of work performed (including biological survey and monitoring results), BMPs implemented (e.g., use of biological monitoring, flagging of work areas, or erosion and sedimentation controls), and supporting photographs of each stage to the appropriate USFWS Office. Furthermore, the documentation describing Covered Species surveys and relocation efforts (if appropriate) will be completed in accordance with the requirements of FISH-3, Fish Capture and Relocation.

USFWS-SPM-REP-01	Preconstruction Survey	A Qualified Biologist will conduct preconstruction surveys for the target reptile species within 72 hours prior to any initial ground disturbance in all suitable habitat in or adjacent to the project site and accessible to the Project Proponent, to identify locations where covered reptiles may be present, evaluate current activity status in the project area, and protect the species and its habitat from avoidable construction-related disturbance. The intent of the survey is to assess current species habitat and use locations in the project area immediately prior to construction. The preconstruction survey is not intended to be a presence/ absence or protocol-level survey; the potential for species presence would have already been evaluated prior to project approval. Preconstruction surveys may be phased across a construction site if construction in different area will occur at different times; only areas where disturbance is imminent need be surveyed. The project area will be reinspected by a Qualified Biologist whenever a lapse in construction activity of 5 days or greater has occurred.
USFWS-SPM-REP-02	Environmentally Sensitive Areas and Wildlife Exclusion	If WEF is used (see GPM-7, Environmentally Sensitive Areas and Wildlife Exclusion for further details), the following applies: - For the San Francisco garter snake, WEF will be established in the uplands immediately adjacent to aquatic snake habitat (e.g., waterbodies, including ponds, wetlands, and riparian areas) and extending up to 200 feet from construction activities. - For the giant garter snake, WEF will be installed prior to the start of ground-disturbing activities and after aquatic habitat (e.g., waterbodies, including ponds, wetlands, and riparian areas) has been dewatered (if applicable). The fencing will be inspected by a Qualified Biologist before the start of each workday and maintained by the Project Proponent until completion of the project. The fencing will be removed after all construction equipment is removed from the project site. To prevent reptiles from becoming entangled, trapped, or injured, fencing materials that include plastic or synthetic monofilament netting will not be used. Acceptable materials include natural fibers such as jute, coconut, twine, or other similar fibers.
USFWS-SPM-REP-03	Clearing and Grubbing Vegetation	A Qualified Biologist will be present during all vegetation clearing and grubbing activities in areas where the Covered reptiles (as identified in Table 6) are confirmed to occur, or where measures are being implemented based on presence of suitable habitat. Before vegetation removal, the Qualified Biologist will thoroughly survey the area for these species. Vegetation in sensitive areas will be cleared by handheld motorized tools (e.g., weed eaters or chainsaws) or by hand pulling, unless alternate methods are proposed by the Project Proponent and approved by USFWS. Tree stumps and roots will be left in place to avoid any ground disturbance and preserve refugia habitat, with the exception of nonnative invasive plants that could propagate from remaining vegetative material. Native branches, leaf litter, mulch, woody debris, and other vegetative trimmings may be retained and spread on site to enhance habitat as appropriate.

USFWS-SPM-REP-04	Prohibited Use of Rodenticides	No rodenticides will be used at the project site during construction in areas that support suitable habitat for the Covered reptiles.
USFWS-SPM-REP-05	Species Observations and Encounters	Each Proposed Restoration Project with the potential to encounter a Covered Species of reptile will submit a rescue and relocation plan to USFWS for review and approval at least 30 days before initiating construction. It is recommended that the rescue and relocation plan be provided as part of the ESA Section 7(a)(2) Review Form to reduce potential delays. General guidance to be considered during plan development is as follows: 1) leave the uninjured animal if it is not in danger; or 2) move the animal to a nearby location if it is in danger as described in REP-6, Species Handling and Relocation. These options are further described as follows: - When a protected reptile is encountered in the project area, the priority is to stop all activities in the surrounding area that have the potential to result in the harm, injury, or death of the individual. The USFWS-Approved Biologist then needs to assess the situation to select the course of action that will minimize adverse effects to the individual. - Avoid contact with the animal and allow it to move out of the project footprint and hazardous situation on its own, to a safe location. This guidance only applies to situations where an animal is encountered while moving through habitat and under conditions that will allow it to escape. This does not apply to animals that are uncovered or otherwise exposed or in areas where there is not enough adjacent habitat to support the life history of the protected reptiles if they move outside the construction footprint. - Avoidance is the preferred option if the animal is not moving or is in some sort of burrow or other refugia. In this case, the area will be well marked for avoidance by construction equipment, and a USFWS-Approved Biologist will be assigned to the area when work is taking place nearby. If avoidance is not practicable or safe for the Covered reptile species, the Project Proponent will implement REP6.

USFWS-SPM-REP-06	Species Handling and Relocation	A protected reptile will only be captured and relocated when that is the only option to prevent its death or injury, and after all attempts to avoid interaction of the species have been exhausted, as described in REP-5, Species Observation and Encounters. Project-specific rescue and relocation plans will be submitted by the Project Proponent and pre-approved by USFWS. General guidance for handling and relocation is as follows: - If appropriate habitat is immediately adjacent to the capture location, then the preferred option is short-distance relocation to that habitat. A snake will not be moved outside of the area where it could have traveled on its own. Captured snakes will be released in appropriate cover as close to their capture location as possible for their continued safety. Under no circumstances will an animal be relocated to another property without the property owner's written permission. It is the Project Proponent's responsibility to arrange for that permission. - The release locations must be pre-identified in the Project-specific rescue and relocation plan approved by USFWS; they will depend on where the individual was found and the opportunities for nearby release. In most situations, the release location is likely to be into the mouth of a small burrow, other suitable refugia, or suitable habitat. - Only a USFWS-Approved Biologist for the project can capture protected reptiles.
USFWS-VHDR-01	Avoidance of Vegetation Disturbance	The Project Proponent will minimize the amount of soil, terrestrial vegetation, emergent vegetation, and submerged vegetation (e.g., eelgrass and kelp in marine areas, or submerged aquatic vegetation in freshwater areas) disturbed during project construction and completion by using methods creating the least disturbance to vegetation. Disturbance to existing grades and native vegetation, the number of access routes, the size of staging areas, and the total area disturbed by the project will be limited to the extent of all temporary and permanent impacts, as defined by the final project design. All roads, staging areas, and other facilities will be placed to avoid and limit disturbance to aquatic habitat suitable for Covered Species (e.g., streambank or stream channel, and riparian habitat). Existing ingress or egress points will be used and/or work will be performed either from the top of the banks, from barges on the waterside of the stream or levee bank, or from dry gravel beds. Existing native vegetation will be retained as practicable, emphasizing the retention of shade-producing and bank-stabilizing trees and brush with greater than 6-inch-diameter branches or trunks. Vegetation disturbance and soil compaction will be minimized by using low-ground-pressure equipment that has a greater reach than or exerts less pressure per square inch on the ground than other equipment.

USFWS-VHDR-02	Native and Invasive Vegetation Removal Materials and Methods	All invasive plant species (e.g., those rated as invasive by the Cal-IPC, or local problem species) will be removed from the project site as practicable, using locally and routinely accepted management practices. Invasive plant material will be destroyed using approved protocols and disposed of at an appropriate upland disposal or compost area. Invasive plant materials stockpiled at sites known to experience flash flooding outside the flood season will be removed within 15 days of the initial creation of the stockpile, to contain the potential spread of invasive plant material. Stockpiling of invasive plant materials is prohibited during the flood season (typically November to April). Nonnative Plant Removal 1. When practicable, nonnative plants will be removed when flowers or seeds are not present. If flowers or seeds are present and have the potential for seed to be widely dispersed during removal (e.g., Spanish broom [Spartium junceum] and eupatory [Ageratina adenophora]), the flowering head will be removed and placed in a container for disposal prior to removal. 2. Whenever practicable, nontarget vegetation will be protected in order to minimize the creation of exposed ground and potential for re-colonization of nonnative plants. A botanist will be consulted prior to any restoration implementation and during preparation of restoration plans. 3. Where appropriate, barriers will be installed to limit illegal off-highway vehicle activity following removal of nonnative vegetation along roadways. Examples of barriers are large rocks, soil berms, and cut vegetation. To the extent practicable, crews in known or assumed occupied habitat for Covered Species will minimize multiple stream crossings for nonnative plant removal from both streambanks simultaneously (e.g., during a work period, an individual will conduct activities along one streambank for the entire stretch before initiating activities on the opposing bank). Stream crossings will use existing features such as bridges and boulders to avoid boots in the water, as much as feasible.

		Footnote: â Habitat will be assumed occupied when suitable habitat is present within the current range of the species and their absence has not been determined by a negative finding using protocol level surveys.

USFWS-VHDR-03	Revegetation Materials and Methods	On completion of work, site contours will be returned to preconstruction conditions or designed to provide increased biological and hydrological functions. Where disturbed, topsoil will be conserved for reuse during restoration, to the extent practicable. Native plant species comprising a diverse community structure (plantings of both woody and herbaceous species, if both are present) that follow a plant species palette approved through the ESA Section 7(a)(2) Review Form process will be used for revegetation of disturbed and compacted areas, as appropriate. See also GPM-015: Revegetate Disturbed Areas, which also allows for revegetation through natural recruitment (e.g., in tidal and managed wetlands and working landscapes where disturbed areas typically revegetate more quickly through natural recruitment than through seeding). Any area barren of vegetation as a result of project implementation will be restored to a natural state by mulching, seeding, planting, or other means, with native trees, shrubs, willow stakes, erosion control native grass seed mixes, or herbaceous plant species, following completion of project construction. Restoration planning for these areas should include steps to prevent colonization by nonnative species, including recolonization by any nonnative plant species that occupied the site prior to project implementation. Irrigation may also be required to ensure survival of containerized shrubs or trees or other vegetation, depending on rainfall. If irrigation is used, all irrigation materials will be removed once no longer needed. Soils that have been compacted by heavy equipment will be de-compacted by shallow or deep ripping, if necessary to allow for revegetation at project completion as heavy equipment exits the construction area.
USFWS-VHDR-04	Revegetation Erosion Control Materials and Methods	If erosion control fabrics are used in revegetated areas, they will be slit in appropriate locations to allow for plant root growth. Only non-monofilament, wildlife-safe fabrics will be used. All exclusion netting/caging placed around plantings will be removed after 2 years or sooner.
USFWS-VHDR-05	Revegetation Monitoring and Reporting	All revegetated areas will be maintained and monitored for a minimum of 2 years after replanting is complete, or until success criteria are met, to ensure that the revegetation effort is successful. The standard for success is 60% cover compared to pre-project conditions at the project site or at least 60% cover compared to an intact, local reference site. If an appropriate reference site or pre-project conditions cannot be identified, success criteria will be developed for review and approval on a project-by-project basis, based on the specific habitat impacted and known recovery times for that habitat and geography. The Project Proponent will prepare a summary report of the monitoring results and recommendations on December 1 each year. The report will be provided to the respective USFWS Field Office (copy the Lead Action Agency).

USFWS-WQHM-01	Staging Areas and Stockpiling of Materials and Equipment	Staging, storage, and stockpile areas must be outside of habitat suitable for Covered Species unless necessary for project implementation and approved by the Action Agency and the USFWS Field Office. Where feasible, staging will occur on access roads or other previously disturbed upland areas, such as developed areas, paved areas, parking lots, areas with bare ground or gravel, and areas clear of vegetation, to avoid sensitive habitats and limit disturbance to surrounding habitats. Similarly, all maintenance equipment and materials (e.g., road rock and project spoil) will be restricted to the existing service roads, paved roads, or other determined designated staging areas. See GPM-010, Equipment Maintenance and Materials Storage, for more details regarding protection measures for materials storage. Staging areas will be established for equipment storage and maintenance, construction materials, fuels, lubricants, solvents, and other possible contaminants. Staging areas will have a stabilized entrance and exit and will be at least 100 feet from bodies of water, unless site-specific circumstances do not provide such a setback; in such cases, the maximum setback possible will be used. See also IWW-002, In-Water Vehicle Selection and Work Access; and IWW-004, In-Water Staging Areas and Use of Barges. If an off-road staging area is chosen and if Covered Species are potentially present, the Qualified Biologist will survey the selected site to verify that no sensitive resources would be disturbed by staging activities. Stockpiling of materials, portable equipment, vehicles, and supplies (e.g., chemicals), will be restricted to the designated construction staging areas. If rain is predicted in the forecast during the dry season, and stockpiled soils will remain exposed and unworked for more than 7 days, then erosion and sediment control measures must be used. If there is a high-wind scenario, then soils will be covered at all times. During the wet season, no stockpiled soils will remain exposed, unless properly installed and maintained erosion controls are in place on and around the stockpile. Temporary stockpiling of material onsite will be minimized. Stockpiled material will be placed in upland areas far enough away from Covered Species habitat that these materials cannot discharge to waters of the United States. Additional species-specific erosion control measures may also be necessary because of the potential for listed species at the project site. More detail is provided in Section 2.1.5.3, Guild and Species-Specific Protection Measures.
USFWS-WQHM-02	Storm Water Pollution Prevention Plan	All projects that are required to obtain coverage under the NPDES General Order for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Order) will prepare and implement a site-specific storm water pollution prevention plan (SWPPP), as required by the Construction General Order.

USFWS-WQHM-04	Hazardous Materials Management and Spill Response	As part of the SWPPP or Erosion Control Plan (see WQHM-002 and WQHM-003), the Project Proponent will prepare and implement a hazardous materials management and spill response plan. The Project Proponent will ensure that any hazardous materials are stored at the staging area(s) with an impermeable membrane between the ground and hazardous material, and that the staging area is designed to prevent the discharge of pollutants to groundwater and runoff water. The Project Proponent will use and store hazardous materials, such as vehicle fuels and lubricants, in designated staging areas away from stream channels and wetlands, unless otherwise approved in the ESA Section 7(a)(2) Review Form, according to local, state, and federal regulations. The Project Proponent will notify regulatory agencies within 24 hours of any leaks or spills and will properly contain and dispose of any unused or leftover hazardous products off site. Also see GPM-010, Equipment Maintenance and Materials Storage, for more detail on spill prevention.
NMFS-CC-BO-GPM-01	Receipt and Copies of All Permits and Authorizations	Work shall not begin until a) the RC and/or Corps has notified the permittee that the requirements of the ESA and Clean Water Act have been satisfied and that the activity is authorized and b) all other necessary permits and authorizations are finalized.
NMFS-CC-BO-GPM-02	Construction Work Windows	The general construction season shall be from June 15 to October 31. Restoration, construction, fish relocation and dewatering activities within any wetted or flowing stream channel shall occur only within this period. If precipitation sufficient to produce runoff is forecast to occur while construction is underway, work will cease and erosion control measures will be put in place sufficient to prevent significant sediment runoff from occurring. Exceptions regarding the construction season will be considered on a case-by-case basis only if justified and if measurable precipitation sufficient to produce runoff is not forecast to occur during any of the above activities, and if approved by the RC, Corps, and NMFS. Revegetation activities including limited soil preparation outside the active channel may occur beyond October 31 if necessary to better ensure successful plant establishment during the onset of winter precipitation.
NMFS-CC-BO-GPM-03	Environmental Monitoring	Prior to construction, the land manager and each contractor shall be provided with the specific protective measures to be followed during implementation of the project by the project proponent or lead biologist. In addition, a qualified biologist shall provide the construction crew with information on all listed species (including state-listed and state fully protected species) in the project area, the protection afforded the species by ESA and CESA, and guidance on those specific protection measures that must be implemented as part of the project.
NMFS-CC-BO-IWW-01	Dewatering/Diversion	In those specific cases where it is deemed necessary to dewater a work site that is located in aquatic habitat, the work area shall be isolated and all the flowing water upstream of the work site shall be temporarily diverted around the work site to maintain downstream flows during construction. Prior to dewatering, determine the best means to bypass flow through the work area to minimize disturbance to the channel and avoid direct mortality of fish and other aquatic vertebrates (as described more fully below under General Conditions for Fish Capture and Relocation).

NMFS-CC-BO-IWW-02	Fish Exclusion During Dewatering	Fish will be excluded from reentering the work area by blocking the stream channel above and below the work area with fine-meshed net or screens. Mesh will be no greater than 1/8-inch diameter. The bottom of the seine must be completely secured to the channel bed to prevent fish from reentering the work area. Exclusion screening must be placed in areas of low water velocity to minimize fish impingement. Upstream and downstream screens must be checked daily (prior to, during, and after instream activities) and cleaned of debris to permit free flow of water. Block nets shall be placed and maintained throughout the construction period at the upper and lower extent of the areas where fish will be removed. Block net mesh shall be sized to ensure salmonids upstream or downstream does not enter the areas proposed for dewatering between passes with the electro-fisher or seine.
NMFS-CC-BO-IWW-03	Qualified Biologist for Fish Exclusion During Dewatering	Coordinate project site dewatering with a qualified biologist to perform fish and amphibian relocation activities. The qualified biologist(s) will possess all valid state and federal permits needed for fish relocation and will be familiar with the life history and identification of salmonids, state-listed fish, and listed amphibians within the action area.
NMFS-CC-BO-IWW-04	Aquatic Species Relocation Prior to Dewatering	Prior to dewatering a construction site, qualified individuals will capture and relocate fish and amphibians to avoid direct mortality and minimize take. This is especially important if listed species are present within the project site.
NMFS-CC-BO-IWW-05	Stream Channel Below Dewatering	Bypass stream flow around the work area, but maintain the stream flow to channel below the construction site.
NMFS-CC-BO-IWW-06	Time Frame of Dewatering	Minimize the length of the dewatered stream channel and duration of dewatering.
NMFS-CC-BO-IWW-07	Temporary Dam or Obstruction Construction	Any temporary dam or other artificial obstruction constructed shall only be built from materials such as sandbags or clean gravel that will cause little or no siltation. Impenetrable material shall be placed over sandbags used for construction of cofferdams construction to minimize water seepage into the construction areas. The impenetrable material shall be firmly anchored to the streambed to minimize water seepage. Cofferdams and the stream diversion systems shall remain in place and fully functional throughout the construction period.
NMFS-CC-BO-IWW-08	Cofferdams with Bypass Pipes Monitoring	When cofferdams with bypass pipes are installed, debris racks will be placed at the bypass pipe inlet. Bypass pipes will be monitored a minimum of two times per day, seven days a week, during the construction period. The contractor or project applicant shall remove all accumulated debris.
NMFS-CC-BO-IWW-09	Bypass Pipe Size	Bypass pipe diameter will be sized to accommodate, at a minimum, twice the existing summer baseflow.
NMFS-CC-BO-IWW-10	Pumping Procedures during Dewatering	The work area may need to be periodically pumped dry of seepage. Place pumps in flat areas, well away from the stream channel. Secure pumps by tying off to a tree or stake in place to prevent movement by vibration. Refuel in an area well away from the stream channel and place fuel absorbent mats under pump while refueling. Pump intakes shall be covered with appropriate sized screening material to prevent potential entrainment of fish or amphibians that failed to be removed. Check intake periodically for impingement of fish or amphibians.

NMFS-CC-BO-IWW-11	Procedures for Pumped Water from Dewatering	If pumping is necessary to dewater the work site, procedures for pumped water shall include requiring a temporary siltation basin for treatment of all water prior to entering any waterway and not allowing oil or other greasy substances originating from the contractor or project applicants operations to enter or be placed where they could enter a wetted channel. Projects will adhere to currently approved CDFW and NMFS Fish Screening Criteria (NMFS 2011).
NMFS-CC-BO-IWW-12	Discharge of Wastewater	Discharge wastewater from construction area to an upland location where it will not drain sediment-laden water back to the stream channel.
NMFS-CC-BO-IWW-13	Removal of Diversion and Barriers to Flow	When construction is completed, the flow diversion structure shall be removed as soon as possible in a manner that will allow flow to resume with the least disturbance to the substrate. Coffer dams will be removed so surface elevations of water impounded above the cofferdam will not be reduced at a rate greater than one inch per hour. This will minimize the risk of beaching and stranding of fish as the area upstream becomes dewatered.
NMFS-CC-BO-IWW-14	Fish Relocation and Dewatering Work Window	Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year. If precipitation sufficient to produce runoff is forecast to occur while construction is underway, work will cease and erosion control measures will be put in place sufficient to prevent significant sediment runoff from occurring. Exceptions on the fish relocation/dewatering time period will be considered on a case-by-case basis only if justified and if precipitation sufficient to produce runoff is not forecast to occur during any of the above activities, and if approved by the RC, Corps and NMFS. If the channel is expected to be seasonally dry during this period, construction should be scheduled so that fish relocation and dewatering are not necessary.

		A qualified fisheries biologist shall perform all seining, electrofishing, and fish relocation activities. The qualified fisheries biologist shall capture and relocate salmonids and other native fish prior to construction of the water diversion structures (e.g., cofferdams). The qualified fisheries biologist shall note the number of salmonids observed in the affected area, the number of salmonids relocated, and the date and time of collection and relocation. The qualified fisheries biologist shall have a minimum of three years of field experience in the identification and capture of salmonids, including juvenile salmonids. The qualified biologist will adhere to the following requirements for capture and transport of salmonids: a) Determine the most efficient means for capturing fish. Complex stream habitat generally requires the use of electrofishing equipment, whereas in outlet pools, fish may be concentrated by pumping down the pool and then seining or dip netting fish. b) Notify the RC one week prior to capture and relocation of salmonids to provide RC or NMFS staff an opportunity to attend. c) Initial fish relocation efforts will be conducted several days prior to the start of construction. This provides the fisheries biologist an opportunity to return to the work area and perform additional electrofishing passes immediately prior to construction if there is water in the isolated construction area. In these instances, additional fish could be captured that eluded the previous day's efforts. If water is left in the construction area, dissolved oxygen levels sufficient for salmonid survival must be maintained. d) At project sites with high summer water temperatures, perform relocation activities during morning periods. e) Prior to capturing fish, determine the most appropriate release location(s). Consider the following when selecting release site(s): - Similar water temperature as capture location - Ample habitat for captured fish - Low likelihood of fish reentering work site or becoming impinged on exclusion net or screen.
NMFS-CC-BO-IWW-15	Capture and Relocation of Salmonids Guidelines for a Qualified Biologist	f) Periodically measure air and water temperatures and monitor captured fish. Temperatures will be measured at the head of riffle tail of pool interface. Cease activities if health of fish is compromised owing to high water temperatures, or if mortality exceeds three percent of captured salmonids.

NMFS-CC-BO-IWW-16	Fish Relocation using Electrofishing	The following methods shall be used if fish are relocated via electrofishing: 1. All electrofishing will be conducted according to NMFS' Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act (NMFS 2000). 2. The backpack electro-fisher shall be set as follows when capturing fish: Voltage setting on the electro-fisher shall not exceed 300 volts. Initial Maximum A) Voltage: 100 Volts 300 Volts B) Duration: 500 Î¼s (microseconds) 5 ms (milliseconds) C) Frequency: 30 Hertz 30 Hertz 3. A minimum of three passes with the electro-fisher shall be utilized to ensure maximum capture probability of salmonids within the area proposed for dewatering. 4. Water temperature, dissolved oxygen, and conductivity shall be recorded in an electrofishing log book, along with electrofishing settings. 5. A minimum of one assistant shall aid the fisheries biologist by netting stunned fish and other aquatic vertebrates.
NMFS-CC-BO-IWW-17	Fish Relocation using Seines	The following methods shall be used if fish are removed with seines. 1. A minimum of three passes with the seine shall be utilized to ensure maximum capture probability of all salmonids within the area. 2. All captured fish shall be processed and released prior to each subsequent pass with the seine. 3. The seine mesh shall be adequately sized to ensure fish are not gilled during capture and relocation activities.

NMFS-CC-BO-IWW-18	Relocation of Salmonids using either Electrofishing or Seining	The following methods shall be used during relocation activities associated with either method of capture (electrofishing or seining): 1. Fish shall not be overcrowded into buckets, allowing no more than 150 0+ fish (approximately six cubic inches per 0+ individuals) per 5 gallon bucket and fewer individuals per bucket for larger/older fish. 2. Every effort shall be made not to mix 0+ salmonids with larger steelhead, or other potential predators, that may consume the smaller salmonids. Have at least two containers and segregate young-of-year (0+) fish from larger age classes. Place larger amphibians in the container with larger fish. 3. Salmonid predators, including other fishes and amphibians, collected and relocated during electrofishing or seining activities shall not be relocated so as to concentrate them in one area. Particular emphasis shall be placed on avoiding relocation of predators into the salmonid relocation pools. To minimize predation of salmonids, these species shall be distributed throughout the wetted portion of the stream to avoid concentrating them in one area. 4. All captured salmonids shall be relocated, preferably upstream, of the proposed construction project and placed in suitable habitat. Captured fish shall be placed into a pool, preferably with a depth of greater than two feet with available instream cover. 5. All captured salmonids will be processed and released prior to conducting a subsequent electrofishing or seining pass. 6. All native captured fish will be allowed to recover from electrofishing before being returned to the stream. 7. Minimize handling of salmonids. However, when handling is necessary, always wet hands or nets prior to touching fish. Handlers will not wear insect repellants containing the chemical N,N-Diethyl-meta-toluamide (DEET). 8. Temporarily hold fish in cool, shaded, aerated water in a container with a lid. Provide aeration with a battery-powered external bubbler. Protect fish from jostling and noise and do not remove fish from this container until time of release. 9. Place a thermometer in holding containers and, if necessary, periodically conduct partial water changes to maintain a stable water temperature. If water temperature reaches or exceeds those allowed by CDFW and NMFS, fish shall be released and rescue operations ceased. 10. In areas where aquatic vertebrates are abundant, periodically cease capture, and release at predetermined locations. 11. Visually identify species and estimate year-classes of fish at time of release. Count and record the number of fish captured. Avoid anesthetizing or measuring fish. Also identify hatchery (clipped adipose fin) and wild fish. 12. If more than 3 percent of the salmonids captured are killed or injured, the project permittee shall contact the RC (currently Joe Pecharich (707) 575-6095 or at joe.pecharich@noaa.gov). The RC will then contact NMFS within 24 hours.

		13. The purpose of the contact is to review the activities resulting in take and to determine if additional protective measures are required. All salmonid mortalities must be retained, placed in an appropriately sized, zip-sealed bag, labeled with the date and time of collection, fork length, location of capture, and frozen as soon as possible. Frozen samples must be retained until specific instructions are provided by NMFS.
NMFS-CC-BO-IWW-19	Instream Construction Work Window	Construction will occur between June 15 and October 31. Revegetation activities, including soil preparation, may extend beyond October 31, if necessary, to better ensure successful plant establishment during the onset of winter precipitation. If precipitation greater than one inch is forecast during the June 15 - October 31 work window, the RC must be notified, implementation work must stop, and erosion control BMP's must be implemented. Extensions of this work window will be considered on a case-by-case basis only if justified and if precipitation sufficient to produce runoff is not forecast to occur during any of the above activities, the effects of this action are not outside the effects analyzed in the BA, and if approved by the RC, Corps and NMFS

NMFS-CC-BO-IWW-20	Preventing Soil and Water Contamination	Debris, soil, silt, excessive bark, rubbish, creosote-treated wood, raw cement/ concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, resulting from projected related activities, shall be prevented from contaminating the soil and/or entering the waters of the State. Any of these materials, placed within or where they may enter a stream or lake, by the applicant or any party working under contract, or with permission of the applicant, shall be removed immediately. During project activities, all trash that may attract potential predators of salmonids will be properly contained, removed from the work site, and disposed of daily.
NMFS-CC-BO-IWW-23	Heavy Equipment Use for Instream Construction	Use of heavy equipment shall be avoided in a channel bottom with rocky or cobbled substrate. If access to the work site requires crossing a rocky or cobbled substrate, a rubber tire loader/backhoe is the preferred vehicle. Only after this option has been determined infeasible will the use of tracked vehicles be considered. The amount of time this equipment is stationed, working, or traveling within the creek bed shall be minimized. When heavy equipment is used, woody debris and vegetation on banks and in the channel shall not be disturbed if outside of the project's scope.
NMFS-CC-BO-IWW-24	Use or Storage of Petroleum Powered Equipment	The use or storage of petroleum-powered equipment shall be accomplished in a manner to prevent the potential release of petroleum materials into waters of the state (Fish and Game Code 5650).
NMFS-CC-BO-IWW-25	Fuel Storage, Refueling, and Servicing	Areas for fuel storage, refueling, and servicing of construction equipment must be located in an upland location.
NMFS-CC-BO-IWW-26	Equipment Maintenance Prior to Use	Prior to use, clean all equipment to remove external oil, grease, dirt, or mud. Wash sites must be located in upland locations so wash water does not flow into the stream channel or adjacent wetlands.
NMFS-CC-BO-IWW-27	Equipment Maintenance Throughout Project	All construction equipment must be in good working condition, showing no signs of fuel or oil leaks. Prior to construction, all mechanical equipment shall be thoroughly inspected and evaluated for the potential of fluid leakage. All questionable motor oil, coolant, transmission fluid, and hydraulic fluid hoses, fitting, and seals shall be replaced. The contractor shall document in writing all hoses, fittings, and seals replaced and shall keep this documentation until the completion of operations. All mechanical equipment shall be inspected on a daily basis to ensure there is no motor oil, transmission fluid, hydraulic fluid, or coolant leaks. All leaks shall be repaired in the equipment staging area or other suitable location prior to resumption of construction activity.
NMFS-CC-BO-IWW-28	Prescence of Spill Containment Materials	Oil absorbent and spill containment materials shall be located on site when mechanical equipment is in operation with 100 feet of the proposed watercourse crossings. If a spill occurs, no additional work shall commence in-channel until (1) the mechanical equipment is inspected by the contractor, and the leak has been repaired, (2) the spill has been contained, and (3) NMFS and CDFW are contacted and have evaluated the impacts of the spill
NMFS-CC-BO-WQHM-01	Preventing Erosion during Construction	When appropriate, isolate the construction area from flowing water until project materials are installed and erosion protection is in place.

NMFS-CC-BO-WQHM-02	Erosion Control Methods	Effective erosion control measures shall be in place at all times during construction. Do not start construction until all temporary control devices (straw bales with sterile, weed free straw, silt fences, etc.) are in place downslope or downstream of project site within the riparian area. The devices shall be properly installed at all location where the likelihood of sediment input exists. These devices shall be in place during and after construction activities for the purposes of minimizing fine sediment and sediment/water slurry input to flowing water and of detaining sediment-laden water on site. If continued erosion is likely to occur after construction is completed, then appropriate erosion prevention measures shall be implemented and maintained until erosion has subsided. Erosion control devices such as coir rolls or erosion control blankets will not contain plastic netting of a mesh size that would entrain, fish, reptiles or amphibians.
NMFS-CC-BO-WQHM-03	Sediment Controls Maintenance	Sediment shall be removed from sediment controls once it has reached one third of the exposed height of the control. Whenever straw bales are used, they shall be staked and dug into the ground to a minimum depth of 12 cm, and only sterile, weed-free straw shall be utilized.
NMFS-CC-BO-WQHM-04	Sediment Contamination from Construction	Sediment-laden water created by construction activity shall be filtered before it leaves the right-of-way or enters the stream network or an aquatic resource area
NMFS-CC-BO-WQHM-05	Maintenance for Storm Events	The contractor/project applicant is required to inspect and repair/maintain all practices prior to and after any storm event, at 24-hour intervals during extended storm events, and a minimum of every two weeks until all erosion control measures have been completed.
NMFS-CC-BO-WQHM-06	Stockpiling Guidelines	Minimize temporary stockpiling of material. Stockpile excavated material in areas where it cannot enter the stream channel. Prior to start of construction; determine if such sites are available at or near the project location. If nearby sites are unavailable, determine location where material will be deposited. Establish locations to deposit spoils well away from watercourses with the potential to delivery sediment into the stream network draining into current salmonid habitat, or historically supporting populations of salmonids. Spoils shall be contoured to disperse runoff and stabilized with mulch and (native) vegetation. Use devices such as plastic sheeting held down with rocks or sandbags over stockpiles, silt fences, or berms of hay bales, to minimize movement of exposed or stockpiled soils.
NMFS-CC-BO-WQHM-07	Topsoil Storage	If feasible, conserve topsoil for reuse at project location or use in other areas. End-haul spoils away from watercourses as soon as possible to minimize potential sediment delivery.
NMFS-CC-BO-WQHM-08	Instream Boulder Grade Control	When needed, utilize instream boulder grade control structures to control channel scour, sediment routing, and headwall cutting.
NMFS-CC-BO-WQHM-09	Reducing Scour from Relief Culverts or Structures	For relief culverts or structures, if a pipe or structure that empties into a stream is installed, an energy dissipater shall be installed to reduce bed and bank scour. This does not apply to culverts installed in fish-bearing tributaries.
NMFS-CC-BO-WQHM-10	Toe of Rock Slope Protection	The toe of rock slope protection used for streambank stabilization shall be placed below bed scour to ensure stability.

NMFS-CC-BO-WQHM-11	Post Construction Minimization of Erosion	Immediately after project completion and before close of seasonal work window, stabilize all exposed soil with mulch, seeding, and/or placement of erosion control blankets. Remove all artificial erosion control devices after the project area has fully stabilized. All exposed soil present in and around the project site shall be stabilized within 7 days. Erosion control devices such as coir rolls or erosion control blankets will not contain plastic netting of a mesh size that would entrain reptiles and amphibians.
NMFS-CC-BO-WQHM-12	Bare and/or Disturbed Slopes Erosion Control	All bare and/or disturbed slopes (larger than 10' x 10' of bare mineral soil) will be treated with erosion control methods such as straw mulching, netting, fiber rolls, and hydro-seed as permanent erosion control measures.
NMFS-CC-BO-WQHM-13	Straw, Mulch, or Slash as Erosion Control	Where straw, mulch, or slash is used as erosion control on bare mineral soil, the minimum coverage shall be 95% with a minimum depth of two inches.
NMFS-CC-BO-WQHM-14	Seeding as Erosion Control	When seeding is used as an erosion control measure, only natives will be used. Sterile (without seeds), weed-free straw, free of exotic weeds, is required when hay bales are used as an erosion control measure.
NMFS-CC-BO-RVM-01	Minimizing Disturbance to Riparian Vegetation	Retain as many trees and shrubs as feasible, emphasizing shade-producing and bank-stabilizing trees and brush.
NMFS-CC-BO-RVM-02	Access Points to Construction	Prior to construction, determine locations and equipment access points that minimize riparian disturbance. Pre-existing access points shall be used whenever possible. Avoid entering unstable areas, which may increase the risk of channel instability.
NMFS-CC-BO-RVM-03	Reducing Soil Compaction	Minimize soil compaction by using equipment with a greater reach or that exerts less pressure per square inch on the ground, resulting in less overall area disturbed or less compaction of disturbed areas.
NMFS-CC-BO-RVM-04	Chainsaw/Saw use in Riparian Areas	If riparian vegetation is to be removed with chainsaws, consider using saws currently available that operate with vegetable-based bar oil.
NMFS-CC-BO-RVM-05	Revegetation of Barren Stream banks	Any stream bank area left barren of vegetation as a result of the implementation or maintenance of the practices shall be restored to a natural state by seeding, replanting, or other agreed upon means with native trees, shrubs, and/or grasses. Barren areas shall typically be planted with a combination of willow stakes, native shrubs and trees and/or erosion control grass mixes.
NMFS-CC-BO-RVM-06	Use of Native Plants for Revegetation	Native plant species shall be used for revegetation of disturbed and compacted areas. The species used shall be specific to the project vicinity or the region where the project is located, and comprise a diverse community structure (plantings shall include both woody and herbaceous species).
NMFS-CC-BO-RVM-08	Plastic Exclusion Fencing	All plastic exclusion netting placed around plantings will be removed and recycled after 3 years, or earlier if appropriate.

Attachment F

Representative Project Site Photographs

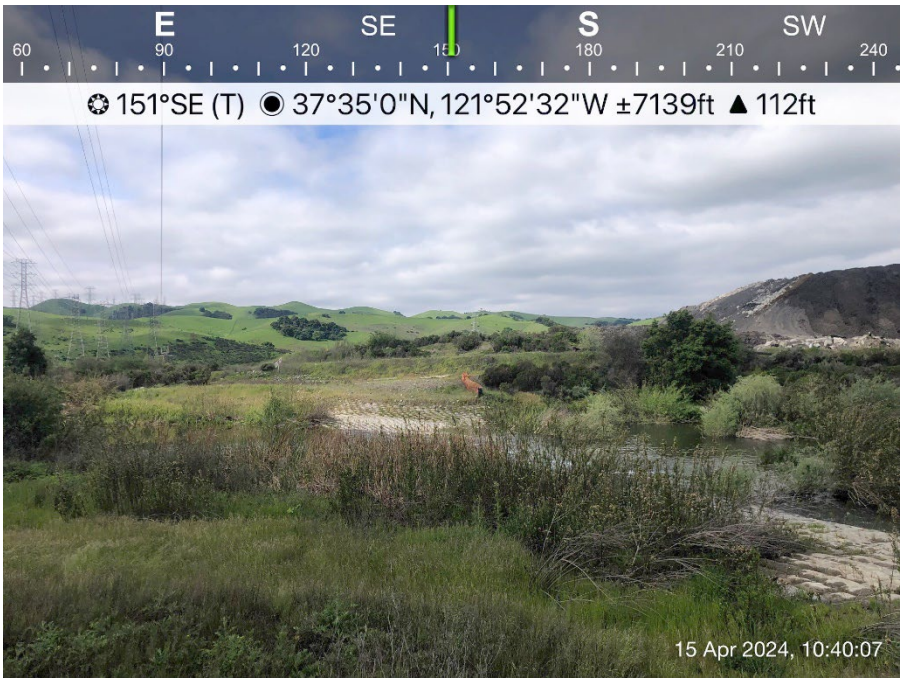


Photo 1

Representative photo of Alameda Creek and surrounding habitat.

Photo 2

Alameda Creek and surrounding habitat, including Er-Con mat.

Photo 3

Alameda Creek and surrounding vegetation.

Photo 4

Representative photo of the habitats in the project area.

Photo 5

Representative photo of developed and ruderal areas in the project area.

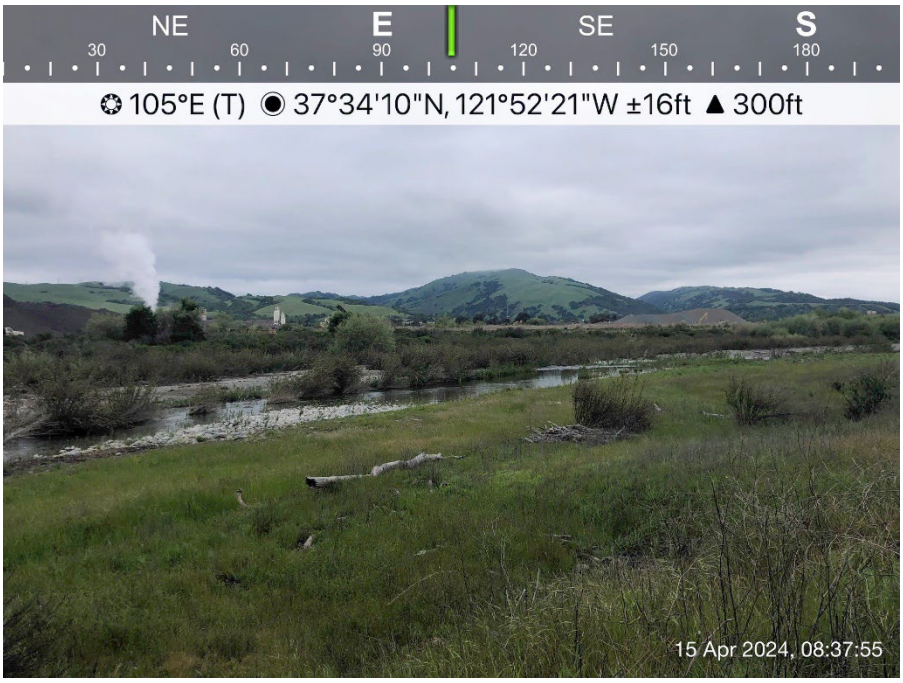


Photo 6

Representative photo of the habitats in the project area.

Photo 7

Representative photo of the habitats in the project area.

Photo 8

Representative riparian habitat surrounding Alameda Creek.

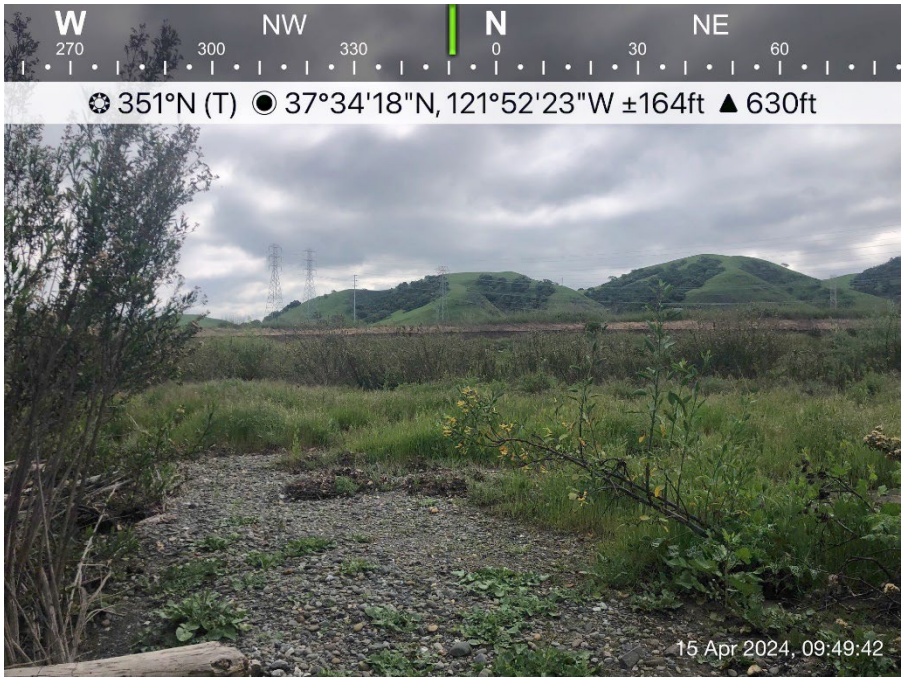


Photo 9

Representative photo of the habitats in the project area.

Photo 10

Representative photo of developed and ruderal habitats at the project site.

ID	Title	Description
SFPUC-1	Construction Staging	PG&E and CalTrout will coordinate with SFPUC to locate temporary construction staging areas outside of the quarries (contact Miranda Maupin, Alameda and Tuolumne Watershed Resources Manager, at mmaupin@sfwater.org and Clayton Koopmann, Rangeland Manager, at ckoopmann@sfwater.org).
SFPUC-10	5-day Start of Work Notification	Prior to mobilization for all locations, the project sponsors and contractors will contact SFPUC at least 5 days prior to onset of work and verify that watershed conditions are appropriate for the work and verify site access and road conditions (contact Miranda Maupin, Alameda and Tuolumne Watershed Resources Manager, at mmaupin@sfwater.org or Dave Baker, Alameda Watershed Forester, at dbaker@sfwater.org or (415) 518-4285).
SFPUC-11	24-hr Start of Work Notification; Fire Prevention Plan	The project sponsors and/or contractors will contact SFPUC-NRLMD 24-hours in advance of work to confirm that conditions are suitable for construction, (please contact Dave Baker, Alameda Watershed Forester, at dbaker@sfwater.org). In addition, the project sponsor and/or its contractor will submit fire prevention measures, particularly for any hot work (e.g. welding) to SFPUC-NRLMD at least five business days in advance of work for review and approval. During construction, the project sponsor and/or its contractor will contact the National Weather Service daily to confirm that local weather conditions are suitable for construction activity. The project sponsor and/or its contractor will cease all construction activities during declared Red Flag days or if directed to do so by SFPUC-NRLMD during high fire hazard periods.
SFPUC-12	Millbrae Dispatch Daily Calls	The project sponsors and contractors will notify SFPUC Millbrae Dispatch twice each day, at (650) 872-5900, when entering and leaving SFPUC property. Please be prepared to provide the following information when asked by the dispatcher: a. Gate number b. Organization name Page 3 of 7 c. Name of person on site d. Phone number of person on site e. Number of vehicles and type of vehicles f. Destination in watershed g. Time in and time out expect'
SFPUC-13	Biological Resources Assessment and Wildlife Fencing	The project sponsors shall complete and submit for review and approval a biological resources assessment, including any relevant field surveys, and a comprehensive impact avoidance and minimization plan for the project. This shall include, but is not limited to, any plans for wildlife exclusion fencing (for more information, contact Mia Ingolia, Senior Biologist, at mingolia@sfwater.org, Scott Simono, Biologist, at ssimono@sfwater.org, Ben Dudek, Biologist, at bdudek@sfwater.org and Scott Chenue, Senior Biologist, at schenue@sfwater.org).
SFPUC-14	Rare Plant Surveys	As part of the update for a biological assessment, a preconstruction sensitive biological resources/species survey by a qualified biologist, including a seasonally appropriate survey (May) for rare plants, is required, Biological resources to be accounted for include but are not limited to nests and refugia such as burrows, Special status plant species include State and federally listed species, along with the species with a rare plant ranking (CRPR) per the California Native Plant Society (CNPS). The project sponsor will provide electronic copies of any biological survey report for the project to SFPUC biologists (contact Mia Ingolia, Senior Biologist, at mingolia@sfwater.org, Scott Simono, Biologist, at ssimono@sfwater.org, Ben Dudek, Biologist, at bdudek@sfwater.org and Scott Chenue, Senior Biologist, at schenue@sfwater.org).
SFPUC-15	Pre-construction Nesting Bird Surveys	The project sponsors will arrange for a qualified biologist to conduct pre-construction nesting bird surveys, including for ground nesting birds, if work occurs between February 15 and August 31, within two-weeks of commencing the project or activity in order to implement appropriate avoidance measures. The project sponsor will provide electronic copies of any biological survey report for the project to SFPUC biologists (for more information, contact Mia Ingolia, Senior Biologist, at mingolia@sfwater.org, Scott Simono, Biologist, at ssimono@sfwater.org, or Ben Dudek, Biologist, at bdudek@sfwater.org).
SFPUC-16	Biological Monitor during Construction	It is the responsibility of the project sponsor to arrange for at least one qualified biological monitor on site during the proposed project and activities on SFPUC property. The size of the project may require more than one biomonitor. This will be further discussed with the SFPUC when an updated biological assessment and an impact avoidance and minimization plan is submitted for review. The biological monitor will be present on site for the duration of project activities. Each morning before the start of work, a biological monitor will check in work crew, inspect newly arriving vehicles, equipment, tools, etc., inspect the project work locations to verify that no special status species are present within designated work areas and ensure that parking, staging, work, etc. is occurring in preapproved, designated areas. The biological monitor will have the authority to stop any action that may result in take of special status species or unanticipated impacts on their habitats. The project sponsor will cover any holes or voids, or provide escape ramps, to prevent special status species from becoming trapped. In addition, the biological monitor will submit a weekly report (via email) regarding the implementation of the “Required Measures” in the SFPUC’s Project Review Certificate to the NRLMD Ecology Group (please contact Scott Simono, Biologist, at ssimono@sfwater.org and Ben Dudek, Biologist, at bdudek@sfwater.org).
SFPUC-17	Environmental Awareness Training	The project sponsor or biological monitor will hold special status species environmental tailboard trainings for employees and contractors performing construction on SFPUC property. All personnel visiting the job site or performing work on or through SFPUC property will attend an environmental tailboard for the project. No work or access onto SFPUC property (including parking or driving) will be performed by individuals who have not received this training. The training shall include a description of the special status species that have the potential to be impacted by the project; and any SFPUC requirements for the project (for more information, please contact Mia Ingolia, Senior Biologist, at mingolia@sfwater.org, Scott Simono, Biologist, at ssimono@sfwater.org and Ben Dudek, Biologist, at bdudek@sfwater.org).

SFPUC-18	Sunol Native Plant Nursery	The project sponsors will coordinate with the SFPUC for revegetation. Specifically, a revegetation plan shall be submitted for review. Any plant species seed mix shall be reviewed and approved by the SFPUC as well as seed lot analyses, including weed seed content, for any seed to be purchased. Any live plants to be planted must be procured through the SFPUC Sunol Native Plant Nursery. Coordination with the nursery is required at least two years before planting to ensure proper time for seed collection, and plant propagation and establishment. (please contact Scott Simono, Biologist, at ssimono@sfwater.org, Mia Ingolia, Senior Biologist, at migolia@sfwater.com, and Bree Candiloro, SFPUC Nursery Manager, at bcandiloro@sfwater.org).
SFPUC-19	No Imported Soil	The use of imported soil, compost, or other organic amendments on SFPUC watershed land is not allowed. In addition, the installation of container (rooted) plants on SFPUC watershed lands is prohibited, except ass provided above, to prevent the introduction of plant pathogens and other invasive exotic species. Any approved rock, gravel, sand or other type of aggregate or fill shall be virgin quarried material, not recycled. Any exceptions to this policy are subject to prior review and approval by the SFPUC-NRLMD's Planning and Regulatory Compliance staff (for more information, contact Mia Ingolia, Biologist, at mingolia@sfwater.org or (415) 554-1872).
SFPUC-2	SERP Slides	Pete McHugh, Senior Environmental Scientist at the California Department of Fish and Wildlife (CDFW), will email SFPUC his presentation slides on the Statutory Exemption for Restoration Projects (SERP) – (contact Casey Rando, Senior Environmental Compliance Planner, at crando@sfwater.org).
SFPUC-20	Decontamination + Inspection	All conditions of the SFPUC Decontamination Standard Operating Procedures will be incorporated into the project and will include, but will not be limited to: Before entering SFPUC property: a. All equipment, tools, clothing, and personal protective equipment or PPE (including boots and shoes) shall be thoroughly cleaned of all visible dirt and plant material prior to working on SFPUC property. All equipment, tools, and PPE (including boots and shoes) should be decontaminated with a ?70% Ethyl or isopropyl alcohol by thoroughly wetting the surface and allowing to air dry before entering SFPUC watershed property. b. Vehicles and Large Equipment must arrive highway legal – Before entering SFPUC Watersheds, the exterior and interior of all vehicles and large equipment (including tires, tracks, and undercarriage) must be cleaned and washed such that all debris, organic matter, and soil is removed. In some instances (as designated by NRLMD staff), cleaning and washing must be followed by sanitizing to eliminate pathogens. c. Vehicles, equipment, tools and PPE (including boots and shoes) must be inspected by SFPUC NRLMD staff prior to commencing work on SFPUC property. Inspections are performed between 8:00 a.m. and 12:00 noon and must be scheduled at least five business days before the start of work (contact Miranda Maupin, Alameda and Tuolumne Watershed Resources Manager, at mmaupin@sfwater.org). d. After completing work and before moving on to the next site, PG&E crews and contractors will repeat step "a" above to decontaminate equipment, tools, clothing, and PPE.
SFPUC-21	7-day Decontamination Dry Period	All equipment, watercrafts, barges, tools, diving and/or other personal protective gear, etc. that may encounter the water must be thoroughly cleaned, decontaminated, and stored dry for 7 days prior to entering SFPUC property. Project sponsors and all contractors must consult and comply with the SFPUC Field Procedures for Decontamination for Aquatic Surveys and complete the Decontamination Checklist. Please also see Aquatics Decontamination Procedures for Contractors Summary. An SFPUC (NRLMD) representative must be on site to witness cleaning and decontaminations. This should be coordinated with NRLMD with at least one week's notice. In addition, an SFPUC representative will need to be present onsite when the equipment, watercrafts, barges, tools, diving and/or other personal protective gear is brought onto SFPUC property/watershed lands to do a final day-of inspection prior to launch of vessels or deployment of equipment/gear. This inspection must be coordinated at least five business days before the scheduled work (contact Scott Chenue, Senior Biologist, schenue@sfwater.org or 925-789-7278 and Miranda Maupin, Alameda and Tuolumne Watershed Resources Manager, mmaupin@sfwater.org or 415-654-3907).

SFPUC-22	Fire Prevention	Depending on when the project/work occurs in the Watershed, the project sponsor will maintain the following fire prevention and extinguishing equipment at the work site: a. I If work occurs from December 15th through May 31st, then the project sponsor will provide at least one 300-gallon water buffalo fully filled with water; a minimum of 200-feet of 1-inch fire hose, (and at least enough hose to reach all portions of the project area from the parking location of the water buffalo) and shovels on the project site always for fire safety. The water buffalo will be moved periodically so that it is located no more than 200 feet from any active project site (or as directed by the NRLMD Watershed Forester). b. If work occurs from June 1st through December 14th, then the project sponsor will comply with all PG&E Fire Season protocols and have at the minimum a 300-gallon water buffalo fully filled with water; a minimum of 200-feet of 1-inch fire hose (and at least enough hose to reach all portions of the project area from the parking location of the water buffalo); shovels and two 5-gallon backpack fire pumps on the project site always for fire safety. All vehicles will carry a shovel and a fully charged 10 lb. fire extinguisher. The water buffalo will be moved periodically so that it is located no more than 200 feet from any active project site (or as directed by the NRLMD Watershed Forester). If vehicular overland travel is required and as directed by the NRLMD forester, a 2,000- gallon water truck may be required to pre-wet the access route to reduce potential ignition hazard. Should topography be too steep or unsafe for water truck access, alternative equipment may be proposed by PG&E but must be approved by the Watershed Manager or the Watershed Forester prior to implementation (see contact info below). Work may be severely limited or stopped altogether during High Fire Danger and/or Red Flag conditions (for more information, please contact Dave Baker, Alameda Watershed Forester, at dbaker@sfwater.org or (415) 518-4285). PG&E will provide contact information (mobile phone and email address) for the on-site Project Manager to receive iINFO advisories and be able to stop work as needed.
SFPUC-23	15 mph speed limit	The speed limit within the Watershed is limited to 15 m.p.h.
SFPUC-24	No Parking off roads unless approved	No travel, parking, or staging off improved roadways is permissible unless specifically approved in advance by the SFPUC.
SFPUC-25	Irrigation Required	If work occurs from June 1st through December 14th, then the project sponsor will irrigate the trees in the dewatered portion of the creek to prevent tree death and in a frequency that sustains their health and wellness.
SFPUC-26	Debris Removal and Inspection	Except for locations where SFPUC-NRLMD staff approval has been previously provided, the project sponsor and/or its contractors will ensure that all debris is removed from SFPUC property and disposed of properly and legally. In addition, the project sponsor will arrange for a post-project/restoration site inspection by SFPUC staff (contact Dave Baker, Alameda Watershed Forester, at dbaker@sfwater.org).
SFPUC-3	BCR	Claire Buchanan, Senior Project Manager for CalTrout, will send SFPUC the 2017 Biological Constraints Report (contact Casey Rando, Senior Environmental Compliance Planner, at crando@sfwater.org).
SFPUC-4	Tribal Coordination	If SF Planning is designated the lead agency on the project's CEQA exemption, the SFPUC-NRLMD requests to be kept updated especially as it involves communications with Native American Tribes near to the project area (contact Casey Rando, Senior Environmental Compliance Planner, at crando@sfwater.org).
SFPUC-5	Water Releases	Casey Rando will communicate with PG&E the existing protocol for communicating planned and unplanned water releases upstream of the worksite (contact Casey Rando, Senior Environmental Compliance Planner, at crando@sfwater.org).
SFPUC-6	Access Permit Required	The project sponsors and PG&E contractor will obtain an approved SFPUC-NRLMD Access Permit (and keys, if necessary) 30 days prior to entering SFPUC property to perform work (contact John Fournet, Water Operations Analyst, at jfournet@sfwater.org and Gloria Ng, NRLMD secretary, at gng@sfwater.org).
SFPUC-7	Pipeline Easement	To obtain a new or modified easement to offset the new pipeline, PG&E will provide SFPUC RES with an easement proposal, legal description, KMZ, and land rights map for the proposed easement boundaries (contact Jonathan Mendoza, Principal Administrative Analyst, at JSMendoza@sfwater.org).
SFPUC-8	Quarry Access	PG&E will work with Martin Marietta and DeSilva quarries to establish access to the work locations, and finalize workspace and staging area maps. PG&E will provide copies of the quarry approved maps to SFPUC RES (contact Jonathan Mendoza, Principal Administrative Analyst, at JSMendoza@sfwater.org).
SFPUC-9	Staging Revocable Licenses	PG&E will send a detailed exhibit which highlights the proposed staging areas outside of PG&E's easement and will work with SFPUC RES to obtain revocable licenses for the work (contact Jonathan Mendoza, Principal Administrative Analyst, at JSMendoza@sfwater.org).
SWRCB-AMP-02	Rain Event Limitations	To the maximum extent practicable, construction activities will be restricted to periods of low rainfall (less than 1" per 24-hour period) and periods of dry weather (with less than a 50% chance of rain). During these restricted periods, under no circumstances will construction activities occur between 30 minutes prior to sunset and 30 minutes after sunrise (i.e., no night work during rain events). If rain exceeds 0.5 inch during a 24-hour period, work will cease until no further rain is forecast. Construction activities halted due to precipitation may resume when precipitation ceases and the National Weather Service 72-hour weather forecast indicates less than a 50% chance of 0.5 inch of rain or less during a 24-hour period. Prior to construction activities resuming, an agency-approved biologist will inspect the project area and all equipment/materials for the presence of special-status amphibians.

SWRCB-AMP-03	Pre-Construction Survey	If covered amphibians are known or assumed to be present, no more than 24 hours prior to the date of initial ground disturbance and vegetation clearing, an agency-approved biologist will walk within the project site to investigate all potential areas that could be used by the special-status amphibians for feeding, breeding, sheltering, movement, and other essential behaviors. If a specialstatus amphibian species is encountered during the survey the project proponent will refer to and follow procedures described below in AMP-0011 and AMP-0012 for passively allowing the species to move out of the work area or actively relocating the species out of harm's way. Proposed projects that may need to actively relocate amphibians out of harm's way will require the project proponent to submit a project-specific species relocation plan for agency review and approval, as described in AMP-0012.
SWRCB-AMP-04	Disease Prevention and Decontamination	To prevent disease conveyance among work sites during project implementation, the agency-approved biologist will ensure that the decontamination protocols described in CDFW, Aquatic Invasive Species Disinfection/Decontamination Protocols (CDFW 2016, or latest version) will be implemented prior to gear and equipment arriving at or moving between work sites and will be followed at all times. A copy of the code of practice must be available at the project site.
SWRCB-AMP-05	Lighting	In addition to GCM-3, Construction Hours (general protection measures in Appendix E), artificial lighting at a project site will be prohibited to the maximum extent practicable during the hours of darkness, except when necessary for driver or pedestrian safety.
SWRCB-AMP-06	Clearing and Grubbing Vegetation	The agency-approved biologist will be present during all vegetation clearing and grubbing activities in areas within the currently occupied range of special-status amphibians where suitable habitat is present. Prior to vegetation removal, the agency-approved biologist will thoroughly survey the area for these species (measure AMP-003). Vegetation in sensitive areas will either be cleared with handheld motorized tools (e.g., weed eaters, chainsaws) or by hand pulling, or an agency-approved biologist will walk in front of vegetation clearing equipment. Where dense brush occurs (e.g., blackberry, periwinkle), the biologist may direct an equipment operator to lift and shake dense vegetation with an excavator or backhoe so that the biologist can look underneath and search for amphibians. Tree stumps and roots will be left in place where possible to avoid any ground disturbance and preserve refugia habitat, with the exception of non-native invasive plants that could propagate from remaining vegetative material. Native branches, leaf litter, mulch, woody debris, and other vegetative trimmings may be retained and spread on site to enhance habitat as appropriate.
SWRCB-AMP-07	Pump Screens	If a water body is to be temporarily dewatered by pumping, intakes will be completely screened consistent with NMFS (1997) and CDFW (2001) screening guidelines, or latest updates to those guidelines (circular screen face openings not to exceed 3/32 inch in diameter; slotted screens must not exceed 1/16 inch in the narrow direction; square screen face openings must not exceed 3/32 inch on a diagonal). The intake will be placed in a perforated bucket or other method to attenuate suction to prevent special-status amphibians from entering the pump system. Water will be returned to the water body when diversions or cofferdams are removed and flow is restored (consistent with measures in Section 2.1.5.2.2, Dewatering Activities and Aquatic Species Relocation). If no diversion or cofferdams are used during dewatering, the waterbody will be allowed to refill naturally from precipitation, runoff, or hydrological processes.

SWRCB-AMP-08	Removal of Non-native Invasive Species	Removal of any individuals of nonnative invasive species (e.g., bullfrogs, nonnative crayfish, or nonnative fishes) is encouraged as practicable to facilitate conditions for project success. The Project Proponent is responsible for ensuring that these activities comply with the California Fish and Game Code. Suspected hybrid California tiger salamander will not be removed without specific authorization from USFWS (and CDFW, in accordance with their requirements). More details on nonnative animal removal are provided below. 1. In federally-listed aquatic species occupied habitat, a USFWS-Approved Biologist will be present during removal activities. Less experienced personnel assisting with removal efforts will get confirmation of species identification of all vertebrates prior to collection and removal. 2. All individuals participating in removal activities will have training in identification of Covered Species that might be present and nonnative species proposed for removal and proper techniques for all planned removal methods prior to the initiation of removal activities. 3. Crew size, along with the amount of time spent in any given habitat area, will be kept to the minimum necessary. Repeated disturbance of any given area within a single year will be avoided unless necessary for eradication purposes. 4. To the extent feasible, both native and nonnative fauna will be examined for signs of diseases or parasites soon after capture, and any abnormalities will be photographed and documented. 5. Prior to initiation of electrofishing activities in Covered Species habitat, the names and credentials of all electrofishing crew leaders will be submitted for review and approval by USFWS. 6. The USFWS-approved electrofishing crew leader will provide training to the crew regarding potential risks associated with electrofishing and injury to Covered Species. The crew will also be trained to identify signs of injury and appropriate response. 7. Electrofishing will be conducted using the minimum pulse rate and width that is effective. Only direct or pulsed direct current will be used. In shallow waters, undercut banks, near algal mats or other areas where Covered Species can be concentrated or are more likely to come into close contact with electrofishing equipment, the amount of time spent electrofishing will be minimized. 8. If any Covered Species are immobilized by electrofishing activities, they will be carefully removed from the water body by a USFWS-Approved Biologist until activities are completed. These individuals will be held for the minimum amount of time necessary and monitored until they are completely mobile and then returned to the point of capture. 9. Handling of individuals (e.g., arroyo toad, California red-legged frog) may occur if they are inadvertently collected by net or trap, in accordance with procedures for handling in AMP-11 and FISH-3. These individuals will be released at the place of capture or will be relocated to the nearest available suitable habitat. 10. Gill nets will be used upstream and downstream of occupied stream stretches, but not in stream stretches where Covered Species might occur. Where gill nets are used, they will not be left unattended overnight. 11. If traps are used, they will be carefully monitored to minimize the potential for injury and mortality of nontarget species. Fish traps will be used under the following conditions: (a) fish traps will be checked a minimum of once a day; (b) fish traps will be set so that air will be available at the top of the trap; and (c) if predator tracks adjacent to or signs of predator tampering with fish traps occur, these traps will be closed for a period of time until predator activity is no longer detected.
SWRCB-AMP-09	Placement of Suitable Erosion Control Material	To prevent amphibians from becoming entangled, trapped, or injured, erosion control materials with plastic or synthetic monofilament netting will not be used. This includes products that use photodegradable or biodegradable synthetic netting, which can take several months to decompose. Acceptable materials include natural fibers such as jute, coconut, twine, or other similar fibers. Following site restoration, erosion control materials, such as straw wattles, will not block the movement of special-status amphibians.
SWRCB-AMP-10	Encounters with Species	Each encounter with a special-status amphibian will be treated on a case-by-case basis. If any life stage of the special-status amphibian species is found and these individuals may potentially be killed or injured by work activities, the following will apply: - If a special-status amphibian is detected in the project area, work activities within 50 feet of the individual that may potentially be harmed, injured, or killed will cease immediately and the agency-approved biologist will be notified. Based on the professional judgment of the agency-approved biologist, if project activities can be conducted without harming or injuring the species, it may be left at the location of discovery and monitored by the agency-approved biologist. All project personnel will be notified of the finding and at no time will work occur within 50 feet of a species without agency-approved biologist present. - Where practicable, contact with the special-status amphibian will be avoided and it will be allowed to move out of the potentially hazardous situation of its own volition. Allowing a special-status amphibian to move out of the potentially hazardous situation of its own volition may not be appropriate for multi-day projects because they could stay or move back into the project site. If there is an immediate hazard or if there is no suitable, accessible habitat nearby for the amphibian to relocate to, it will be moved following approved handling protocol (AMP-0011).
SWRCB-AMP-11	Species Observations and Handling Protocol	If a special-status species does not or cannot leave the work area, the agency-approved biologist will implement the species observation and handling protocols outlined below for the various species' guilds. Separate permits are needed prior to any capture, handling, and relocation of special-status species. Only agency-approved biologists will participate in activities associated with the capture, handling, relocation, and monitoring of a special-status amphibian. In addition to measures described in AMP-005 (which refers to CDFW [2016] decontamination protocols), to prevent the spread of pathogens among sites, special care should be taken to prevent transferring potential pathogens among individual animals.

SWRCB-BIRD-01	Habitat Assessment	A habitat assessment will be conducted by a qualified biologist to determine whether suitable habitat (e.g., including foraging, nesting, and dispersal habitat) for the special-status bird(s) occurs in the project area, as applicable. If suitable habitat for special-status species is identified in the project area and the proposed project may affect suitable habitat, the project proponent will implement measures BIRD-002 through 5 in areas with suitable habitat. Alternatively, the project proponent may propose to conduct surveys and/or monitoring to confirm presence or absence of the species.
SWRCB-BIRD-02	Nest Protection Work Window	Project activity in known or potentially occupied migratory bird habitat will be conducted outside of the nesting season to the maximum extent practicable. If project activities must occur during the nesting season see BIRD-005.
SWRCB-BIRD-03	Work Area Limits	Work site boundaries in suitable habitat will be clearly marked with flagging or other visible materials, which will be removed at the conclusion of the project.
SWRCB-BIRD-04	Site Access Restrictions	If the site conditions allow, access to work sites in occupied habitat will be by foot travel, otherwise heavy equipment will be allowed within suitable nesting habitats only with the presence of an agency-approved biologist. Access routes and work areas will be limited to the minimum amount necessary to achieve the project goals.
SWRCB-BIRD-05	Monitoring	If project activities must occur during the nesting season, preconstruction nest surveys will be conducted by an agency-approved biologist, buffers will be established to protect active nests, and disturbance in the vicinity of active nests will be monitored to ensure that it does not disrupt an active nest.
SWRCB-FISH-01	Habitat Disturbance Avoidance and Minimization	Disturbance to aquatic habitat for special-status fish species will be avoided and/or minimized to the maximum extent practicable unless the purpose of the project is to provide overall benefits to the species and the benefits are greater than any temporary impacts to habitat.
SWRCB-FISH-02	Habitat Assessment and Surveys	For projects that may result in impacts to aquatic habitat within the range of special-status fish species, no less than 30 days prior to construction of the project, the project proponent will evaluate the potential for special-status fish species to be present in the project area. The evaluation may be based on existing information if sufficiently available, or the project proponent may conduct a habitat assessment or focused survey for those species, if appropriate. The habitat assessment and/or survey will be conducted in potentially suitable aquatic habitat within 300 feet of the project area. The agency-approved biologist will conduct the habitat assessment and/or fish survey and will adhere to the standards provided in the CDFW California Salmonid Stream Habitat Restoration Manual 4th Edition Volume I: Section IV (CDFW 2010) or most current regulatory agency guidance document. If special-status fish species are observed during the survey or the habitat is otherwise potentially occupied, based on the results of the habitat assessment or existing information, the project proponent will implement FISH-003, Fish Capture and Relocation, as described below.

SWRCB-FISH-03	Fish Capture and Relocation	- If projects that require dewatering or other work in suitable habitat for the special-status fish species, if fish capture and relocation would be the most protective approach to managing fish during construction, then a fish capture and relocation plan will be developed and submitted to NMFS, USFWS, and/or CDFW, as applicable, for approval. The plan will describe the biologist qualifications, capture methods, capture and relocation work areas, and reporting requirements including details in the list below. If capture and relocation is not feasible or would not be the most protective approach to managing fish in the work area (e.g., if dewatering is not needed or appropriate; or if fish are in a large, unconfined water body), other methods to protect covered fish species (e.g., timing restrictions around season and tide, or bubble curtains) should be detailed in a plan and submitted to FWS for approval. - This plan will incorporate the latest agency guidance relating to the capture and relocation of fish, as applicable. - Procedures for decontamination of any equipment used in the capture and relocation of fish will be identified. - Prior to the implementation of capture and relocation activities, relocation (or release) sites will be identified by the agency-approved biologist based on proximity, access, habitat suitability, and potential to be affected by constructionrelated disturbance. Suitable habitat for relocation site(s) will be within the same watershed/sub-watershed fish were originally captured. - Fish relocation will only be conducted (or led) by an agency-approved biologist. If an agency-approved biologist is needed, the project proponent will submit the biologist's qualifications to the appropriate agency office for approval 30 days prior to project construction. The biologist will have knowledge and experience in fish biology and ecology, fish/habitat relationships, and biological monitoring, and handling, collecting, and relocating fish or other relevant experience. - Residual surface water associated with the diverted or dewatered habitat will be monitored or sampled for the presence of fish by an agency-approved biologist as soon as the waters are isolated. If a special-status fish is observed in the isolated habitat, they will be immediately captured and relocated to the suitable habitat outside of the construction area, but within the same watershed/subwatershed, by the agency-approved biologist in accordance with the approved fish capture and relocation plan. - The agency-approved biologist will relocate any special-status fish species that may become stranded to an appropriate place depending upon the life stage of the fish, consistent with the approved rescue and relocation plan. - The agency-approved biologist will note the number of individuals observed in the affected area, the number of individuals relocated, the approximate size of individuals, the location of capture and release, any instances of injury or mortality, and the date and time of the collection and relocation. The agencyapproved biologist will also identify and record the species observed and relocated and the life stage for anadromous species. This information will be reported to the appropriate agency office within 7 days of completion of the fish capture and relocation effort.
SWRCB-FISH-04	Reporting	An agency-approved biologist will provide a written summary of work performed (including biological survey and monitoring results), protection measures implemented (e.g., use of biological monitor, flagging of work areas, erosion and sedimentation controls) and supporting photographs of each stage to the appropriate agency office. Furthermore, the documentation describing surveys and relocation efforts (if appropriate) will be completed in accordance with the requirements of FISH-003: Fish Capture and Relocation.
SWRCB-PLANT-01	Habitat Assessment and Surveys	If the project area can potentially support special-status plant species, an agency-approved biologist will conduct a survey for special-status plant species within 1 year prior to commencement of grounddisturbing activities. Surveys should follow USFWS's General Rare Plant Survey Guidelines (USFWS 2002); and CDFW's Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (2018) or their most recent equivalents.
SWRCB-PLANT-02	Seasonal Avoidance of Vernal Pool Plant Species and Other Annual and Perennial Species	- For Vernal Pool Plant Species: Work within 250 feet of suitable special-status vernal pool plant habitat (e.g., vernal pools, seasonal wetlands) will be performed under dry site conditions to the maximum extent possible, to minimize potential adverse impacts to aquatic habitats. If any construction activities must occur during the wet period, exclusion fencing and erosion control materials will be placed around vernal pools and other seasonal wetlands as determined by the agency-approved biologist to reduce sedimentation into vernal pool habitat. The fencing will provide a buffer between construction activities and the vernal pools and other seasonal wetlands. The agency-approved biologist will oversee, monitor, inspect and maintain the exclusion fencing. - For Other Annual Plant Species: To avoid impacts to other annual species, schedule work to occur after plants have set seed and senesced, avoid soil disturbance, and avoid actions that have potential to reduce habitat quality.
SWRCB-PLANT-03	Exclusion Buffer Establishment	An agency-approved biologist will clearly delineate with flagging or other field markers a minimum 50-foot avoidance buffer around all special-status plants or their suitable habitat. A larger exclusion buffer may be established if determined by the agency-approved biologist to be necessary for the protection of the special-status plants. No work activity will occur within the exclusion buffer, except as permitted under Measure PLANT-004, Work Restrictions in the Exclusion Buffer. Additionally, a buffer of at least 300 feet from any vernal pool, vernal pool grassland, or seasonal wetland will be established for the protection of special status plants.

SWRCB-PLANT-04	Work Restrictions in the Exclusion Buffer	If agency-approved biologist determines that some work activities can take place within the exclusion buffer described in Measure PLANT-003 without causing any adverse direct or indirect impacts to special-status plants identified for avoidance, those approved work activities may be conducted within the exclusion buffer. Special-status vernal pool plants will be clearly marked by an agency-approved biologist prior to worker entry into the exclusion buffer. Workers may only enter the exclusion buffer when accompanied by an agencyapproved biologist, and all work within the exclusion buffer will be monitored by an agency-approved biologist.
SWRCB-PLANT-05	Biological Monitoring	An agency-approved biologist will monitor all construction activities, and also within the buffers established under PLANT-003, Exclusion Buffer Establishment. Any non-disturbance exclusion zones will be established, maintained and monitored. The biologist will ensure that loss of specialstatus plants or destruction of their habitat does not occur outside of the project footprint.
SWRCB-PLANT-06	Herbicide Application, Clearing, and Ground Disturbance	If mechanical removal is not effective, or could damage sensitive habitats, limited herbicide application may occur as noted below and in accordance with General Protection Measures VHDR-6 through VHDR-8 (Appendix E), wind speed limitations during herbicide application. - To avoid impacts to other special-status species (non-vernal pool species), the following protections will be applied: - Backpack and hand-held herbicide application, if applied in dry conditions, is prohibited within 5 feet of any special-status plant. Protect special-status plants from herbicide drift (e.g., cover with plastic when spraying or use a wick applicator). - Broadcast and power spray herbicide application is prohibited; and - Ground disturbing activities are prohibited within 5 feet of senesced annual and perennial plants and within 10 feet of perennial plants. Ground disturbance should occur outside of the dripline of any woody species identified for avoidance.
SWRCB-REP-01	Pre-Construction Survey	An agency-approved biologist will conduct preconstruction surveys for the target reptile species within 72 hours prior to any initial ground disturbance within all suitable habitat within or adjacent to the project site and accessible to the project proponent, to identify locations where special-status reptiles may be present, evaluate current activity status in the project area, and protect the species and its habitat from avoidable construction-related disturbance. The intent of this survey is to assess current special-status reptile habitat and use locations in the project area immediately prior to construction. Preconstruction surveys may be phased across a construction site if construction in different areas will occur at different times; only areas where disturbance is imminent need be surveyed. The project area will be re-inspected by the agency-approved biologist whenever a lapse in construction activity of 5 days or greater has occurred.
SWRCB-REP-02	Environmentally Sensitive and Wildlife Exclusion Area	Prior to the start of construction, SPM-002, Environmentally Sensitive and Wildlife Exclusion will be implemented. In addition, the following applies: - For the giant garter snake, fencing and/or monitoring will be implemented in coordination with the agency-approved biologist prior to the start of grounddisturbing activities. If fencing is used the fencing will be inspected by the agency-approved biologist before the start of each work day and maintained by the project proponent until completion of the project. The fencing will be removed after all construction equipment is removed from those segments of the project. To prevent reptiles from becoming entangled, trapped, or injured, fencing materials that use plastic or synthetic monofilament netting will not be used. Acceptable materials include natural fibers such as jute, coconut, twine, or other similar fibers.
SWRCB-REP-03	Clearing and Grubbing Vegetation	An agency-approved biologist will be present during all vegetation clearing and grubbing activities in areas where the specialstatus reptiles are confirmed to occur, or where measures are being implemented based on presence of suitable habitat. Prior to vegetation removal, the agency-approved biologist will thoroughly survey the area for these species. Vegetation in sensitive areas will be cleared by handheld motorized tools (e.g., weed eaters, chainsaws) or hand pulling unless alternate methods are proposed by the project proponent and approved by agency(ies). Tree stumps and roots will be left in place where possible to avoid any ground disturbance and preserve refugia habitat, with the exception of non-native invasive plants that could propagate from remaining vegetative material. Native branches, leaf litter, mulch, woody debris, and other vegetative trimmings may be retained and spread on site to enhance habitat as appropriate.
SWRCB-REP-04	Prohibited Use of Rodenticides	No rodenticides will be used at the project site during construction in areas that support suitable habitat for special-status reptiles.

SWRCB-REP-05	Species Observations and Encounters	Each proposed project with the potential to encounter a special-status reptile species will submit a rescue and relocation plan to agency(ies) for review and approval prior to initiating construction. General guidance to be considered during plan development is as follows: 1) leave the uninjured animal if it is not in danger, or 2) move the animal to a nearby location if it is in danger as described in REP-006, Species Handling and Relocation, below. These options are further described as follows: - When a special-status reptile is encountered in the project area, the priority is to stop all activities in the surrounding area that have the potential to result in the harm, injury, or death of the individual. The agency-approved biologist then needs to assess the situation to select the course of project that will minimize adverse effects to the individual. - Avoid contact with the animal and allow it to move out of the project footprint and hazardous situation on its own to a safe location. This guidance only applies to situations where an animal is encountered while moving through habitat and under conditions that will allow it to escape. This does not apply to animals that are uncovered or otherwise exposed or in areas where there is not enough adjacent habitat to support the life history of the special-status reptiles if they move outside the construction footprint. - Avoidance is the preferred option if the animal is not moving or is within some sort of burrow or other refugia. In this case, the area will be well marked for avoidance by construction and an agency-approved biologist will be assigned to the area when work is taking place nearby. If avoidance is not practicable or safe for the special-status reptile, the project proponent will implement REP-006, below.
SWRCB-REP-06	Species Handling and Relocation	A special-status reptile will only be captured and relocated when it is the only option to prevent its death or injury, and after all attempts to avoid interaction of the species have been exhausted as described in REP-006, Species Observation and Encounters. Project-specific rescue and relocation plans will be approved by the agency(ies) prior to starting construction. General guidance for handling and relocation is as follows: - If appropriate habitat is located immediately adjacent to the capture location, then the preferred option is short distance relocation to that habitat. A snake will not be moved outside of the area where it could have traveled on its own. Captured snakes will be released in appropriate cover as close to their capture location as possible for their continued safety. Under no circumstances will an animal be relocated to another property without the owner's written permission. It is the project proponent's responsibility to arrange for that permission. - The release locations must be pre-identified in the project-specific rescue and relocation plan approved by the agency(ies); they will depend on where the individual was found and the opportunities for nearby release. In most situations the release location is likely to be into the mouth of a small burrow, other suitable refugia, or suitable habitat. - Only agency-approved biologists for the project can capture special-status reptiles.
SWRCB-SPM-01	Preconstruction Surveys	If special-status plants are present and/or specialstatus terrestrial animal species habitat is present (e.g., stationary habitat such as burrows, bird nests, cavities for bats, etc.), where appropriate, based on project-specific requirements, a qualified, agency-approved biologist with experience on the identification of all applicable life stages of the special-status species will conduct reconnaissance-level preconstruction surveys and implement additional measures, as appropriate, to protect the species from construction-related disturbance before work begins. The intent of the survey is to assess current species habitat and use locations in the project area immediately prior to construction. Special-status plant species surveys shall be conducted in the appropriate blooming period, as applicable, prior to the start of construction for proper plant identification. If construction activities cease for more than five consecutive days, and there is potential for special-status species to re-occupy the site, the agency-approved biologist will re-survey the project area and implement measures, as appropriate. A project proponent can choose to assume animal species presence, forgo preconstruction surveys, and implement additional protection measures, as appropriate, to protect special status species from construction-related disturbance. Additional species guild-specific pre-construction requirements are described below and may supersede this general species protection measure, as applicable.

SWRCB-SPM-02	Environmentally Sensitive Areas and/or Wildlife Exclusion	Monitoring, flagging, and/or fencing will be used to minimize disturbance to environmentally sensitive areas (e.g., waters and wetlands). This measure augments GPM-7 (Appendix E), which applies to sensitive aquatic resources. If fencing is used: - The agency-approved biologist or resource specialist will determine the location of the fencing prior to the start of construction (e.g., between active work area(s) and sensitive resources). - Fencing will remain in place throughout the duration of the construction activities, and will be inspected and maintained regularly by the agency-approved biologist or resource specialist until completion of the project. - Repairs to the fencing will be made within 24 hours of discovery. - Fencing will be removed when all construction equipment is removed from the site, and the area cleared of debris and trash, and returned to natural conditions.
SWRCB-SPM-03	Species Protection Construction Work Windows	Construction work windows may be required, depending on whether or not the project involves in-water construction and/or whether special-status species have potential to occur onsite.
SWRCB-SPM-04	Species Capture, Handling and Translocation	Special-status species capture, handling, and translocation will only be conducted by an agency-approved biologist(s). Required permitting will be needed prior to any capture, handling, and relocation. If translocation of special-status species is needed, the project proponent will prepare a special-status species translocation plan to be reviewed and approved by the agency(ies), as appropriate, prior to project implementation. The plan will include capture and translocation methods, translocation site, and post translocation monitoring, if applicable. If capture, handling, and translocation is necessary due to dewatering activities, refer to the protective measures for Dewatering Activities, under general protection measure IWW 6 and follow the agency-approved translocation plan.
SWRCB-SPM-05	Special-Status Species Entrapment Prevention	All excavated, steep-walled holes or trenches will be covered with appropriate covers (e.g., thick metal sheets or plywood) at the end of each workday. Covers will be placed so that trench edges are fully sealed with rock bags, sand, or other appropriate material. Alternatively, one or more escape ramps such as fill dirt or wood planking will be installed at an angle no greater than 30 degrees, to allow wildlife to escape. Before holes or trenches are filled, sealed, or collapsed, the holes or trenches will be thoroughly inspected for trapped animals. Any animals discovered will be allowed to escape voluntarily or will be relocated by an agency-approved biologist.
SWRCB-SPM-06	Airborne Noise Reduction	Equipment, including noise abatement systems, will be maintained in good working order. If construction noise has the potential to adversely affect special-status species, the project proponent will include site specific measures for construction activities to minimize impacts. Muffler (or spark arrester) damage must be promptly remedied, to the degree practicable, to meet sound attenuation standards.
SWRCB-SRGO-GPM-01	Receipt and Copies of All Permits and Authorizations	Work will not begin until all necessary permits and authorizations have been received (e.g., USACE, USFWS, NMFS, State and Regional Boards, CDFW). The project proponent will ensure that a readily available copy of the applicable agency permits and authorizations (e.g., USFWS Biological Opinion, NMFS Biological Opinion, Section 404 permit, etc.) is maintained by the construction foreman/manager on the project site for the duration of project activities.
SWRCB-SRGO-GPM-02	Construction Work Windows	Construction work windows may be required in order to avoid impacts to aquatic resources and associated beneficial uses during the wet season. Project proponents must also follow the applicable Regional Board's construction work windows, unless otherwise approved.
SWRCB-SRGO-GPM-03	Construction Hours	Construction activities will generally be limited to daylight hours, to the extent feasible. If nighttime construction is necessary, including in tidally influenced waters where tides may limit daylight access and work schedules, all project lighting (e.g., staging areas, equipment storage sites, roadway, and construction footprint) will be selectively placed and directed onto the roadway or construction site and away from aquatic habitats. Light glare shields will be used to reduce the extent of illumination into aquatic habitats. If the work area is near surface waters, the lighting will be shielded so that it does not shine directly into the water.

SWRCB-SRGO-GPM-04	Environmental Awareness Training	For projects occurring in aquatics resources (e.g., wetlands, riparian areas, etc.), prior to engaging existing or new personnel in construction activities, new construction personnel will participate in environmental awareness training conducted by an agency-approved biologist or resource specialist.* Construction personnel will be informed regarding the identification, potential presence, legal protections, avoidance and minimization measures, and applicable general protection measures for all aquatic resources with the potential to occur within or immediately adjacent to the project site. Construction personnel will be informed of the procedures to follow should aquatic resources be disturbed during construction activities. For projects where the agency-approved biologist or resource specialist is not regularly on the project site, training may be provided via online/web-based meeting with an interactive portion (e.g., web-based or in-person discussion) to be included during remote training sessions. For projects that may continue over an extended duration and require excessive training events, a training video developed under the supervision of the FWS-approved biologist or resource specialist may be used to train new personnel, as long as an FWS-approved biologist or resource specialist is available via phone to answer questions about the training or that may arise during construction. Footnote: * Agency-approve monitor refers to monitors who demonstrate qualifications and can be approved by CDFW, NMFS, and/or USFWS and accepted by approving Water Board.
SWRCB-SRGO-GPM-05	Environmental Monitoring	As required in the NOA, a resource specialist will ensure that all applicable protective measures are implemented during project construction. The resource specialist will have authority to stop any work if they determine that any permit requirement is not fully implemented. The resource specialist will prepare and maintain a monitoring log of construction site conditions and observations, which will be kept on file.
SWRCB-SRGO-GPM-06	Work Area and Speed Limits	Construction work and materials staging will be restricted to designated work areas, routes, staging areas, temporary interior roads, or the limits of existing roadways. Prior to initiating construction or grading activities, brightly colored fencing or flagging or other practical means will be erected to demarcate the limits of the project activities, including the boundaries of designated staging areas; ingress and egress corridors; stockpile areas for spoils disposal, soil, and materials; and equipment exclusion zones. Flagging or fencing will be maintained in good repair for the duration of project activities. Vehicles will obey posted speed limits on public roadways and will limit speeds to 20 miles per hour (mph) within the project area on unpaved surfaces and unpaved roads (to reduce dust and soil erosion) or in areas where specialstatus species have the potential to occur. Speeds greater than 20 mph may be permitted in the project area where special-status species are not expected to occur (e.g., within areas from which special-status species have been excluded) and where there is no risk of generating excessive dust (e.g., surfaces are paved, saturated, or have been treated with other measures to prevent dust).
SWRCB-SRGO-GPM-07	Environmentally Sensitive Areas	Monitoring, flagging, or fencing will be used, where appropriate, to minimize disturbance to environmentally sensitive areas (e.g., waters and wetlands). If fencing is used: - Fencing used must be approved by CDFW and/or USFWS for compatibility with species under their jurisdiction, as applicable, that may occur on site. - The agency-approved biologist or resource specialist will determine the location of fencing prior to the start of construction (e.g., between active work area(s) and sensitive resources). - Fencing will remain in place throughout the duration of the construction activities and will be inspected and maintained regularly by the agencyapproved biologist or resource specialist until completion of the project. - Repairs to the fencing will be made within 24 hours of discovering any failure. - Fencing will be removed when all construction equipment is removed from the site, the area is cleared of debris and trash, and the area is returned to natural conditions.

SWRCB-SRGO-GPM-08	Prevent Spread of Invasive Species	The spread or introduction of invasive exotic plant species by arriving vehicles, equipment, imported gravel, and other materials, will be avoided to the maximum extent possible. When practicable, invasive exotic plants in the project areas will be removed and properly disposed of in a manner that will not promote their spread. Equipment will be cleaned of any sediment or vegetation at designated wash stations before entering or leaving the project area to avoid spreading pathogens or exotic/invasive species. Isolated infestations of noxious weeds identified in the project area will be treated with approved eradication methods at an appropriate time to prevent further formation of seed and destroy viable plant parts and seed. Wash sites must be in confined areas that limit run-off to any surrounding habitat and on a flat grade. Upland areas will use rice straw or invasive species-free local slash/mulch for erosion control, while the remainder of the project area will use certified, weed-free erosion control materials. Mulch must be certified weedfree. The project proponent will follow the guidelines in the CDFW's California Aquatic Invasive Species Management Plan (CDFW 2008) and Aquatic Invasive Species Disinfection/Decontamination Protocols (CDFW 2016), where relevant. Construction supervisors and managers will be educated on weed identification and the importance of controlling and preventing the spread of noxious weeds. The project proponent will follow any applicable local guidance to prevent the spread of invasive animal species. Construction supervisors and managers will be responsible for implementation of appropriate protocols (e.g., disinfection of equipment and footwear) to prevent the spread of invasive animals.
SWRCB-SRGO-GPM-09	Practices to Prevent Pathogen Contamination	The project proponent will review and implement restoration design considerations and best management practices as published by the Working Group for Phytophthoras in Native Habitats (www.calphytos.org), when there is a risk of introduction and spread of plant pathogens in site plantings. (http://www.suddenoakdeath.org/ welcome-to-calphytos-org-phytophthoras-in-native-habitats/resources/#restoration.)
SWRCB-SRGO-GPM-10	Equipment Maintenance and Materials Storage	Vehicle traffic will be confined to existing roads and the proposed access route(s). All machinery must be in good working condition, showing no signs of fuel or oil leaks. Oil, grease, or other fluids will be washed off at designated wash stations prior to equipment entering the construction site. Inspection and evaluation for the potential for fluid leakage will be performed daily during construction. Where possible, and where it would not result in greater impact to aquatic resources, no equipment refueling, or fuel storage will take place within 100 feet of a body of water. All fuel and chemical storage, servicing, and refueling will be done in an upland staging area or other suitable location (e.g., barges) with secondary containment to prevent spills from traveling to surface water or drains. Project proponents will establish staging areas for equipment storage and maintenance, construction materials, fuels, lubricants, solvents, and other possible contaminants in coordination with resource agencies. Staging areas will have a stabilized entrance and exit and will be located in upland areas to the extent possible and at least 100 feet from bodies of water unless site-specific circumstances do not provide such a setback or would result in further damage to sensitive resources, in which case the maximum setback possible will be used. Fluids will be stored in appropriate containers with covers and properly recycled or disposed of offsite. Machinery stored on site will have pans or absorbent mats placed underneath potential leak areas as a precautionary measure to further reduce the potential for impact from an unintended or previously undetectable leak.
SWRCB-SRGO-GPM-11	Material Disposal	All refuse, debris, unused materials, and supplies that cannot reasonably be secured will be removed daily from the project work area and deposited at an appropriate disposal or storage site. All construction debris will be removed from the project work area immediately upon project completion. The Water Quality and Hazardous Materials measures (below), will be implemented as applicable to ensure proper handling and disposal of hazardous materials.
SWRCB-SRGO-GPM-12	Fugitive Dust Reduction	To reduce dust, construction vehicles will be speed restricted as described in GPM-6, Work Area and Speed Limits when traveling on non-paved surfaces. Stockpiled materials susceptible to wind-blown dispersal will be covered with plastic sheeting or other suitable material to prevent movement of the material. During construction, water (e.g., trucks and portable pumps with hoses) or other approved methods will be used to control fugitive dust, as necessary. Dust suppression activities must not result in a discharge to waters of the state unless such discharges are approved by the State or Regional Board.
SWRCB-SRGO-GPM-13	Trash Containment and Removal	During project activities all trash will be properly contained within sealed containers and removed from the work site and disposed of as necessary to maintain a trash-free work area (e.g., trash containers will not be used beyond capacity and fully close/seal).
SWRCB-SRGO-GPM-14	Project Cleanup after Completion	Work pads, temporary falsework, and other construction items will be removed from the 100-year floodplain by the end of the construction window. Removal of materials must not result in discharge to waterbodies.
SWRCB-SRGO-GPM-15	Revegetate Disturbed Areas	All temporarily disturbed areas will be de-compacted and seeded/planted with an assemblage of native riparian, wetland, and/or upland plant species suitable for the area. The project proponent will develop a revegetation plan, including (as applicable) a schedule; plans for grading of disturbed areas to pre-project contours; planting palette with plant species native to the project area; invasive species management; performance standards; success criteria; and maintenance requirements (e.g., watering, weeding, and replanting). Plants for revegetation will come primarily from active seeding and planting; natural recruitment may also be proposed if site conditions allow for natural recruitment to reestablish vegetation and avoid potential negative risks associated with erosion and impacts to water quality. Plants imported to the restoration areas will come from local stock, and to the extent possible, local nurseries. Only native plants (genera) will be used for restoration efforts. Certified weed-free native mixes and mulch will be used for restoration planting or seeding. Revegetation activities within and adjacent to waters of the state will commence as soon as is practicable after construction activities at a site are complete.

SWRCB-SRGO-IWW-01	Appropriate In-Water Materials	Selection and use of gravels, cobble, boulders, and instream woody materials in streams, and other materials (e.g., oyster shells, other substrates) for reef/bed restoration will be performed to avoid and/or minimize adverse impacts to aquatic resources, special-status aquatic species, and their habitats. On-site gravels will be screened and sorted; gravels imported from a commercial source will be clean-washed and of appropriate size. As necessary to protect aquatic species, placement will be overseen by an agency-approved Monitor; implementation timing will be determined based on the least amount of overlap, or impact on, all aquatic natural resources that may be affected and the timing of their use of the receiving area. Imported gravel from outside the project watershed will not be from a source known to contain historic hydraulic gold mine tailings, dredger tailings, or mercury mine waste or tailings. Materials that may foul or degrade spawning gravels, such as sand or soil eroding from sand bag or earthen dams will be managed to avoid release and exposure in salmonid streams. Oyster shells or other substrates for reef/bed restoration will be cured and inspected to be free of pathogens and/or non-native species.
SWRCB-SRGO-IWW-02	In-Water Vehicle Selection and Work Access	If work requires that equipment enter wetlands or below the bank of a waters of the state, equipment with low ground-pressure (typically less than 13 to 20 pounds per square inch (psi)) should be selected where feasible to minimize soil compaction. Low groundpressure heavy equipment mats should be used if needed to lessen soil compaction. Hydraulic fluids in mechanical equipment working in the waters of the state, will not contain organophosphate esters. Vegetable based hydraulic fluids are preferred, where feasible. The amount of time this equipment is stationed, working, or traveling in the waters of the state will be minimized. All equipment will be removed from the aquatic feature during non-work hours where appropriate or returned to the agency-approved staging area in the aquatic feature.
SWRCB-SRGO-IWW-03	In-Water Placement of Materials, Structures, and Operation of Equipment	Material used for bank stabilization or in-water restoration will minimize discharge sediment or other forms of waste to waters of the state. Where feasible, construction will occur from the top of the stream bank, or on a ground protection mat underlain with filter fabric, or a barge. All materials placed in streams, rivers or other waters will be nontoxic. Any combination of wood, plastic, cured concrete, steel pilings, or other materials used for in-channel structures will not contain coatings or treatments, or consist of substances toxic to aquatic organisms (e.g., zinc, arsenic, creosote, copper, other metals, pesticides, or petroleum-based products) that may leach into the surrounding environment in amounts harmful to aquatic organisms. Except for the following conditions, equipment must not be operated in standing or flowing waters without site-specific approval from State or Regional Board staff: - All construction activities must be effectively isolated from water flows to minimize the potential for runoff. This may be accomplished by working in the dry season or dewatering the work area in the wet season. - When work in standing or flowing water is required, structures for isolating the in-water work area and/or diverting the water flow must not be removed until all disturbed areas are cleaned and stabilized. The diverted water flow must not be contaminated by construction activities. - All open flow temporary diversion channels must be lined with filter fabric or other appropriate liner material to prevent erosion. Structures used to isolate the in-water work area and/or divert the water flow (e.g., coffer dam or geotextile silt curtain) must not be removed until all disturbed areas are stabilized.
SWRCB-SRGO-IWW-04	In-Water Staging Areas and Use of Barges	Where appropriate and practical, barges will be used to stage equipment and construct the project, while reducing noise, traffic disturbances and effects to terrestrial vegetation. When barge use is not practical, construction equipment and project materials may be staged in designated agency-approved staging areas. Existing staging sites, maintenance toe roads, and crown roads will be used to the maximum extent possible for project staging and access to avoid affecting previously undisturbed areas. For projects that involve in-water work for which boats and/or temporary floating work platforms are necessary, buoys will be installed so that moored vessels will not beach on the shoreline and anchor lines will not drag. Moored vessels and buoys will not be within 25 feet of vegetated shallow waters.

SWRCB-SRGO-IWW-05	Cofferdam Construction	Cofferdams may be installed both upstream and downstream, and along portions of the cross section of a channel or other waterway if necessary to isolate the extent of the work areas. When feasible, construction of cofferdams will begin in the upstream area and continue in a downstream direction, allowing water to drain and allowing fish and aquatic wildlife species to leave (under their own volition), from the area being isolated by the cofferdam, prior to closure. The flow will then be diverted only when construction of the upstream dam is completed and the work area has been naturally drained of flow, at this point, the downstream dam, if necessary, would be completed and then flow would be diverted around the work area. Cofferdams and stream diversion systems will remain in place and fully functional throughout the construction period. In order to minimize adverse effects to aquatic species, stream diversions will be limited to the shortest duration necessary to complete in-water work. In-water cofferdams will only be built from materials such as sandbags, plastic, clean gravel (possibly wrapped in impermeable material), rubber bladders, vinyl, steel, or earthen fill, in a manner that minimizes siltation and/or turbidity. Sandbags may only be used to build cofferdams upstream of spawning gravels when filled with clean gravel (or other material acceptable to the approving Water Board). Where possible, cofferdams should be pushed into place. If pile driving (sheet piles) is required, vibratory hammers should be used and impact hammer should be avoided. If necessary, the footing of the cofferdam will be keyed into the channel bed at an appropriate depth to capture the majority of subsurface flow needed to dewater the streambed. When cofferdams with bypass pipes are installed, debris racks will be placed at the bypass pipe inlet in a manner that minimizes the potential for fish impingement and/or entrapment. As needed and where feasible, bypass pipes will be monitored for accumulation of debris. All accumulated debris will be removed. When appropriate, cofferdams will be removed so surface elevations of water impounded above the cofferdam will not be reduced at a rate greater than one inch per hour. Cofferdams in tidal waters should be removed during the lowest possible tide and in slack water to the extent feasible to minimize disturbance and turbidity. This will minimize the probability of fish and other aquatic species stranding as the area upstream becomes dewatered. All dewatering/diversion facilities will be installed such that natural flow is maintained upstream and downstream of project areas. An area may need to be dewatered for long enough to allow special-status species to leave on their own before final clearance surveys and construction can begin.
SWRCB-SRGO-IWW-06	Dewatering/Diversion	The area to be dewatered will encompass the minimum area necessary to perform construction activities. The project proponent will provide a dewatering plan with a description of the proposed dewatering structures, and appropriate types of BMPs for the installation, operation, maintenance, and removal of those structures. The period of dewatering/diversion will extend only for the minimum amount of time needed to perform the restoration activity and to allow special-status species time to leave on their own before final clearance surveys and construction can begin. Where feasible and appropriate, dewatering/diversion will occur via gravity-driven systems, and where water is pumped from within the construction area, it should be pumped to upland areas (where feasible) and to a location where it can infiltrate without return flows to the watercourse. Dewatering/diversion will be designed to avoid direct and preventable indirect mortality of fish and other aquatic species. If special-status fish species may be present in the area to be dewatered, a fish capture and relocation plan will be developed and implemented for review and approval by appropriate agencies (e.g., CDFW, NMFS, USFWS, as applicable). Stream flows will be allowed to gravity flow around or through the work site using temporary bypass pipes or culverts. Bypass pipes will be sized to accommodate, at a minimum, twice the expected construction-period flow, to not increase stream velocity, and will be placed at stream grade. Conveyance pipe outlet energy dissipaters will be installed to prevent scour and turbidity at the discharge location. When use of gravity-fed dewatering is not feasible and pumping is necessary to dewater a work site, a temporary siltation basin and/or use of silt bags may be required. Silt fences or mechanisms to avoid sediment input to the flowing channel will be installed adjacent to flowing water. Water pumped or removed from dewatered areas will be conducted in a manner that does not contribute turbidity to nearby receiving waters. Where possible, pumps will be refueled in an area well away from the stream channel. Fuel absorbent mats will be placed under the pumps while refueling. Equipment working in the stream channel or within 25 feet of a wetted channel will have a double (i.e., primary and secondary) containment system for diesel and oil fluids. All work will comply with the CDFW Fish Screening Criteria (CDFW 2001) and NMFS Fish Screening Criteria for Anadromous Salmonids (NMFS 1997). Pump intakes will be covered with mesh per the requirements of current fish screening criteria (approx 3/32 inch max diameter) to prevent potential entrainment of fish or other aquatic species that could not be removed from the area to be dewatered. The pump intake will be checked periodically for impingement of fish or other aquatic species. Diverted flows must be of sufficient quality and quantity, and of appropriate temperature, to support existing fish and other aquatic life both above and below the diversion. Preproject flows must be restored to the affected surface water body upon completion of work at that location. Where diversions are planned, contingency plans will be developed that include oversight for breakdowns, fueling, maintenance, leaks, etc.
SWRCB-SRGO-IWW-07	Fish and Aquatic Species Exclusion While Installing Diversion Structures	Fish and other aquatic species will be excluded from occupying the area to be dewatered by blocking the stream channel above and below the area to be dewatered with fine-meshed block nets or screens while coffer dams and other diversion structures are being installed. Block net mesh will be sized to ensure aquatic species upstream or downstream do not enter the areas proposed for dewatering. Mesh will be no greater than 1/8-inch diameter. The bottom of the net must be completely secured to the channel bed. Block nets or screens must be checked at least twice daily at the beginning and end of the workday and cleaned of debris to permit free flow of water. Block nets or screens will be placed and maintained throughout the dewatering period at the upper and lower extent of the areas where aquatic species will be removed. Net placement s temporary and will be removed once dewatering has been accomplished or construction work is complete for the day.

SWRCB-SRGO-IWW-08	Removal of Diversion and Barriers to Flow	Upon completion of construction activities, any diversions or barriers to flow will be removed in a manner that will allow flow to resume with the least disturbance to the substrate and consideration of turbidity levels. Alteration of creek beds will be minimized to the maximum extent possible; any imported material that is not part of the project design will be removed from stream beds upon completion of the project.
SWRCB-SRGO-VHDR-01	Avoidance of Vegetation Disturbance	The project proponent will minimize, to the greatest extent feasible, the amount of soil, terrestrial vegetation, emergent native vegetation, and submerged vegetation (e.g., eelgrass and kelp in marine areas, or submerged aquatic vegetation in brackish and freshwater areas) disturbed during project construction and completion and using methods creating the least disturbance to vegetation. Disturbance to existing grades and native vegetation, the number of access routes, the size of staging areas, and the total area disturbed by the project will be limited to the extent of all temporary and permanent impacts as defined by the final project design. All roads, staging areas, and other facilities will be placed to avoid and limit disturbance to waters of the state and other aquatic habitats (e.g., streambank or stream channel, riparian habitat) as much as possible. When possible, existing ingress or egress points will be used and/or work will be performed from the top of the creek banks or from barges on the waterside of the stream or levee bank, or dry gravel beds. Existing native vegetation will be retained as practicable, emphasizing the retention of shade-producing and bank stabilizing trees and brush with greater than 6-inch diameter branches or trunks. Where possible, vegetation disturbance and soil compaction will be minimized by using low ground-pressure (typically less than 13 to 20 pounds psi) equipment that exerts less pressure per square inch on the ground than other equipment. To minimize impacts to vegetation, select equipment with a greater reach.
SWRCB-SRGO-VHDR-02	Native and Invasive Vegetation Removal Materials and Methods	If riparian vegetation is to be removed with chainsaws or other power equipment, machines that operate with vegetable-based bar oil will be used, as practicable. All invasive plant species (e.g., those rated as invasive by the California Invasive Plant Council or local problem species) will, if feasible, be removed from the project site, using locally and routinely accepted agriculture practices. Invasive plant material will be destroyed using approved protocols and disposed of at an appropriate upland disposal or compost area. Invasive plant materials stockpiled at sites known to experience flash flooding outside the flood season will be removed within 15 days of the initial creation of the stockpile in order to contain the potential spread of invasive plant material. Stockpiling of invasive plant materials is prohibited during the flood season.
SWRCB-SRGO-VHDR-03	Revegetation Materials and Methods	Upon completion of work, site contours will be returned to preconstruction conditions or to contours specified in a Water Board-approved project design that provides enhanced biological and hydrological functions. Where disturbed, topsoil will be conserved (and watered at an appropriate frequency) for reuse during restoration to the extent practicable. Native plant species comprising a diverse community structure (plantings of both woody and herbaceous species, if both are present) that follow an agency-approved plant palette will be used for revegetation of disturbed and compacted areas, as appropriate. See also GPM15: Revegetate Disturbed Areas, which also allows for revegetation through natural recruitment (e.g., in tidal and managed wetlands and working landscapes where disturbed areas typically revegetate more quickly through natural recruitment than through seeding). Any area barren of vegetation as a result of project implementation will be restored to a natural state by mulching, seeding, planting, or other means with native trees, shrubs, willow stakes, erosion control native seed mixes, or herbaceous plant species following completion of project construction. Irrigation may also be required in order to ensure survival of containerized shrubs or trees or other vegetation, depending on rainfall. Soils that have been compacted by heavy equipment will be decompacted, as necessary, to allow for revegetation at project completion as heavy equipment exits the construction area.
SWRCB-SRGO-VHDR-04	Revegetation Erosion Control Materials and Methods	If erosion control fabrics are used in revegetated areas, they will be slit in appropriate locations as necessary to allow for plant root growth. Only non-monofilament, wildlife-safe fabrics will be used. All plastic exclusion netting placed around plantings will be removed after 2 years or sooner if practicable.
SWRCB-SRGO-VHDR-05	Revegetation Monitoring and Reporting	All revegetated areas will be maintained and monitored for a minimum of 2 years after replanting is complete and until success criteria are met, to ensure the revegetation effort is successful. The standard for success is at least 60% absolute cover compared to pre-project conditions at the project site or at least 60% cover compared to an intact, local reference site (or an available reference site accepted by the approving Water Board). If an appropriate reference site or pre-project conditions cannot be identified, success criteria will be developed for review and approval by the approving Water Board on a project-by-project basis based on the specific habitat impacted and known recovery times for that habitat and geography. The project proponent will prepare a summary report of the monitoring results and recommendations at the conclusion of each monitoring year.

SWRCB-SRGO-WQHM-01	Staging Areas and Stockpiling of Materials and Equipment	Staging, storage, and stockpile areas must be outside of waters of the state. To the extent feasible, staging will occur on access roads or other previously disturbed upland areas, such as developed areas, paved areas, parking lots, areas with bare ground or gravel, and areas clear of vegetation, to avoid aquatic habitats and limit disturbance to surrounding habitats. Similarly, all maintenance equipment and materials (e.g., road rock and project spoil) will be restricted to the existing service roads, paved roads, or other determined designated staging areas. See GPM-10 for more details regarding protection measures for materials storage. Staging areas will be established for equipment storage and maintenance, construction materials, fuels, lubricants, solvents, and other possible contaminants in coordination with resource agencies. Staging areas will have a stabilized entrance and exit and will be located at least 100 feet from bodies of water unless site-specific circumstances do not provide such a setback, in such cases the maximum setback possible will be used. If an off-road site is chosen and if special-status species are potentially present, the Biological Monitor will survey the selected site to verify that no aquatic resources would be disturbed by staging activities. Stockpiling of materials, portable equipment, vehicles and supplies (e.g., chemicals), will be restricted to the designated construction staging areas. If rain is predicted in the forecast during the dry season, and stockpiled soils will remain exposed and unworked for more than 7 days, then erosion and sediment control measures must be used. If there is a high-wind scenario (to be defined by the approving Water Board as appropriate for an individual project site), then soils will be covered at all times. During the wet season, no stockpiled soils will remain exposed, unless properly installed and maintained erosion and sediment controls are in place on and around the stockpile. Temporary stockpiling of material onsite will be minimized. Stockpiled material will be placed in upland areas far enough away from aquatic habitats that these materials cannot discharge to a water of the state.
SWRCB-SRGO-WQHM-02	Storm Water Pollution Prevention Plan	Note: Either this measure, or WQHM-003 Erosion and Sediment Control Measures, would be applicable, but not both. All projects covered by the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) will prepare and implement the required, site-specific, storm water pollution prevention plan (SWPPP).
SWRCB-SRGO-WQHM-04	Hazardous Materials Management and Spill Response Plan	As part of the SWPPP or Erosion Control Plan (WQHM-2 and WQHM-3), project proponent will prepare and implement a hazardous materials management and spill response plan. Project proponent will ensure that any hazardous materials are stored at the staging area(s) with an impermeable membrane between the ground and hazardous material and that the staging area is designed to prevent the discharge of pollutants to groundwater and runoff water. Project proponent will stop work, follow the spill response plan, and arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills. (See WQHM-6. Accidental Discharge of Hazardous Materials for accidental discharges of a reportable quantity of a hazardous material, sewage, or an unknown material.) Project proponent will notify regulatory agencies within 24 hours of any leaks or spills. Project proponent will properly contain and dispose of any unused or leftover hazardous products off-site. Project proponent will use and store hazardous materials, such as vehicle fuels and lubricants, in designated staging areas located away from stream channels and wetlands, according to local, state, and federal regulations, as applicable. Also see GPM-10: Equipment Maintenance and Materials Storage for more detail on spill prevention.
SWRCB-SRGO-WQHM-06	Accidental Discharge of Hazardous Materials	Following an accidental discharge of a reportable quantity of a hazardous material, sewage, or an unknown material, the following applies (Wat. Code, Â§ 13271): As soon as (A) discharger has knowledge of the discharge or noncompliance, (B) notification is possible, and (C) notification can be provided without substantially impeding cleanup or other emergency measures then: - first call - 911 (to notify local response agency) - then call - Office of Emergency Services (OES) State Warning Center at: (800) 852-7550 or (916) 845-8911 - Lastly, follow the required OES procedures as set forth in: http://www.caloes.ca.gov/FireRescueSite/Documents/CalOESSpill_Booklet_Feb2014_FINAL_BW_Acc.pdf Following notification to OES, the discharger will notify the State or Regional Board (and other agencies requiring notification in their respective permits), as soon as practicable (ideally within 24 hours). Notification may be via telephone, e-mail, delivered written notice, or other verifiable means.
USFWS-GPM-01	Receipt and Copies of All Permits and Authorizations	Work will not begin until all necessary permits and authorizations have been issued (e.g., USACE, USFWS, NMFS, State and/or Regional Boards, or CDFW). The Project Proponent will ensure that a readily available copy of the applicable agency permits and authorizations (e.g., USFWS PBO, NMFS PBO, or Section 404 permit) is maintained by the construction foreperson/manager on the project site for the duration of project activities.

USFWS-GPM-02	Construction Work Windows	Construction work windows may be required, depending on whether the project involves in-water construction and/or whether Covered Species have the potential to occur in the project area. Covered Species work windows are provided in Section 2.1.5.3, Guild- and Species-Specific Protection Measures.* Footnote: * Extended or alternative work windows may be considered on an individual project basis with prior approval from USFWS ES, provided the Project Proponent can demonstrate that measures implemented to avoid or minimize exposure would do so at a level commensurate with the standard work windows.
USFWS-GPM-03	Construction Hours	Construction activities will generally be limited to daylight hours, to the extent practicable. If nighttime construction is necessary, including in tidally influenced waters where tides may limit daylight access and work schedules, all project lighting (e.g., staging areas, equipment storage sites, roadway, and construction footprint) will be selectively placed and directed onto the roadway or construction site and away from sensitive habitats. Light glare shields will be used to reduce the extent of illumination into sensitive habitats. If the work area is near surface waters, the lighting will be shielded so that it does not shine directly into the water.
USFWS-GPM-04	Environmental Awareness Training	For projects occurring where Covered Species are likely to be present, prior to engaging existing or new personnel in construction activities, new construction personnel will participate in environmental awareness training conducted by a Qualified Biologist. Construction personnel will be informed regarding the identification, potential presence, habitat requirements, legal protections, avoidance and minimization measures, and applicable protection measures for Covered Species with the potential to occur in or immediately adjacent to the project site. Construction personnel will be informed of the procedures to follow should a Covered Species be encountered during construction activities. For projects where the Qualified Biologist is not regularly on the project site, training may be provided in an online/virtual meeting. For projects that may continue over an extended duration and require excessive training events, a training video developed under the supervision of the Qualified Biologist may be used to train new personnel, as long as a Qualified Biologist is available by phone to answer questions about the training or to answer questions that may arise during construction.
USFWS-GPM-05	Environmental Monitoring	Where appropriate and based on project-specific requirements, a Qualified Biologist(s) will perform site clearance at the beginning of each day and will monitor construction activities throughout the day in, or immediately adjacent to, sensitive resources and/or Covered Species habitat (including critical habitat as applicable), as necessary. The Qualified Biologist will confirm that all applicable protection measures are implemented during project construction. The Qualified Biologist will have the authority to stop any work if they determine that any permit requirement is not fully implemented or if it is necessary to protect Covered Species, consistent with the information provided in a signed ESA Section 7(a)(2) Review Form by the USFWS Field Office to cover the proposed project by the PBO. The Qualified Biologist will prepare and maintain a biological monitoring log of construction site conditions and observations, which will be kept on file.
USFWS-GPM-06	Work Area and Speed Limits	Construction work and materials staging will be restricted to the smallest area practicable in designated work areas, routes, staging areas, temporary interior roads, or the limits of existing roadways. Prior to initiating construction or grading activities, brightly colored fencing or flagging or other practical means will be erected to demarcate the limits of the project activities, including the boundaries of designated staging areas; ingress and egress corridors; stockpile areas for spoils disposal, soil, and materials; and equipment exclusion zones. Flagging or fencing will be maintained in good repair for the duration of project activities. Posted speed limits on public roadways will be adhered to and speeds will be limited to 20 miles per hour (mph) in the project area on unpaved surfaces and unpaved roads (to reduce dust and soil erosion), or in areas where Covered Species have the potential to occur. Speeds greater than 20 mph may be permitted in the project area where Covered Species are not expected to occur (e.g., in areas where Covered Species have been excluded) and there is no risk of generating excessive dust (e.g., surfaces are paved, saturated, or have been treated with other measures to prevent dust). Additional details are provided in Section 2.1.5.3, Guild- and Species-Specific Protection Measures, where applicable. See also IWW-004, In-Water Staging Areas and Use of Barges.
USFWS-GPM-07	Environmentally Sensitive Areas and/or Wildlife Exclusion	Where appropriate, fencing, flagging, or biological monitoring will be used to minimize disturbance to environmentally sensitive areas and Covered Species habitat. If the project site is suitable for fencing, prior to the start of construction, environmentally sensitive area fencing (ESAF) and/or Wildlife Exclusion Fencing (WEF) will be installed between the active work area(s) and any suitable terrestrial habitat where Covered Species could enter the site. When fencing is not practicable due to project size, topography, soils, or other factors, monitoring by a Qualified Biologist during construction activities can be used to minimize impacts (see GPM-005, Environmental Monitoring). - The Qualified Biologist will determine the location of the ESAF and/or WEF prior to the start of construction. - WEF specifications (e.g., height, installation requirement, or materials) will be determined based on the species the fencing is intended to exclude. ESAF does not require such specifications and may include flagging or monitoring (see GPM-005, Environmental Monitoring). - The ESAF and/or WEF will remain in place throughout the duration of the construction activities and will be inspected and maintained regularly by the Qualified Biologist until completion of the project. Repairs to the ESAF and/or WEF will be made within 24 hours of discovery. The fencing will be removed only when all construction equipment is removed from the site, the area is cleared of debris and trash, and the area is returned to natural conditions.

USFWS-GPM-08	Prevent Spread of Invasive Species	The spread or introduction of nonnative, invasive plant and animal species will be avoided. When practicable, nonnative invasive plants in the project areas will be removed and properly disposed of in a manner that will not promote their spread. Equipment will be cleaned of any sediment or vegetation at designated wash stations before entering or leaving the project area, to avoid spreading pathogens or nonnative invasive species. Activities that create new habitat for nonnative invasive species will be avoided. Isolated infestations of nonnative invasive species identified in the project area will be treated with weed management methods at an appropriate time, to prevent further formation of seed and destroy viable plant parts and seed. Wash sites must be in confined areas that limit runoff to any surrounding habitat, and on a flat grade. Upland areas will use rice straw or invasive species-free local slash/mulch for erosion control; the remainder of the project area will use certified, weedfree erosion control materials. Mulch must be certified weed-free. The Project Proponent will follow the guidelines in the CDFW's California Aquatic Invasive Species Management Plan (CDFW 2008) and Aquatic Invasive Species Disinfection/Decontamination Protocols (CDFW 2016). Construction supervisors and managers will be educated on weed identification and the importance of controlling and preventing the spread of invasive weeds.
USFWS-GPM-09	Practices to Prevent Pathogen Contamination	The Project Proponent will review and implement restoration design considerations and best management practices (BMPs) to help prevent pathogen contamination, as published by the "Working Group for Phytophthoras in Native Habitats" (www.calphytos.org), when there is a risk of introduction and spread of plant pathogens in site plantings. The Project Proponent will review and implement decontamination protocols to prevent the spread of pathogens among amphibians or other aquatic animals when working in aquatic habitats that may support native amphibians. Gear and equipment that may contact water will be cleaned and decontaminated to prevent the spread of chytrid fungus, following protocols in Aquatic Invasive Species Disinfection/Decontamination Protocols (CDFW 2016, or latest version). For additional guidance related to amphibians and chytrid fungus, see AMP-4 and AMP-10.
USFWS-GPM-10	Equipment Maintenance and Materials Storage	Vehicle traffic will be confined to existing roads and the proposed access route(s). All machinery must be in good working condition, showing no signs of fuel or oil leaks. Oil, grease, or other fluids will be washed off at designated wash stations prior to entering the construction site. Inspection and evaluation for the potential for fluid leakage will be performed daily during construction. All fuel and chemical storage, servicing, and refueling will be done in an upland staging area or other suitable location (e.g., barges) with secondary containment to prevent spills from traveling to surface water or drains. Project Proponents will establish staging areas for equipment storage and maintenance, construction materials, fuels, lubricants, solvents, and other possible contaminants in coordination with resource agencies. Staging areas will have a stabilized entrance and exit and will be at least 100 feet from waterbodies, unless site-specific circumstances do not provide such a setback; in such cases, the maximum setback possible will be used. Fluids will be stored in appropriate containers with covers and will be properly recycled or disposed of off-site. Machinery stored on site will have pans or absorbent mats placed underneath potential leak areas.
USFWS-GPM-11	Material Disposal	All refuse, debris, unused materials, and supplies that cannot reasonably be secured will be removed daily from the project work area and deposited at an appropriate disposal or storage site. All construction debris will be removed from the work area immediately on project completion. The Water Quality and Hazardous Materials (Section 2.1.5.2, Water Quality and Hazardous Materials) measures will be implemented to ensure proper handling and disposal of hazardous materials.
USFWS-GPM-12	Fugitive Dust Reduction	To reduce dust, construction vehicles will be speedrestricted as described in GPM-006, Work Area and Speed Limits, when traveling on nonpaved surfaces. Stockpiled materials susceptible to wind-blown dispersal will be covered with plastic sheeting or other suitable material to prevent movement of the material. During construction, water (e.g., trucks, and portable pumps with hoses) or other approved methods will be used to control fugitive dust. Dust suppression activities must not result in a discharge to waterbodies.
USFWS-GPM-13	Trash Removed Daily	During project activities all trash, especially food-related refuse that may attract potential predators or scavengers, will be properly contained in sealed containers, removed from the work site, and disposed of daily.
USFWS-GPM-14	Project Cleanup after Completion	Work pads, temporary falsework, and other construction items will be removed from the 100-year floodplain by the end of the construction window. Removal of materials must not result in discharge to waterbodies.
USFWS-GPM-15	Revegetate Disturbed Areas	All temporarily disturbed areas will be decompacted and seeded/planted with an assemblage of native riparian, wetland, and/or upland plant species suitable for the area. The Project Proponent will develop a revegetation plan. Plants for revegetation will come primarily from active seeding and planting, or from natural recruitment where applicable. Plants imported to the restoration areas will come from local stock. Only native plants (genera) will be used for restoration efforts. Certified weed-free native mixes and mulch will be used for any restoration planting or seeding. Revegetation activities in and adjacent to waterbodies and other aquatic habitat suitable for Covered Species will commence after construction activities at a site are complete.
USFWS-GPM-16	Wildfire Prevention	With the exception of vegetation-clearing equipment, no vehicles or construction equipment will be operated in areas of tall, dry vegetation. A fire prevention and suppression plan will be developed and implemented for all maintenance and repair activities that require welding or otherwise have a risk of starting a wildfire.
USFWS-IWW-01	Appropriate In-Water Materials	Selection and use of gravels, cobble, boulders, and instream woody materials in streams, and other materials (e.g., oyster shells, other substrates) for reef/bed restoration will be performed to avoid and/or minimize adverse impacts to aquatic Covered Species and their habitats. On-site gravels will be screened and sorted; Gravels imported from a commercial source will be clean-washed and of appropriate size. As necessary to protect Covered Species, placement will be overseen by a Qualified Biologist; implementation timing will be determined based on the least amount of overlap (or impact on) all sensitive biological resources that may be affected, and the timing of their use of the receiving area. Imported gravel from outside the project watershed will not be from a source known to contain historical hydraulic gold mine tailings, dredger tailings, or mercury mine waste or tailings. Materials that may foul or degrade spawning gravels (e.g., sand or soil eroding from sandbag or earthen dams) will be managed to avoid release and exposure in salmonid streams. Oyster shells or other substrates for reef/bed restoration will be cured and inspected to be free of pathogens and/or nonnative species.

USFWS-IWW-02	In-Water Vehicle Selection and Work Access	If work requires that equipment enter wetlands or below the banks of a Water of the US, equipment with low ground pressure will be used to minimize soil compaction. Low-ground-pressure heavy equipment mats will be used, if needed to lessen soil compaction. Hydraulic fluids in mechanical equipment working in the waters of the United States or any other aquatic habitat suitable for Covered Species will not contain organophosphate esters. The amount of time this equipment is stationed, working, or traveling in the waters of the United States or other aquatic habitat suitable for Covered Species will be minimized. All equipment will be removed from the aquatic feature during nonwork hours or returned to the staging area approved through the ESA Section 7(a)(2) Review Form process in the aquatic feature.
USFWS-IWW-03	In-Water Placement of Materials, Structures, and Operation of Equipment	Material used for bank stabilization or in-water restoration will minimize discharge sediment or other forms of waste to waters of the United States or other aquatic habitat suitable for Covered Species. Construction will occur from the top of the stream bank, on a ground protection mat underlain with filter fabric, or a barge. All materials placed in streams, rivers, or other waters will be nontoxic. Any combination of wood, plastic, cured concrete, steel pilings, or other materials used for in-channel structures will not contain coatings or treatments, or consist of substances toxic to aquatic organisms (e.g., zinc, arsenic, creosote, copper, other metals, pesticides, or petroleum-based products) that may leach into the surrounding environment in amounts harmful to aquatic organisms. Except for the following conditions, equipment must not be operated in standing or flowing waters without site-specific approval from the USFWS Field Office: - All construction activities must be effectively isolated from water flows, to minimize the potential for runoff. This may be accomplished by working in the dry season or dewatering the work area in the wet season. - When work in standing or flowing water is required, structures for isolating the in-water work area and/or diverting the water flow must not be removed until all disturbed areas are cleaned and stabilized. The diverted water flow must not be contaminated by construction activities. - All open-flow temporary diversion channels must be lined with filter fabric or other appropriate liner material to prevent erosion. Structures used to isolate the in-water work area and/or divert the water flow (e.g., cofferdam or geotextile silt curtain) must not be removed until all disturbed areas are stabilized.
USFWS-IWW-04	In-Water Staging Areas and Use of Barges	Where appropriate and practical, barges will be used to stage equipment and construct the project, to reduce noise, traffic disturbances, and effects on terrestrial vegetation. When barge use is not practical, construction equipment and plant materials will be staged in staging areas approved through the ESA Section 7(a)(2) Review Form process. Existing staging sites, maintenance toe roads, and crown roads will be used for project staging and access to avoid affecting previously undisturbed areas. For projects that involve in-water work for which boats and/or temporary floating work platforms are necessary, buoys will be installed so that moored vessels will not beach on the shoreline and anchor lines will not drag. Moored vessels and buoys will not be within 25 feet of vegetated shallow waters.
USFWS-IWW-05	Cofferdam Construction	Cofferdams may be installed both upstream and downstream, and along portions of the cross section of a channel or other waterway, if necessary to isolate the extent of the work areas. Construction of cofferdams will begin in the upstream area and continue in a downstream direction, enabling water to drain and allowing fish and aquatic wildlife species to leave (under their own volition) the area being isolated by the cofferdam, prior to closure. The flow will then be diverted only when construction of the upstream dam (if necessary) is completed and the work area has been naturally drained of flow; at this point, the downstream dam (if necessary) would be completed, and flow would be diverted around the work area. Cofferdams and stream diversion systems will remain in place and fully functional throughout the construction period. To minimize adverse effects to Covered Species, stream diversions will be limited to the shortest duration necessary to complete in-water work. In-water cofferdams will only be built from materials such as sandbags, clean gravel, rubber bladders, vinyl, steel, or earthen fill, and will be built in a manner that minimizes siltation and/or turbidity. Cofferdams will be pushed into place. If pile driving (sheet piles) is required, vibratory hammers will be used, and impact hammers will be avoided. If necessary, the footing of the cofferdam will be keyed into the channel bed at an appropriate depth to capture the majority of subsurface flow needed to dewater the streambed. When cofferdams with bypass pipes are installed, debris racks will be placed at the bypass pipe inlet in a manner that minimizes the potential for fish impingement and/or entrapment. Bypass pipes will be monitored for accumulation of debris, and accumulated debris will be removed. When appropriate, cofferdams will be removed so that surface elevations of water impounded above the cofferdam will not be reduced at a rate greater than 1 inch per hour. Cofferdams in tidal waters will be removed during the lowest possible tide and in slack water to minimize disturbance and turbidity. This will minimize the probability of fish and other aquatic species stranding as the area upstream becomes dewatered. All dewatering/diversion facilities will be 74 installed so that natural flow is maintained upstream and downstream of project areas. An area may need to be dewatered long enough to allow Covered Species to leave on their own before final clearance surveys and construction can begin.

USFWS-IWW-06	Dewatering/Diversion	The area to be dewatered will encompass the minimum area necessary to perform construction activities. The Project Proponent will provide a dewatering plan with a description of the proposed dewatering structures and appropriate BMPs for the installation, operation, maintenance, and removal of those structures. The period of dewatering/diversion will extend only for the minimum amount of time needed to perform the restoration activity and to allow Covered Species time to leave on their own before final clearance surveys and construction can begin. Dewatering/diversion will occur via gravity-driven systems, where feasible and except as specified below. Dewatering/diversion will be designed to avoid direct and preventable indirect mortality of fish and other aquatic species. If Covered Fish Species may be present in the area to be dewatered, a fish capture and relocation plan will be developed and implemented for review and approval by the appropriate agencies. Stream flows will be allowed to gravity flow around or through the work site, using temporary bypass pipes or culverts. Bypass pipes will be sized to accommodate a minimum of twice the expected construction-period flow and not increase stream velocity and will be placed at stream grade. Conveyance pipe outlet energy dissipaters will be installed to prevent scour and turbidity at the discharge location. When gravity-fed dewatering is not feasible and pumping is necessary to dewater a work site, a temporary siltation basin and/or silt bags may be required to prevent sediment from reentering the wetted channel. Silt fences or mechanisms to avoid sediment input to the flowing channel will be installed adjacent to flowing water. Water pumped or removed from dewatered areas will be conducted in a manner that does not contribute turbidity to nearby receiving waters. Pumps will be refueled in an area well away from the stream channel. Fuel-absorbent mats will be placed under the pumps while refueling. Equipment working in the stream channel or within 25 feet of a wetted channel will have a double (i.e., primary and secondary) containment system for diesel and oil fluids. All work will comply with the CDFW Fish Screening Criteria (CDFW 2001) or NMFS Fish Screening Criteria for Anadromous Salmonids (NOAA 2022). Pump intakes will be covered with mesh, in accordance with the requirements of current fish screening criteria (approximately 3/32 inch max diameter), to prevent potential entrainment of fish or other aquatic species that could not be removed from the area to be dewatered. The pump intake will be checked periodically for impingement of fish or other aquatic species. Diverted flows must be of sufficient quality and quantity, and of appropriate temperature, to support existing fish and other aquatic life both above and below the diversion. Pre-project flows must be restored to the affected surface waterbody on completion of work at that location. Where diversions are planned, contingency plans will be developed that include oversight for breakdowns, fueling, maintenance, leaks, etc.
USFWS-IWW-07	Fish and Aquatic Species Exclusion While Installing Diversion Structures	Fish and other aquatic species will be excluded from occupying the area to be dewatered by blocking the stream channel above and below with fine-meshed block nets or screens, based on the site 75 conditions, while cofferdams and other diversion structures are being installed. Block net mesh will be sized to ensure that aquatic species upstream or downstream do not enter the areas proposed for dewatering. Mesh will be no greater than 1/8-inch diameter. The bottom of the net must be completely secured to the channel bed. Block nets or screens must be checked at least twice daily at the beginning and end of the workday and cleaned of debris to permit free flow of water. Block nets or screens will be placed and maintained throughout the dewatering period at the upper and lower extent of the areas where aquatic species will be removed. Net placement is temporary and will be removed once dewatering has been accomplished, or construction work is complete for the day. Pump intakes will be covered with mesh, in accordance with the requirements of current NMFS fish screening criteria (approximately 3/32 inch max diameter), to prevent potential entrainment of fish or other aquatic species that could not be removed from the area to be dewatered. The pump intake will be checked periodically for impingement of fish or other aquatic species. All work will comply with the CDFW Fish Screening Criteria (CDFW 2001) or NMFS Fish Screening Criteria for Anadromous Salmonids (NOAA 2022).
USFWS-IWW-08	Removal of Diversion and Barriers to Flow	On completion of construction activities, any diversions or barriers to flow will be removed in a manner that will allow flow to resume with the least disturbance to the substrate. Alteration of creek beds will be minimized; any imported material that is not part of the project design will be removed from stream beds on completion of the project.
USFWS-SPM-AMP-01	Wildlife Passage Design	For projects that include the installation, repair, or replacement of permanent or temporary fencing (e.g., security, landscape, or privacy fencing) fencing will be designed to allow for permeability; it will incorporate a minimum 6-inch gap at regular intervals to allow for covered amphibians to disperse between upland and breeding habitat. This measure is not applicable to ESAF or WEF specified as part of construction activities to protect habitats or exclude wildlife from the work areas. Facilities such as curbs, drainages, culverts, and fence "footers" will be designed with gradually sloped sides or intermittent gaps to facilitate wildlife movement.
USFWS-SPM-AMP-02	Rain Event Limitations	To the maximum extent practicable, construction activities will be restricted to periods of low rainfall (less than 0.5 inch per 24-hour period) and periods of dry weather (with less than a 50% chance of rain). During these restricted periods, no construction activities will occur between 30 minutes prior to sunset and 30 minutes after sunrise (no night work during rain events). If rain exceeds 0.5 inch during a 24-hour period, work will cease until no further rain is forecast. Construction activities halted due to precipitation may resume when precipitation ceases and the National Weather Service 72-hour weather forecast indicates less than a 50% chance of 0.5 inch of rain or less during a 24-hour period. Before construction activities resume, a Qualified Biologist will inspect the project area and all equipment/materials for the presence of Covered Species of amphibians.

USFWS-SPM-AMP-03	Preconstruction Survey	If covered amphibians are present or assumed present,* no more than 24 hours prior to the date of initial ground disturbance and vegetation clearing, a USFWS-Approved Biologist will walk in the project site to investigate all potential areas that could be used by the Covered Species of amphibians (as identified in Table 5) for feeding, breeding, sheltering, movement, and other essential behaviors. If a covered amphibian species is encountered during the survey, the Project Proponent will refer to and follow procedures described below in AMP-9, Encounters with Species; and AMP-10, Species Observations and Handling Protocol, for passively allowing the species to move out of the work area or actively relocating the species out of harm's way. Proposed restoration projects that may need to actively relocate amphibians out of harm's way will require the Project Proponent to submit a projectspecific species relocation plan for USFWS review and approval, as described in AMP-10. Footnote: * The Project Proponent will assume a species is present in an area when suitable habitat is present within the current range of the species and their absence has not been determined by a negative finding using protocol level surveys.
USFWS-SPM-AMP-04	Disease Prevention and Decontamination	To prevent disease conveyance among work sites during project implementation, the USFWS-Approved Biologist will ensure that the decontamination protocols described in CDFW, Aquatic Invasive Species Disinfection/ Decontamination Protocols (CDFW 2016 or latest version) will be implemented prior to gear and equipment arriving at or moving between work sites and will be followed at all times. A copy of the code of practice must be available at the project site.
USFWS-SPM-AMP-05	Lighting	In addition to GPM-3, Construction Hours, artificial lighting at a project site will be prohibited to the maximum extent practicable during the hours of darkness, except when necessary for driver or pedestrian safety.
USFWS-SPM-AMP-06	Clearing and Grubbing Vegetation	A USFWS-Approved Biologist will be present during all vegetation clearing and grubbing activities in areas within the currently occupied range of Covered Species of amphibians where suitable habitat is present. Before vegetation removal, the USFWS-Approved Biologist will thoroughly survey the area for these species (see AMP-3, Preconstruction Survey). Either vegetation in sensitive areas will be cleared with handheld motorized tools (e.g., weed eaters or chainsaws) or by hand pulling; or a USFWS-Approved Biologist will walk in front of vegetation-clearing equipment. Where dense brush occurs (e.g., blackberry or periwinkle), the USFWS-Approved Biologist may direct an equipment operator to lift and shake dense vegetation with an excavator or backhoe so that the USFWSApproved Biologist can look underneath and search for amphibians. Tree stumps and roots will be left in place to avoid any ground disturbance and preserve refugia habitat, with the exception of nonnative invasive plants that could propagate from remaining vegetative material. Native branches, leaf litter, mulch, woody debris, and other vegetative trimmings may be retained and spread on site to enhance habitat, as appropriate.
USFWS-SPM-AMP-07	Pump Screens	If a waterbody is to be temporarily dewatered by pumping, intakes will be completely screened, consistent with NMFS (1997) and CDFW (2001) screening guidelines or latest updates to those guidelines (currently, where fry-sized salmonids are present, wire mesh openings no larger than 3/32 inch [2.38 mm] for woven wire or perforated plate screens, or 0.0689 inch [1.75 mm] for profile wire screens, and other relevant criteria such as limited approach velocities), to avoid entrainment or impingement of larval amphibians. The intake will be placed in a perforated bucket or another method to attenuate suction, to prevent Covered Species of amphibians from entering the pump system. Water will be returned to the water body when diversions or cofferdams are removed and flow is restored (consistent with measures in Section 2.1.5.2.2, Dewatering Activities and Aquatic Species Relocation). If no diversion or cofferdams are used during dewatering, the waterbody will be allowed to refill naturally from precipitation, runoff, or hydrological processes.

USFWS-SPM-AMP-08	Removal of Nonnative Invasive Species	Removal of any individuals of nonnative invasive species (e.g., bullfrogs, nonnative crayfish, or nonnative fishes) is encouraged as practicable to facilitate conditions for project success. The Project Proponent is responsible for ensuring that these activities comply with the California Fish and Game Code. Suspected hybrid California tiger salamander will not be removed without specific authorization from USFWS (and CDFW, in accordance with their requirements). More details on nonnative animal removal are provided below. 1. In federally-listed aquatic species occupied habitat, a USFWS-Approved Biologist will be present during removal activities. Less experienced personnel assisting with removal efforts will get confirmation of species identification of all vertebrates prior to collection and removal. 2. All individuals participating in removal activities will have training in identification of Covered Species that might be present and nonnative species proposed for removal and proper techniques for all planned removal methods prior to the initiation of removal activities. 3. Crew size, along with the amount of time spent in any given habitat area, will be kept to the minimum necessary. Repeated disturbance of any given area within a single year will be avoided unless necessary for eradication purposes. 4. To the extent feasible, both native and nonnative fauna will be examined for signs of diseases or parasites soon after capture, and any abnormalities will be photographed and documented. 5. Prior to initiation of electrofishing activities in Covered Species habitat, the names and credentials of all electrofishing crew leaders will be submitted for review and approval by USFWS. 6. The USFWS-approved electrofishing crew leader will provide training to the crew regarding potential risks associated with electrofishing and injury to Covered Species. The crew will also be trained to identify signs of injury and appropriate response. 7. Electrofishing will be conducted using the minimum pulse rate and width that is effective. Only direct or pulsed direct current will be used. In shallow waters, undercut banks, near algal mats or other areas where Covered Species can be concentrated or are more likely to come into close contact with electrofishing equipment, the amount of time spent electrofishing will be minimized. 8. If any Covered Species are immobilized by electrofishing activities, they will be carefully removed from the water body by a USFWS-Approved Biologist until activities are completed. These individuals will be held for the minimum amount of time necessary and monitored until they are completely mobile and then returned to the point of capture. 9. Handling of individuals (e.g., arroyo toad, California red-legged frog) may occur if they are inadvertently collected by net or trap, in accordance with procedures for handling in AMP-11 and FISH 3. These individuals will be released at the place of capture or will be relocated to the nearest available suitable habitat.
USFWS-SPM-AMP-09	Placement of Suitable Erosion Control Material	To prevent amphibians from becoming entangled, trapped, or injured, erosion control materials that use plastic or synthetic monofilament netting will not be used. Silt fencing can be used because it is not considered a netting and does not entangle species. This includes products that use photodegradable or biodegradable synthetic netting, which can take several months to decompose. Acceptable materials include natural fibers such as jute, coconut, twine, or other similar fibers. Following site restoration, erosion control materials such as straw wattles will not block the movement of Covered Species of amphibians.
USFWS-SPM-AMP-10	Encounters with Species	Each encounter with a covered amphibian will be treated on a case-by-case basis. If any life stage of the Covered Species of amphibian is found and these individuals may potentially be killed or injured by work activities, the following will apply: a. If a Covered Species of amphibian is detected in the project area, work activities within 50 feet of the individual that may potentially be harmed, injured, or killed will cease immediately, and the USFWS-Approved Biologist will be notified. Based on the professional judgment of the USFWS-Approved Biologist, if project activities can be conducted without harming or injuring the species, it may be left at the location of discovery and monitored by the USFWS-Approved Biologist. All project personnel will be notified of the finding, and at no time will work occur within 50 feet of a species without a USFWS-Approved Biologist present. b. Contact with the Covered Species of amphibian will be avoided, and the amphibian will be allowed to move out of the potentially hazardous situation of its own volition. Allowing a Covered Species of amphibian to move out of the potentially hazardous situation of its own volition may not be appropriate for multi-day projects because covered amphibians could stay or move back into the project site. If there is an immediate hazard or if there is no suitable, accessible habitat nearby to which the amphibian may relocate, the amphibian will be moved following approved handling protocol (see AMP-11, Species Observations and Handling Protocol). c. Not to exceed the self-imposed take limits provided in Table 4.

		The potential need to handle and relocate covered amphibian species should be evaluated during the technical assistance step shown in Figure 2.1-1. If Covered Species of Amphibian (as identified in Table 5) does not or cannot leave the work area and handling covered amphibians (as identified in Table 5) is required, capture and relocation will only be allowed in accordance with a plan developed in accordance with the guidance below and submitted to USFWS for review and approval. Although it could be submitted after the ESA Section 7(a)(2) Review Form, to avoid project delays and facilitate timely USFWS review and approval, a draft of the capture and relocation plan may be submitted with the ESA Section 7(a)(2) Review Form. The capture and relocation will be conducted by a USFWS-Approved Biologist. In addition to measures described in GPM-9, Practices to Prevent Pathogen Contamination; and AMP-5, Clearing and Grubbing Vegetation (which refers to CDFW [2016] decontamination protocols), to prevent the spread of pathogens among sites, special care should be taken to prevent transferring potential pathogens among individual animals, as described below. a. Prior to handling and relocation, the USFWS-Approved Biologist will take precautions to prevent the introduction of amphibian diseases, in accordance with the Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander (USFWS 2003). i. All dirt and debris, including mud, snails, plant material (including fruits and seeds), and algae, should be removed from nets, traps, boots, vehicle tires and all other surfaces that have come into contact with water. Cleaned items should be rinsed with clean water before leaving the work area. ii. Boots, nets, traps, etc., should then be scrubbed with either a 70% ethanol solution, a bleach solution (0.5 to 1.0 cup of bleach to 1.0 gallon of water), QUAT 128 (quaternary ammonium, use 1:60 dilution), or a 6% sodium hypochlorite 3 solution and rinsed clean with water between study sites. Cleaning equipment in the immediate vicinity of a pond or wetland should be avoided. Care should be taken so that all traces of the disinfectant are removed before entering the next aquatic habitat. iii. When working at sites with known or suspected disease problems, disposable gloves should be worn and changed between handling each animal. iv. Used cleaning materials (liquids, etc.) should be disposed of safely, and if necessary, taken back to the lab for proper disposal. Used disposable gloves should be retained for safe disposal in sealed bags. b. Disinfecting equipment and clothing is especially important when biologists are coming to the project area to handle amphibians after working in other aquatic habitats (see GPM-9 and AMP-5, which reference CDFW [2016] protocols). Covered amphibians will also be handled and assessed according to the Restraint and Handling of Live Amphibians (USGS 2001).
USFWS-SPM-AMP-11	Species Observations and Handling Protocol	Covered amphibians will be captured by hand, dip net, seine net, or other USFWS-Approved methodology, transported and relocated to nearby suitable habitat outside of the work area, and released as soon as practicable the same day of capture. Soaps, oils, creams, lotions, repellents, or solvents of any sort cannot be used on hands within two hours before and during periods when the biologist is capturing and relocating individuals. Individuals will be relocated to areas containing suitable habitat, as identified in the relocation plan. If the animal will be held in captivity for any length of time,

USFWS-SPM-ASP-01	Qualifications of the Qualified Biologist and USFWS-Approved Biologist	Biological monitoring and construction oversight will be provided by biologists at two different experience levels, depending on the activity. These two levels are described in this measure, below. In general, the Qualified Biologist will complete many tasks across species for a Proposed Restoration Project, and the USFWS-Approved Biologist will only be required for specific tasks that require additional species expertise. In some cases, the Qualified Biologist(s) may work under the guidance, direction, or supervision of the USFWS-Approved Biologist. Unless otherwise indicated in Section 2.1.5.3, Guild- and Species-Specific Protection Measures, general site surveys and biological monitoring can be conducted by a Qualified Biologist. Because the qualifications for the USFWS-Approved Biologist exceed those for the Qualified Biologist, any activity indicated as appropriate for the Qualified Biologist may also be completed by a USFWS-Approved Biologist. - Qualified Biologist: The Qualified Biologist is required to meet certain qualifications, as confirmed by the Project Proponent. Resume review by the USFWS is not required for the Qualified Biologist. Minimum qualifications for the Qualified Biologist include a bachelor's degree in biological or environmental science, natural resources management, or related discipline; field experience in the habitat types that may occur at the project site; familiarity with the Covered Species (or closely related species) that may occur at the project site; and prior preconstruction survey, construction monitoring, or construction oversight experience (if and as relevant to the activity to be conducted). - USFWS-Approved Biologist: For some Covered Species, additional qualifications may be required for biologists who would be responsible for species handling or relocation, or other activities (Section 2.1.5.3, Guild- and Species-Specific Protection Measures). These activities would be completed by the USFWS-Approved Biologist when required by the protection measures. Resume(s) for the USFWS-Approved Biologist(s) with experience in the identification of all life stages and ecology of the applicable Covered Species (or closely related species) and their critical habitat will be submitted to the USFWS Field Office for review and approval at least 30 days prior to any activity for which the protection measures indicate that a USFWS-Approved Biologist is required. Because species handling and relocation of some species for proposed restoration projects would be authorized by USFWS through issuance of the PBO and associated ITS, it may not be a requirement for the USFWS-Approved Biologist to hold a federal Section 10(a)(1)(A) Recovery Permit to implement this role on an approved project under this program. However, it is noted that some presence/absence surveys that may be performed by a USFWS-Approved Biologist may require that the person conducting those surveys hold a Section 10(a)(1)(A) Recovery Permit. For any surveys, securing/confirming necessary 10(a)(1)(A) permits and other authorizations should be coordinated with the respective USFWS Field Office or S7 Delegated Authority Program (DAP).
USFWS-SPM-ASP-02	Preconstruction Surveys	If Covered Species and/or their habitat is present, where appropriate and based on project-specific requirements, a Qualified Biologist will conduct visual preconstruction surveys and implement additional protection measures within 5 days prior to beginning work to protect the species and habitat from avoidable construction-related disturbance. The intent of the survey is to assess current species habitat and species use locations in the project area immediately prior to construction. The preconstruction survey is not intended to be a presence/absence or protocol-level survey; the potential for species presence would have already been evaluated prior to project approval. Pre-construction surveys may be phased across a construction site if construction in different areas will occur at different times; only areas where disturbance is imminent need be surveyed. If construction activities at a given location cease for more than 5 consecutive days, and there is potential for Covered Species to reoccupy habitat at that site, the Qualified Biologist will resurvey the project area prior to resuming construction and implement applicable protection measures. Additional guild- and species-specific preconstruction requirements are provided in Section 2.1.5.3, Guild- and Species-Specific Protection Measures, and may supersede this more GPM, as applicable.
USFWS-SPM-ASP-03	Species Capture, Handling, and Translocation	Covered Species capture, handling, and translocation will only be conducted by a USFWS-Approved Biologist(s). The Project Proponent will prepare a Covered Species translocation plan to be reviewed and approved by the USFWS Field Office as part of the ESA Section 7(a)(2) Review Form. The plan will include capture and translocation methods, translocation site, and post translocation monitoring, if applicable. Additional measures are defined in Section 2.1.5.3, Guild- and Species-Specific Protection Measures. If capture, handling, and translocation are necessary due to dewatering activities, see IWW-6, Dewatering/Diversion, and follow the USFWS-Approved translocation plan. Additional guild- and species-specific capture, handling, and translocation requirements are described in Section 2.1.5.3, Guild- and Species-Specific Protection Measures, and may supersede this more GPM, as applicable.
USFWS-SPM-ASP-04	Covered Species Entrapment Prevention	To prevent the accidental entrapment of Covered Species during construction, all excavated, steep-walled holes or trenches will be covered with appropriate covers (e.g., plywood, thick metal sheets, or similar materials) at the end of each workday. Covers will be placed so that trench edges are fully sealed with rock bags, sand, or other appropriate material. Alternatively, one or more escape ramps (e.g., fill dirt or wood planking) will be installed at an angle no greater than 30 degrees, to allow wildlife to escape. Before holes or trenches are filled, sealed, or collapsed, the holes or trenches will be thoroughly inspected for trapped animals. If pipes are stored on site or in associated staging areas, they will be capped when not in use or stored above ground level at an appropriate height to minimize species entrapment and will be inspected before being moved. Any animals discovered will be allowed to escape voluntarily or will be relocated by a USFWS-Approved Biologist. Additional guild- and species-specific entrapment prevention requirements are described in Section 2.1.5.3, Guild- and Species-Specific Protection Measures, and may supersede this more GPM, as applicable.

USFWS-SPM-ASP-05	Airborne Noise Reduction	Equipment (including the noise abatement systems) will be maintained in good working order. If construction noise has the potential to adversely affect Covered Species, the Project Proponent will include site-specific protection measures for construction activities in the Project ESA Section 7(a)(2) Review Form to minimize impacts. Muffler (or spark arrester) damage must be promptly remedied. Potential adverse effects from project-related noise should be avoided or minimized to the maximum extent practicable by implementing sufficient disturbance buffers between noisegenerating project activities and covered amphibian, bird, and mammal species habitat. When applicable, species-specific noise buffer distances are provided in Section 2.1.5.3, Guild and Species-Specific Protection Measures. Noise buffer distances are distinct from other indicated buffer distances in Section 2.1.5.3, which may relate to an area involving dispersal, visual disturbance, or other considerations; however, incorporating the larger of two buffer distances will provide buffer for both purposes. Noise buffer distances may be modified in coordination with the USFWS Field Office based on project specific characteristics or a Project Proponent/Action Agency may choose to submit their own analysis and buffer recommendations for the USFWS's consideration. If sufficient buffers cannot be implemented, the proposed activities may lead to adverse effects, including possible incidental take.
USFWS-SPM-AWS-01	Habitat Avoidance and Work Window	Ground disturbance and vegetation clearing in scrub/chaparral habitat will be avoided to the maximum extent possible. Project activities **except revegetation** in suitable habitat in the currently occupied range of the species where Alameda whipsnake is known to be or may be present will be confined to April 1 through October 31.* To the extent practicable, all rock outcrops will be avoided. Not to exceed the self-imposed take limit of injury or mortality to no more than four adults or juveniles/hatchlings annually. The self-imposed take limit also requires no net loss of habitat through the protection measures and/or offsetting impacts with habitat restoration or enhancement. Footnote: * Extended or alternative work windows may be considered on an individual project basis with prior approval from USFWS ES, provided the Project Proponent can demonstrate that measures implemented to avoid or minimize exposure would do so at a level commensurate with the standard work windows.
USFWS-SPM-AWS-02	Daily Timing Restrictions	To avoid or minimize effects on the Alameda whipsnake and its habitat, construction and ground disturbance will occur only during daytime hours, will cease no less than 30 minutes before sunset, and may not begin again earlier than 30 minutes after sunrise. If nighttime work is needed, the Project Proponent should explain in the ESA Section 7(a)(2) Review Form why it is needed, along with any additional protection measures that may be appropriate, for review and approval by the USFWS Field Office. A Qualified Biologist will inspect the site prior to vehicle operation and will monitor construction activities.
USFWS-SPM-CRLF-CTS-01	Work Windows	For the California red-legged frog and California tiger salamander, project activities in uplands **except for revegetation** will be confined to May 1 through October 31, unless there is a rain event forecast likely to generate measurable fall, rain of 1 inch or greater, at which time work will cease for the fall season. For project activities in occupied aquatic breeding habitat, grading and other disturbance will avoid the breeding season and will be limited to between July 1 and October 31, unless preconstruction surveys and monitoring demonstrate that young-of-year (recently metamorphosed) amphibians have dispersed from the breeding habitat. In that case, based on the recommendation of the USFWS-Approved Biologist, and with written approval from the USFWS (e.g., email), the Project Proponent may proceed with work in aquatic breeding habitat prior to July 1. Work in a pool or wetland may also begin before July 1 if the pool or wetland has been dry for a minimum of 30 days before initiating work. Not to exceed the self-imposed take limits in Table 5 Covered Species - Amphibians.
USFWS-SPM-CRLF-CTS-02	Nonnative Animal Removals	During electrofishing activities, in or near California red-legged frog occupied habitat, a USFWS-Approved Biologist will precede the electrofishing crew and survey for California red-legged frogs. If any California red-legged frogs are detected, they will be captured and held outside the waterbody until the electrofishing activities at that location have been completed. All individuals would then be immediately returned to the point of capture. California red-legged frog tadpoles will not be removed from habitat during electrofishing. If a tadpole is shocked then it should be captured (e.g., placed in shallow container) and monitored until it regains function, and then released at point of capture. If it does not regain function then should be reported as a mortality. If California red-legged frogs are detected but escape capture, the USFWS-Approved Biologist will determine measures for avoiding or minimizing impacts to individuals (i.e., leave the area or limit the duration of shocking pulses).
USFWS - NYLF-MYLF-FYLF-1	Work Windows	For projects where the Sierra Nevada yellow-legged frog, mountain yellow-legged frog, and foothill yellow-legged frog are known or assumed to occur, project activities **except for revegetation** in uplands areas will be confined to August 1 through October 31. Not to exceed the self-imposed take limits in Tables 4 and 5. For project activities in occupied aquatic breeding habitat that typically dries before the end of autumn, grading and other disturbance will be confined to May 1 through November 15, and to when the breeding habitat feature (or portion of the feature where work would occur) has been dry for a minimum of 30 days before initiating work. These frogs have a multi-year larval development stage and are present in aquatic breeding habitat year-round. Therefore, project activities in occupied aquatic breeding habitat that does not dry before the end of autumn will be confined to May 1 through November 15 and will require a USFWS-Approved capture and relocation plan (see AMP-11, Species Observations and Handling Protocol) prior to initiating grading and other disturbance in the aquatic breeding habitat. Dewatering sites will be located and timed to avoid and minimize adverse effects to instream flows and depletion of pool habitat.
USFWS-SNYLF-MYLF-FYLF-2	Water Temperature	Project activities will not result in long-term deleterious changes to water temperatures in occupied or potential habitat.

USFWS-SPM-FISH-01	Habitat Disturbance Avoidance and Minimization	Disturbance to aquatic habitat for covered fish species will be avoided and/or minimized to the maximum extent practicable, unless the purpose of the project is to provide overall benefits to the species and the benefits are greater than any temporary impacts to habitat.
USFWS-SPM-FISH-02	Habitat Assessment and Surveys	For projects that may result in impacts to aquatic habitat within the range of covered fish species, no less than 30 days prior to construction of the project, the Project Proponent will evaluate the potential for covered fish species to be present in the project area. The evaluation may be based on existing information if sufficiently available, or the Project Proponent may conduct a habitat assessment or focused survey for those species, if appropriate. An example where it may not be appropriate to conduct a survey is when electrofishing or seining could result in mortality (e.g., mortality of tidewater goby), and it is preferred to assume species presence. The habitat assessment and/or survey will be conducted in potentially suitable aquatic habitat within 300 feet of the proposed project. The Qualified Biologist will conduct the habitat assessment and/or fish survey and will adhere to the standards provided in the CDFW California Salmonid Stream Habitat Restoration Manual 4th Edition Volume I: Section IV (CDFW 2010). If Covered fish species are observed during the survey or the habitat is otherwise potentially occupied, based on the results of the habitat assessment or existing information, the Project Proponent will implement FISH-3, Fish Capture and Relocation, as described below.
USFWS-SPM-FISH-03	Fish Capture and Relocation	For projects that require dewatering of other non-fish-laden habitat for the covered fish species (as identified in FISH-2), fish capture and relocation would be the most protective approach to managing fish during construction, then a fish capture and relocation plan will be developed and submitted to the appropriate USFWS Office for approval as part of the ESA Section 7(a)(2) Review Form submittal. The plan will describe the biologist's qualifications, capture methods, capture and relocation work areas, and reporting requirements, including details in the list below. If capture and relocation is not feasible or would not be the most protective approach to managing fish in the work area (e.g., if dewatering is not needed or appropriate; or if fish are in a large, unconfined waterbody), other methods to protect covered fish species (e.g., timing restrictions around season and tide, or bubble curtains) should be detailed in a plan and submitted to USFWS for approval. It is recommended that the capture and relocation plan be submitted with the ESA Section 7(a)(2) Review Form to avoid delays. a. This plan will incorporate the latest USFWS and NMFS guidance relating to the capture and relocation of fish, as applicable. b. Procedures for decontamination of any equipment used in the capture and relocation of fish will be identified. c. Prior to the implementation of capture and relocation activities, relocation (or release) sites will be identified by the USFWS-Approved Biologist, based on proximity, access, habitat suitability, and potential to be affected by construction-related disturbance. Suitable habitat for relocation sites will be in the same watershed/subwatershed basin where fish were originally captured. One or more of the following methods will be used to capture protected fish species: electrofishing, dip net, seine, throw net, minnow trap, and hand. d. Fish relocation will only be conducted (or led) by a USFWS-Approved Biologist. If a USFWS-Approved Biologist is needed, the Project Proponent will submit the biologist's qualifications to the appropriate USFWS Office for approval 30 days prior to project construction. The USFWS-Approved Biologist will have knowledge and experience in fish biology and ecology; fish/habitat relationships; biological monitoring; handling, collecting, and relocating fish; or other relevant experience. e. Residual surface water associated with the diverted or dewatered habitat will be monitored or sampled for the presence of fish by a USFWS-Approved Biologist as soon as the waters are isolated. If a Covered Species of fish is observed in the isolated habitat, they will be immediately captured and relocated to the suitable habitat outside of the construction area, but in the same water basin, by the USFWS-Approved Biologist, in accordance with the approved fish capture and relocation plan. f. The USFWS-Approved Biologist will relocate any stranded covered fish species to an appropriate place, depending on the life stage of the fish and consistent with the USFWSApproved rescue and relocation plan. g. The USFWS-Approved Biologist will note the number of individuals observed in the affected area, the number of individuals relocated, the approximate size of individuals, the location of capture and release, any instances of injury or mortality, and the date and time of the collection and relocation. This information will be reported to the appropriate USFWS Office within 7 days of completion
USFWS-SPM-FISH-04	Reporting	The USFWS-Approved Biologist will provide a written summary of work performed (including biological survey and monitoring results), BMPs implemented (e.g., use of biological monitoring, flagging of work areas, or erosion and sedimentation controls), and supporting photographs of each stage to the appropriate USFWS Office. Furthermore, the documentation describing Covered Species surveys and relocation efforts (if appropriate) will be completed in accordance with the requirements of FISH-3, Fish Capture and Relocation.

USFWS-SPM-REP-01	Preconstruction Survey	A Qualified Biologist will conduct preconstruction surveys for the target reptile species within 72 hours prior to any initial ground disturbance in all suitable habitat in or adjacent to the project site and accessible to the Project Proponent, to identify locations where covered reptiles may be present, evaluate current activity status in the project area, and protect the species and its habitat from avoidable construction-related disturbance. The intent of the survey is to assess current species habitat and use locations in the project area immediately prior to construction. The preconstruction survey is not intended to be a presence/ absence or protocol-level survey; the potential for species presence would have already been evaluated prior to project approval. Preconstruction surveys may be phased across a construction site if construction in different area will occur at different times; only areas where disturbance is imminent need be surveyed. The project area will be reinspected by a Qualified Biologist whenever a lapse in construction activity of 5 days or greater has occurred.
USFWS-SPM-REP-02	Environmentally Sensitive Areas and Wildlife Exclusion	If WEF is used (see GPM-7, Environmentally Sensitive Areas and Wildlife Exclusion for further details), the following applies: - For the San Francisco garter snake, WEF will be established in the uplands immediately adjacent to aquatic snake habitat (e.g., waterbodies, including ponds, wetlands, and riparian areas) and extending up to 200 feet from construction activities. - For the giant garter snake, WEF will be installed prior to the start of ground-disturbing activities and after aquatic habitat (e.g., waterbodies, including ponds, wetlands, and riparian areas) has been dewatered (if applicable). The fencing will be inspected by a Qualified Biologist before the start of each workday and maintained by the Project Proponent until completion of the project. The fencing will be removed after all construction equipment is removed from the project site. To prevent reptiles from becoming entangled, trapped, or injured, fencing materials that include plastic or synthetic monofilament netting will not be used. Acceptable materials include natural fibers such as jute, coconut, twine, or other similar fibers.
USFWS-SPM-REP-03	Clearing and Grubbing Vegetation	A Qualified Biologist will be present during all vegetation clearing and grubbing activities in areas where the Covered reptiles (as identified in Table 6) are confirmed to occur, or where measures are being implemented based on presence of suitable habitat. Before vegetation removal, the Qualified Biologist will thoroughly survey the area for these species. Vegetation in sensitive areas will be cleared by handheld motorized tools (e.g., weed eaters or chainsaws) or by hand pulling, unless alternate methods are proposed by the Project Proponent and approved by USFWS. Tree stumps and roots will be left in place to avoid any ground disturbance and preserve refugia habitat, with the exception of nonnative invasive plants that could propagate from remaining vegetative material. Native branches, leaf litter, mulch, woody debris, and other vegetative trimmings may be retained and spread on site to enhance habitat as appropriate.
USFWS-SPM-REP-04	Prohibited Use of Rodenticides	No rodenticides will be used at the project site during construction in areas that support suitable habitat for the Covered reptiles.
USFWS-SPM-REP-05	Species Observations and Encounters	Each Proposed Restoration Project with the potential to encounter a Covered Species of reptile will submit a rescue and relocation plan to USFWS for review and approval at least 30 days before initiating construction. It is recommended that the rescue and relocation plan be provided as part of the ESA Section 7(a)(2) Review Form to reduce potential delays. General guidance to be considered during plan development is as follows: 1) leave the uninjured animal if it is not in danger; or 2) move the animal to a nearby location if it is in danger as described in REP-6, Species Handling and Relocation. These options are further described as follows: - When a protected reptile is encountered in the project area, the priority is to stop all activities in the surrounding area that have the potential to result in the harm, injury, or death of the individual. The USFWS-Approved Biologist then needs to assess the situation to select the course of action that will minimize adverse effects to the individual. - Avoid contact with the animal and allow it to move out of the project footprint and hazardous situation on its own, to a safe location. This guidance only applies to situations where an animal is encountered while moving through habitat and under conditions that will allow it to escape. This does not apply to animals that are uncovered or otherwise exposed or in areas where there is not enough adjacent habitat to support the life history of the protected reptiles if they move outside the construction footprint. - Avoidance is the preferred option if the animal is not moving or is in some sort of burrow or other refugia. In this case, the area will be well marked for avoidance by construction equipment, and a USFWS-Approved Biologist will be assigned to the area when work is taking place nearby. If avoidance is not practicable or safe for the Covered reptile species, the Project Proponent will implement REP6.

USFWS-SPM-REP-06	Species Handling and Relocation	A protected reptile will only be captured and relocated when that is the only option to prevent its death or injury, and after all attempts to avoid interaction of the species have been exhausted, as described in REP-5, Species Observation and Encounters. Project-specific rescue and relocation plans will be submitted by the Project Proponent and pre-approved by USFWS. General guidance for handling and relocation is as follows: - If appropriate habitat is immediately adjacent to the capture location, then the preferred option is short-distance relocation to that habitat. A snake will not be moved outside of the area where it could have traveled on its own. Captured snakes will be released in appropriate cover as close to their capture location as possible for their continued safety. Under no circumstances will an animal be relocated to another property without the property owner's written permission. It is the Project Proponent's responsibility to arrange for that permission. - The release locations must be pre-identified in the Project-specific rescue and relocation plan approved by USFWS; they will depend on where the individual was found and the opportunities for nearby release. In most situations, the release location is likely to be into the mouth of a small burrow, other suitable refugia, or suitable habitat. - Only a USFWS-Approved Biologist for the project can capture protected reptiles.
USFWS-VHDR-01	Avoidance of Vegetation Disturbance	The Project Proponent will minimize the amount of soil, terrestrial vegetation, emergent vegetation, and submerged vegetation (e.g., eelgrass and kelp in marine areas, or submerged aquatic vegetation in freshwater areas) disturbed during project construction and completion by using methods creating the least disturbance to vegetation. Disturbance to existing grades and native vegetation, the number of access routes, the size of staging areas, and the total area disturbed by the project will be limited to the extent of all temporary and permanent impacts, as defined by the final project design. All roads, staging areas, and other facilities will be placed to avoid and limit disturbance to aquatic habitat suitable for Covered Species (e.g., streambank or stream channel, and riparian habitat). Existing ingress or egress points will be used and/or work will be performed either from the top of the banks, from barges on the waterside of the stream or levee bank, or from dry gravel beds. Existing native vegetation will be retained as practicable, emphasizing the retention of shade-producing and bank-stabilizing trees and brush with greater than 6-inch-diameter branches or trunks. Vegetation disturbance and soil compaction will be minimized by using low-ground-pressure equipment that has a greater reach than or exerts less pressure per square inch on the ground than other equipment.
USFWS-VHDR-02	Native and Invasive Vegetation Removal Materials and Methods	All invasive plant species (e.g., those rated as invasive by the Cal-IPC, or local problem species) will be removed from the project site as practicable, using locally and routinely accepted management practices. Invasive plant material will be destroyed using approved protocols and disposed of at an appropriate upland disposal or compost area. Invasive plant materials stockpiled at sites known to experience flash flooding outside the flood season will be removed within 15 days of the initial creation of the stockpile, to contain the potential spread of invasive plant material. Stockpiling of invasive plant materials is prohibited during the flood seaso (typically November to April). Nonnative Plant Removal 1. When practicable, nonnative plants will be removed when flowers or seeds are not present. If flowers or seeds are present and have the potential for seed to be widely dispersed during removal (e.g., Spanish broom [Spartium junceum] and eupatory [Ageratina adenophora]), the flowering head will be removed and placed in a container for disposal prior to removal. 2. Whenever practicable, nontarget vegetation will be protected in order to minimize the creation of exposed ground and potential for re-colonization of nonnative plants. A botanist will be consulted prior to any restoration implementation and during preparation of restoration plans. 3. Where appropriate, barriers will be installed to limit illegal off-highway vehicle activity following removal of nonnative vegetation along roadways. Examples of barriers are large rocks, soil berms, and cut vegetation. To the extent practicable, crews in known or assumedâ occupied habitat for Covered Species will minimize multiple stream crossings for nonnative plant removal from both streambanks simultaneously (e.g., during a work period, an individual will conduct activities along one streambank for the entire stretch before initiating activities on the opposing bank). Stream crossings will use existing features such as bridges and boulders to avoid boots in the water, as much as feasible. Footnote: â Habitat will be assumed occupied when suitable habitat is present within the current range of the species and their absence has not been determined by a negative finding using protocol level surveys.

USFWS-VHDR-03	Revegetation Materials and Methods	On completion of work, site contours will be returned to preconstruction conditions or designed to provide increased biological and hydrological functions. Where disturbed, topsoil will be conserved for reuse during restoration, to the extent practicable. Native plant species comprising a diverse community structure (plantings of both woody and herbaceous species, if both are present) that follow a plant species palette approved through the ESA Section 7(a)(2) Review Form process will be used for revegetation of disturbed and compacted areas, as appropriate. See also GPM-015: Revegetate Disturbed Areas, which also allows for revegetation through natural recruitment (e.g., in tidal and managed wetlands and working landscapes where disturbed areas typically revegetate more quickly through natural recruitment than through seeding). Any area barren of vegetation as a result of project implementation will be restored to a natural state by mulching, seeding, planting, or other means, with native trees, shrubs, willow stakes, erosion control native grass seed mixes, or herbaceous plant species, following completion of project construction. Restoration planning for these areas should include steps to prevent colonization by nonnative species, including recolonization by any nonnative plant species that occupied the site prior to project implementation. Irrigation may also be required to ensure survival of containerized shrubs or trees or other vegetation, depending on rainfall. If irrigation is used, all irrigation materials will be removed once no longer needed. Soils that have been compacted by heavy equipment will be decompacted by shallow or deep ripping, if necessary to allow for revegetation at project completion as heavy equipment exits the construction area.
USFWS-VHDR-04	Revegetation Erosion Control Materials and Methods	If erosion control fabrics are used in revegetated areas, they will be slit in appropriate locations to allow for plant root growth. Only non-monofilament, wildlife-safe fabrics will be used. All exclusion netting/caging placed around plantings will be removed after 2 years or sooner.
USFWS-VHDR-05	Revegetation Monitoring and Reporting	All revegetated areas will be maintained and monitored for a minimum of 2 years after replanting is complete, or until success criteria are met, to ensure that the revegetation effort is successful. The standard for success is 60% cover compared to pre-project conditions at the project site or at least 60% cover compared to an intact, local reference site. If an appropriate reference site or pre-project conditions cannot be identified, success criteria will be developed for review and approval on a project-by-project basis, based on the specific habitat impacted and known recovery times for that habitat and geography. The Project Proponent will prepare a summary report of the monitoring results and recommendations on December 1 each year. The report will be provided to the respective USFWS Field Office (copy the Lead Action Agency).
USFWS-WQHM-01	Staging Areas and Stockpiling of Materials and Equipment	Staging, storage, and stockpile areas must be outside of habitat suitable for Covered Species unless necessary for project implementation and approved by the Action Agency and the USFWS Field Office. Where feasible, staging will occur on access roads or other previously disturbed upland areas, such as developed areas, paved areas, parking lots, areas with bare ground or gravel, and areas clear of vegetation, to avoid sensitive habitats and limit disturbance to surrounding habitats. Similarly, all maintenance equipment and materials (e.g., road rock and project spoil) will be restricted to the existing service roads, paved roads, or other determined designated staging areas. See GPM-010, Equipment Maintenance and Materials Storage, for more details regarding protection measures for materials storage. Staging areas will be established for equipment storage and maintenance, construction materials, fuels, lubricants, solvents, and other possible contaminants. Staging areas will have a stabilized entrance and exit and will be at least 100 feet from bodies of water, unless site-specific circumstances do not provide such a setback; in such cases, the maximum setback possible will be used. See also IWW-002, In-Water Vehicle Selection and Work Access; and IWW-004, In-Water Staging Areas and Use of Barges. If an off-road staging area is chosen and if Covered Species are potentially present, the Qualified Biologist will survey the selected site to verify that no sensitive resources would be disturbed by staging activities. Stockpiling of materials, portable equipment, vehicles, and supplies (e.g., chemicals), will be restricted to the designated construction staging areas. If rain is predicted in the forecast during the dry season, and stockpiled soils will remain exposed and unworked for more than 7 days, then erosion and sediment control measures must be used. If there is a high-wind scenario, then soils will be covered at all times. During the wet season, no stockpiled soils will remain exposed, unless properly installed and maintained erosion controls are in place on and around the stockpile. Temporary stockpiling of material onsite will be minimized. Stockpiled material will be placed in upland areas far enough away from Covered Species habitat that these materials cannot discharge to waters of the United States. Additional species-specific erosion control measures may also be necessary because of the potential for listed species at the project site. More detail is provided in Section 2.1.5.3, Guild and Species-Specific Protection Measures.
USFWS-WQHM-02	Storm Water Pollution Prevention Plan	All projects that are required to obtain coverage under the NPDES General Order for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Order) will prepare and implement a site-specific storm water pollution prevention plan (SWPPP), as required by the Construction General Order.

USFWS-WQHM-04	Hazardous Materials Management and Spill Response	As part of the SWPPP or Erosion Control Plan (see WQHM-002 and WQHM-003), the Project Proponent will prepare and implement a hazardous materials management and spill response plan. The Project Proponent will ensure that any hazardous materials are stored at the staging area(s) with an impermeable membrane between the ground and hazardous material, and that the staging area is designed to prevent the discharge of pollutants to groundwater and runoff water. The Project Proponent will use and store hazardous materials, such as vehicle fuels and lubricants, in designated staging areas away from stream channels and wetlands, unless otherwise approved in the ESA Section 7(a)(2) Review Form, according to local, state, and federal regulations. The Project Proponent will notify regulatory agencies within 24 hours of any leaks or spills and will properly contain and dispose of any unused or leftover hazardous products off site. Also see GPM-010, Equipment Maintenance and Materials Storage, for more detail on spill prevention.
NMFS-CC-BO-GPM-01	Receipt and Copies of All Permits and Authorizations	Work shall not begin until a) the RC and/or Corps has notified the permittee that the requirements of the ESA and Clean Water Act have been satisfied and that the activity is authorized and b) all other necessary permits and authorizations are finalized.
NMFS-CC-BO-GPM-02	Construction Work Windows	The general construction season shall be from June 15 to October 31. Restoration, construction, fish relocation and dewatering activities within any wetted or flowing stream channel shall occur only within this period. If precipitation sufficient to produce runoff is forecast to occur while construction is underway, work will cease and erosion control measures will be put in place sufficient to prevent significant sediment runoff from occurring. Exceptions regarding the construction season will be considered on a case-by-case basis only if justified and if measurable precipitation sufficient to produce runoff is not forecast to occur during any of the above activities, and if approved by the RC, Corps, and NMFS. Revegetation activities including limited soil preparation outside the active channel may occur beyond October 31 if necessary to better ensure successful plant establishment during the onset of winter precipitation.
NMFS-CC-BO-GPM-03	Environmental Monitoring	Prior to construction, the land manager and each contractor shall be provided with the specific protective measures to be followed during implementation of the project by the project proponent or lead biologist. In addition, a qualified biologist shall provide the construction crew with information on all listed species (including state-listed and state fully protected species) in the project area, the protection afforded the species by ESA and CESA, and guidance on those specific protection measures that must be implemented as part of the project.
NMFS-CC-BO-IWW-01	Dewatering/Diversion	In those specific cases where it is deemed necessary to dewater a work site that is located in aquatic habitat, the work area shall be isolated and all the flowing water upstream of the work site shall be temporarily diverted around the work site to maintain downstream flows during construction. Prior to dewatering, determine the best means to bypass flow through the work area to minimize disturbance to the channel and avoid direct mortality of fish and other aquatic vertebrates (as described more fully below under General Conditions for Fish Capture and Relocation).
NMFS-CC-BO-IWW-02	Fish Exclusion During Dewatering	Fish will be excluded from reentering the work area by blocking the stream channel above and below the work area with fine-meshed net or screens. Mesh will be no greater than 1/8-inch diameter. The bottom of the seine must be completely secured to the channel bed to prevent fish from reentering the work area. Exclusion screening must be placed in areas of low water velocity to minimize fish impingement. Upstream and downstream screens must be checked daily (prior to, during, and after instream activities) and cleaned of debris to permit free flow of water. Block nets shall be placed and maintained throughout the construction period at the upper and lower extent of the areas where fish will be removed. Block net mesh shall be sized to ensure salmonids upstream or downstream does not enter the areas proposed for dewatering between passes with the electro-fisher or seine.
NMFS-CC-BO-IWW-03	Qualified Biologist for Fish Exclusion During Dewatering	Coordinate project site dewatering with a qualified biologist to perform fish and amphibian relocation activities. The qualified biologist(s) will possess all valid state and federal permits needed for fish relocation and will be familiar with the life history and identification of salmonids, state-listed fish, and listed amphibians within the action area.
NMFS-CC-BO-IWW-04	Aquatic Species Relocation Prior to Dewatering	Prior to dewatering a construction site, qualified individuals will capture and relocate fish and amphibians to avoid direct mortality and minimize take. This is especially important if listed species are present within the project site.
NMFS-CC-BO-IWW-05	Stream Channel Below Dewatering	Bypass stream flow around the work area, but maintain the stream flow to channel below the construction site.
NMFS-CC-BO-IWW-06	Time Frame of Dewatering	Minimize the length of the dewatered stream channel and duration of dewatering.
NMFS-CC-BO-IWW-07	Temporary Dam or Obsutruction Construction	Any temporary dam or other artificial obstruction constructed shall only be built from materials such as sandbags or clean gravel that will cause little or no siltation. Impenetrable material shall be placed over sandbags used for construction of cofferdams construction to minimize water seepage into the construction areas. The impenetrable material shall be firmly anchored to the streambed to minimize water seepage. Cofferdams and the stream diversion systems shall remain in place and fully functional throughout the construction period.

NMFS-CC-BO-IWW-08	Cofferdams with Bypass Pipes Monitoring	When cofferdams with bypass pipes are installed, debris racks will be placed at the bypass pipe inlet. Bypass pipes will be monitored a minimum of two times per day, seven days a week, during the construction period. The contractor or project applicant shall remove all accumulated debris.
NMFS-CC-BO-IWW-09	Bypass Pipe Size	Bypass pipe diameter will be sized to accommodate, at a minimum, twice the existing summer baseflow.
NMFS-CC-BO-IWW-10	Pumping Procedures during Dewatering	The work area may need to be periodically pumped dry of seepage. Place pumps in flat areas, well away from the stream channel. Secure pumps by tying off to a tree or stake in place to prevent movement by vibration. Refuel in an area well away from the stream channel and place fuel absorbent mats under pump while refueling. Pump intakes shall be covered with appropriate sized screening material to prevent potential entrainment of fish or amphibians that failed to be removed. Check intake periodically for impingement of fish or amphibians.
NMFS-CC-BO-IWW-11	Procedures for Pumped Water from Dewatering	If pumping is necessary to dewater the work site, procedures for pumped water shall include requiring a temporary siltation basin for treatment of all water prior to entering any waterway and not allowing oil or other greasy substances originating from the contractor or project applicants operations to enter or be placed where they could enter a wetted channel. Projects will adhere to currently approved CDFW and NMFS Fish Screening Criteria (NMFS 2011): circular screen face openings not to exceed 3/32 inch in diameter; slotted screens must not exceed 1/16 inch in the narrow direction; square screen face openings must not exceed 3/32 inch on a diagonal.
NMFS-CC-BO-IWW-12	Discharge of Wastewater	Discharge wastewater from construction area to an upland location where it will not drain sediment-laden water back to the stream channel.
NMFS-CC-BO-IWW-13	Removal of Diversion and Barriers to Flow	When construction is completed, the flow diversion structure shall be removed as soon as possible in a manner that will allow flow to resume with the least disturbance to the substrate. Coffer dams will be removed so surface elevations of water impounded above the cofferdam will not be reduced at a rate greater than one inch per hour. This will minimize the risk of beaching and stranding of fish as the area upstream becomes dewatered.
NMFS-CC-BO-IWW-14	Fish Relocation and Dewatering Work Window	Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year. If precipitation sufficient to produce runoff is forecast to occur while construction is underway, work will cease and erosion control measures will be put in place sufficient to prevent significant sediment runoff from occurring. Exceptions on the fish relocation/dewatering time period will be considered on a case-by-case basis only if justified and if precipitation sufficient to produce runoff is not forecast to occur during any of the above activities, and if approved by the RC, Corps and NMFS. If the channel is expected to be seasonally dry during this period, construction should be scheduled so that fish relocation and dewatering are not necessary.
NMFS-CC-BO-IWW-15	Capture and Relocation of Salmonids Guidelines for a Qualified Biologist	A qualified fisheries biologist shall perform all seining, electrofishing, and fish relocation activities. The qualified fisheries biologist shall capture and relocate salmonids and other native fish prior to construction of the water diversion structures (e.g., cofferdams). The qualified fisheries biologist shall note the number of salmonids observed in the affected area, the number of salmonids relocated, and the date and time of collection and relocation. The qualified fisheries biologist shall have a minimum of three years of field experience in the identification and capture of salmonids, including juvenile salmonids. The qualified biologist will adhere to the following requirements for capture and transport of salmonids: a) Determine the most efficient means for capturing fish. Complex stream habitat generally requires the use of electrofishing equipment, whereas in outlet pools, fish may be concentrated by pumping down the pool and then seining or dip netting fish. b) Notify the RC one week prior to capture and relocation of salmonids to provide RC or NMFS staff an opportunity to attend. c) Initial fish relocation efforts will be conducted several days prior to the start of construction. This provides the fisheries biologist an opportunity to return to the work area and perform additional electrofishing passes immediately prior to construction if there is water in the isolated construction area. In these instances, additional fish could be captured that eluded the previous day's efforts. If water is left in the construction area, dissolved oxygen levels sufficient for salmonid survival must be maintained. d) At project sites with high summer water temperatures, perform relocation activities during morning periods. e) Prior to capturing fish, determine the most appropriate release location(s). Consider the following when selecting release site(s): - Similar water temperature as capture location - Ample habitat for captured fish - Low likelihood of fish reentering work site or becoming impinged on exclusion net or screen. f) Periodically measure air and water temperatures and monitor captured fish. Temperatures will be measured at the head of riffle tail of pool interface. Cease activities if health of fish is compromised owing to high water temperatures, or if mortality exceeds three percent of captured salmonids.

NMFS-CC-BO-IWW-16	Fish Relocation using Electrofishing	The following methods shall be used if fish are relocated via electrofishing: 1. All electrofishing will be conducted according to NMFS' Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act (NMFS 2000). 2. The backpack electro-fisher shall be set as follows when capturing fish:Voltage setting on the electro-fisher shall not exceed 300 volts. Initial Maximum A) Voltage: 100 Volts 300 Volts B) Duration: 500 Î¼s (microseconds) 5 ms (milliseconds) C) Frequency: 30 Hertz 30 Hertz 3. A minimum of three passes with the electro-fisher shall be utilized to ensure maximum capture probability of salmonids within the area proposed for dewatering. 4. Water temperature, dissolved oxygen, and conductivity shall be recorded in an electrofishing log book, along with electrofishing settings. 5. A minimum of one assistant shall aid the fisheries biologist by netting stunned fish and other aquatic vertebrates.
NMFS-CC-BO-IWW-17	Fish Relocation using Seines	The following methods shall be used if fish are removed with seines. 1. A minimum of three passes with the seine shall be utilized to ensure maximum capture probability of all salmonids within the area. 2. All captured fish shall be processed and released prior to each subsequent pass with the seine. 3. The seine mesh shall be adequately sized to ensure fish are not gilled during capture and relocation activities.
NMFS-CC-BO-IWW-18	Relocation of Salmonids using either Electrofishing or Seining	The following methods shall be used during relocation activities associated with either method of capture (electrofishing or seining): 1. Fish shall not be overcrowded into buckets, allowing no more than 150 0+ fish (approximately six cubic inches per 0+ individuals) per 5 gallon bucket and fewer individuals per bucket for larger/older fish. 2. Every effort shall be made not to mix 0+ salmonids with larger steelhead, or other potential predators, that may consume the smaller salmonids. Have at least two containers and segregate young-of-year (0+) fish from larger age classes. Place larger amphibians in the container with larger fish. 3. Salmonid predators, including other fishes and amphibians, collected and relocated during electrofishing or seining activities shall not be relocated so as to concentrate them in one area. Particular emphasis shall be placed on avoiding relocation of predators into the salmonid relocation pools. To minimize predation of salmonids, these species shall be distributed throughout the wetted portion of the stream to avoid concentrating them in one area. 4. All captured salmonids shall be relocated, preferably upstream, of the proposed construction project and placed in suitable habitat. Captured fish shall be placed into a pool, preferably with a depth of greater than two feet with available instream cover. 5. All captured salmonids will be processed and released prior to conducting a subsequent electrofishing or seining pass. 6. All native captured fish will be allowed to recover from electrofishing before being returned to the stream. 7. Minimize handling of salmonids. However, when handling is necessary, always wet hands or nets prior to touching fish. Handlers will not wear insect repellants containing the chemical N,N-Diethyl-meta-toluamide (DEET). 8. Temporarily hold fish in cool, shaded, aerated water in a container with a lid. Provide aeration with a battery-powered external bubbler. Protect fish from jostling and noise and do not remove fish from this container until time of release. 9. Place a thermometer in holding containers and, if necessary, periodically conduct partial water changes to maintain a stable water temperature. If water temperature reaches or exceeds those allowed by CDFW and NMFS, fish shall be released and rescue operations ceased. 10. In areas where aquatic vertebrates are abundant, periodically cease capture, and release at predetermined locations. 11. Visually identify species and estimate year-classes of fish at time of release. Count and record the number of fish captured. Avoid anesthetizing or measuring fish. Also identify hatchery (clipped adipose fin) and wild fish. 12. If more than 3 percent of the salmonids captured are killed or injured, the project permittee shall contact the RC (currently Joe Pecharich (707) 575-6095 or at joe.pecharich@noaa.gov). The RC will then contact NMFS within 24 hours. 13. The purpose of the contact is to review the activities resulting in take and to determine if additional protective measures are required. All salmonid mortalities must be retained, placed in an appropriately sized, zip-sealed bag, labeled with the date and time of collection, fork length, location of capture, and frozen as soon as possible. Frozen samples must be retained until specific instructions are provided by NMFS.
NMFS-CC-BO-IWW-19	Instream Construction Work Window	Construction will occur between June 15 and October 31. Revegetation activities, including soil preparation, may extend beyond October 31, if necessary, to better ensure successful plant establishment during the onset of winter precipitation. If precipitation greater than one inch is forecast during the June 15 - October 31 work window, the RC must be notified, implementation work must stop, and erosion control BMP's must be implemented. Extensions of this work window will be considered on a case-by-case basis only if justified and if precipitation sufficient to produce runoff is not forecast to occur during any of the above activities, the effects of this action are not outside the effects analyzed in the BA, and if approved by the RC, Corps and NMFS

NMFS-CC-BO-IWW-20	Preventing Soil and Water Contamination	Debris, soil, silt, excessive bark, rubbish, creosote-treated wood, raw cement/ concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, resulting from projected related activities, shall be prevented from contaminating the soil and/or entering the waters of the State. Any of these materials, placed within or where they may enter a stream or lake, by the applicant or any party working under contract, or with permission of the applicant, shall be removed immediately. During project activities, all trash that may attract potential predators of salmonids will be properly contained, removed from the work site, and disposed of daily.
NMFS-CC-BO-IWW-23	Heavy Equipment Use for Instream Construction	Use of heavy equipment shall be avoided in a channel bottom with rocky or cobbled substrate. If access to the work site requires crossing a rocky or cobbled substrate, a rubber tire loader/backhoe is the preferred vehicle. Only after this option has been determined infeasible will the use of tracked vehicles be considered. The amount of time this equipment is stationed, working, or traveling within the creek bed shall be minimized. When heavy equipment is used, woody debris and vegetation on banks and in the channel shall not be disturbed if outside of the project's scope.
NMFS-CC-BO-IWW-24	Use or Storage of Petroleum Powered Equipment	The use or storage of petroleum-powered equipment shall be accomplished in a manner to prevent the potential release of petroleum materials into waters of the state (Fish and Game Code 5650).
NMFS-CC-BO-IWW-25	Fuel Storage, Refueling, and Servicing	Areas for fuel storage, refueling, and servicing of construction equipment must be located in an upland location.
NMFS-CC-BO-IWW-26	Equipment Maintenance Prior to Use	Prior to use, clean all equipment to remove external oil, grease, dirt, or mud. Wash sites must be located in upland locations so wash water does not flow into the stream channel or adjacent wetlands.
NMFS-CC-BO-IWW-27	Equipment Maintenance Throughout Project	All construction equipment must be in good working condition, showing no signs of fuel or oil leaks. Prior to construction, all mechanical equipment shall be thoroughly inspected and evaluated for the potential of fluid leakage. All questionable motor oil, coolant, transmission fluid, and hydraulic fluid hoses, fitting, and seals shall be replaced. The contractor shall document in writing all hoses, fittings, and seals replaced and shall keep this documentation until the completion of operations. All mechanical equipment shall be inspected on a daily basis to ensure there is no motor oil, transmission fluid, hydraulic fluid, or coolant leaks. All leaks shall be repaired in the equipment staging area or other suitable location prior to resumption of construction activity.
NMFS-CC-BO-IWW-28	Prescence of Spill Containment Materials	Oil absorbent and spill containment materials shall be located on site when mechanical equipment is in operation with 100 feet of the proposed watercourse crossings. If a spill occurs, no additional work shall commence in-channel until (1) the mechanical equipment is inspected by the contractor, and the leak has been repaired, (2) the spill has been contained, and (3) NMFS and CDFW are contacted and have evaluated the impacts of the spill
NMFS-CC-BO-WQHM-01	Preventing Erosion during Construction	When appropriate, isolate the construction area from flowing water until project materials are installed and erosion protection is in place.
NMFS-CC-BO-WQHM-02	Erosion Control Methods	Effective erosion control measures shall be in place at all times during construction. Do not start construction until all temporary control devices (straw bales with sterile, weed free straw, silt fences, etc.) are in place downslope or downstream of project site within the riparian area. The devices shall be properly installed at all location where the likelihood of sediment input exists. These devices shall be in place during and after construction activities for the purposes of minimizing fine sediment and sediment/water slurry input to flowing water and of detaining sediment-laden water on site. If continued erosion is likely to occur after construction is completed, then appropriate erosion prevention measures shall be implemented and maintained until erosion has subsided. Erosion control devices such as coir rolls or erosion control blankets will not contain plastic netting of a mesh size that would entrain, fish, reptiles or amphibians.
NMFS-CC-BO-WQHM-03	Sediment Controls Maintenance	Sediment shall be removed from sediment controls once it has reached one third of the exposed height of the control. Whenever straw bales are used, they shall be staked and dug into the ground to a minimum depth of 12 cm, and only sterile, weed-free straw shall be utilized.
NMFS-CC-BO-WQHM-04	Sediment Contamination from Construction	Sediment-laden water created by construction activity shall be filtered before it leaves the right-of-way or enters the stream network or an aquatic resource area
NMFS-CC-BO-WQHM-05	Maintenance for Storm Events	The contractor/project applicant is required to inspect and repair/maintain all practices prior to and after any storm event, at 24-hour intervals during extended storm events, and a minimum of every two weeks until all erosion control measures have been completed.

NMFS-CC-BO-WQHM-06	Stockpiling Guidelines	Minimize temporary stockpiling of material. Stockpile excavated material in areas where it cannot enter the stream channel. Prior to start of construction; determine if such sites are available at or near the project location. If nearby sites are unavailable, determine location where material will be deposited. Establish locations to deposit spoils well away from watercourses with the potential to delivery sediment into the stream network draining into current salmonid habitat, or historically supporting populations of salmonids. Spoils shall be contoured to disperse runoff and stabilized with mulch and (native) vegetation. Use devices such as plastic sheeting held down with rocks or sandbags over stockpiles, silt fences, or berms of hay bales, to minimize movement of exposed or stockpiled soils.
NMFS-CC-BO-WQHM-07	Topsoil Storage	If feasible, conserve topsoil for reuse at project location or use in other areas. End-haul spoils away from watercourses as soon as possible to minimize potential sediment delivery.
NMFS-CC-BO-WQHM-08	Instream Boulder Grade Control	When needed, utilize instream boulder grade control structures to control channel scour, sediment routing, and headwall cutting.
NMFS-CC-BO-WQHM-09	Reducing Scour from Relief Culverts or Structures	For relief culverts or structures, if a pipe or structure that empties into a stream is installed, an energy dissipater shall be installed to reduce bed and bank scour. This does not apply to culverts installed in fish-bearing tributaries.
NMFS-CC-BO-WQHM-10	Toe of Rock Slope Protection	The toe of rock slope protection used for streambank stabilization shall be placed below bed scour to ensure stability.
NMFS-CC-BO-WQHM-11	Post Construction Minimization of Erosion	Immediately after project completion and before close of seasonal work window, stabilize all exposed soil with mulch, seeding, and/or placement of erosion control blankets. Remove all artificial erosion control devices after the project area has fully stabilized. All exposed soil present in and around the project site shall be stabilized within 7 days. Erosion control devices such as coir rolls or erosion control blankets will not contain plastic netting of a mesh size that would entrain reptiles and amphibians.
NMFS-CC-BO-WQHM-12	Bare and/or Disturbed Slopes Erosion Control	All bare and/or disturbed slopes (larger than 10' x 10' of bare mineral soil) will be treated with erosion control methods such as straw mulching, netting, fiber rolls, and hydro-seed as permanent erosion control measures.
NMFS-CC-BO-WQHM-13	Straw, Mulch, or Slash as Erosion Control	Where straw, mulch, or slash is used as erosion control on bare mineral soil, the minimum coverage shall be 95% with a minimum depth of two inches.
NMFS-CC-BO-WQHM-14	Seeding as Erosion Control	When seeding is used as an erosion control measure, only natives will be used. Sterile (without seeds), weed-free straw, free of exotic weeds, is required when hay bales are used as an erosion control measure.
NMFS-CC-BO-RVM-01	Minimizing Disturbance to Riparian Vegetation	Retain as many trees and shrubs as feasible, emphasizing shade-producing and bank-stabilizing trees and brush.
NMFS-CC-BO-RVM-02	Access Points to Construction	Prior to construction, determine locations and equipment access points that minimize riparian disturbance. Pre-existing access points shall be used whenever possible. Avoid entering unstable areas, which may increase the risk of channel instability.
NMFS-CC-BO-RVM-03	Reducing Soil Compaction	Minimize soil compaction by using equipment with a greater reach or that exerts less pressure per square inch on the ground, resulting in less overall area disturbed or less compaction of disturbed areas.
NMFS-CC-BO-RVM-04	Chainsaw/Saw use in Riparian Areas	If riparian vegetation is to be removed with chainsaws, consider using saws currently available that operate with vegetable-based bar oil.
NMFS-CC-BO-RVM-05	Revegetation of Barren Stream banks	Any stream bank area left barren of vegetation as a result of the implementation or maintenance of the practices shall be restored to a natural state by seeding, replanting, or other agreed upon means with native trees, shrubs, and/or grasses. Barren areas shall typically be planted with a combination of willow stakes, native shrubs and trees and/or erosion control grass mixes.

NMFS-CC-BO-RVM-06	Use of Native Plants for Revegetation	Native plant species shall be used for revegetation of disturbed and compacted areas. The species used shall be specific to the project vicinity or the region where the project is located, and comprise a diverse community structure (plantings shall include both woody and herbaceous species).
NMFS-CC-BO-RVM-08	Platic Exclusion Fencing	All plastic exclusion netting placed around plantings will be removed and recycled after 3 years, or earlier if appropriate.

Monitoring and Maintenance Plan

Sunol Valley Fish Passage Project

The Sunol Valley Fish Passage Project (Project) is expected to allow aquatic organism passage and specifically steelhead passage upstream of the gravel quarry reach in Alameda Creek. The Project will remove the existing concrete erosion control mat (Er-Con Mat) protecting a 36" diameter Pacific Gas and Electric Company pipeline, L303. The pipeline will be removed and reburied 18 feet below the Alameda Creek bed to avoid the need for erosion protection. After construction, the Project will be evaluated with a variety of metrics. These include the Project's own objectives, and NOAA Tier 1 monitoring. This document describes how the objectives will be evaluated and how other associated monitoring data will be taken.

1 OBJECTIVES

The Project will be evaluated for success based on comparison to its objectives. Each of the projects' objectives, listed below, will be evaluated with a specific metric, listed below each objective.

Objective 1: Remove fish passage barrier by burying the L-303 pipeline deeper

- Evaluated based hydraulic modeling results of depths and velocities across the new project area post-construction in comparison to fish passage criteria.

Objective 2: Eliminate fish passage issues within the project extents (Er-Con mat, critical riffles), but not as far upstream as Irvington Tunnel Bridge

- Evaluated based hydraulic modeling results of depths and velocities across the new project area post-construction in comparison to fish passage criteria.

Objective 3: Restore a natural channel morphology through the reach that accommodates the natural Alameda Creek dynamics

- Evaluated based on as-built survey of the terrain in comparison to the design.

Objective 4: Achieve cut-fill balance (no import or export of material) to reduce project costs

- Evaluated based on as-built survey of the terrain in comparison to the design.

Objective 5: Minimize downstream sediment movement associated with pipeline lowering

- Evaluated based on as-built survey of the terrain in comparison to the design.

Objective 6: Avoid increasing 100-year flood water surface elevation

- Evaluated based on as-built hydraulic modeling

Objective 7: Revegetation with native plants

- Evaluated based on as-built vegetation

Objective 8: Opportunistic removal of invasive plant species

- Evaluated based on as-built report documenting removal of invasive plant species

2 COMPLIANCE MONITORING

Monitoring requirements are included in several of the expected permits and environmental compliance documents for the project. These include Tier 1 NOAA monitoring, which includes site passability (channel width, channel gradient, and jump height), presence of steelhead (presence/absence of diadromous fish species, life stage limited by barrier), annual operating, maintenance, and liability costs: annual for next five-year period, any changes to safety hazards, and civic or community enhancement. They also include pre and post-project photos from all

permits, 60% vegetative cover as a requirement in the USFWS Programmatic BO, dissolved oxygen and temperature monitoring prior, during, and after construction, as well as monthly visual runoff monitoring from the RWQCB, and visual pollutant and pH monitoring from the Construction General Permit (i.e. Stormwater Pollution Prevention Plan) (Table 2).

3 TIER 1 NOAA MONITORING

There are 5 elements of NOAA Tier 1 monitoring, which consist of:

1) Site Passability: channel width, channel gradient, and jump height
2) Presence of Target Fish Species: presence/absence of native fish species, life stage limited by barrier
3) Annual Operating, Maintenance, and Liability Costs: annual for next five-year period
4) Safety Hazard: describe hazard diminished or eliminated
5) Civic or Community Enhancement: changes to infrastructure, utilities or recreational facilities

Project designs have been presented to resource agencies as part of project development through 65% design. A pre-implementation survey will be conducted at the site to document conditions before barrier removal by contractor McBain Associates Applied River Sciences (McBain). The post implementation survey will be conducted by McBain soon after project implementation to document as-built conditions and metrics for fish passage including channel width, channel gradient, jump height, velocity analysis, and others as described below. McBain will conduct post-project implementation surveys annually for 3 years.

3.1 Site Passability

The pre-implementation measurements for passability metrics (channel width, gradient, and maximum jump height) will be taken pre/post project implementation at the gas pipeline and Er-Con mat. Channel width measurements will be taken immediately upstream and downstream of the existing barrier. For channel gradient, a longitudinal profile through the project reach will be determined, defined by the extent of barrier influence on channel and/or water surface slope by McBain. The maximum jump height will be identified as the largest abrupt discontinuity in the channel gradient that would require a fish to jump to transit the site. Maximum jump heights will be identified visually from the pre-and post-implementation longitudinal profile plots and then measured. Additional field measurements will identify changes to profile post-project implementation.

3.2 Presence of Target Fish Species

CCC steelhead (O. mykiss) is the keystone species for monitoring. Due to the currently limited presence of steelhead in the project reach, presence of different life stages upstream of the project reach will be inferred using Passive Integrated Transponder (PIT) tag detections of juvenile steelhead tagged by San Francisco Public Utilities Commission (SFPUC). The presence of steelhead downstream of the project site will be inferred using the video monitoring and PIT tag detections by the Alameda County Water District (ACWD). Additionally, physical capture of native fishes occurs each year via outmigrant trapping and electrofishing upstream of the project site by SFPUC along with visual redd surveys which provides abundance and productivity estimates.

Pre/post-project monitoring will be conducted at the project site to assess the impact of removing fish passage barrier at on mainstem Alameda Creek on juvenile and adult steelhead migration upstream and smolt migration downstream.

Pre-project Monitoring will determine presence or absence of CCC steelhead upstream and downstream of the project via SFPUC redd and outmigrant surveys and ACWD PIT antenna work and video monitoring downstream.

Post-project Monitoring: California Trout will work with partners in the Alameda Creek watershed to install a PIT antenna upstream of the project location in a reach that is suitable to install an antenna and is accessible and safe for maintenance. The antenna will provide PIT tag detections that will document passage efficacy with empirical observation of tagged steelhead upstream of the current barrier. PIT antenna data, paired with SFPUC and ACWD monitoring data, will inform the impact of removing the barrier through presence/absence of CCC steelhead compared to data gathered from pre-project monitoring.

Target:

- Confirmed steelhead presence upstream of project site by Year 3

In addition, CalTrout will integrate steelhead population monitoring efforts and reporting with watershed partners to help estimate abundance and run timing in Alameda Creek. CalTrout will share steelhead detections in the watershed with other monitoring groups. The data compilation and summary of presence/abundance and movement will be shared with resource agencies at Alameda Creek Fisheries Work Group Monitoring Subcommittee meetings organized by California Department of Fish and Wildlife (CDFW).

3.3 Annual Operating, Maintenance and Liability Costs

The project will remove the Er-Con mat, and therefore will require no ongoing maintenance or liability costs. Both before and after the project, PG&E will maintain the gas pipeline at the same operating, maintenance, and liability costs. The new PG&E gas pipeline will fall under PG&E existing regular operations inspections and maintenance protocol for all pipelines they maintain across the state, and PG&E will incur all costs for its upkeep moving forward.

The average 5-year operating and maintenance costs before and after the project will be calculated.

3.4 Safety Hazard

Currently, the existing PG&E gas pipeline poses no safety hazard or risk to the public. Implementation of the project will not increase risk of flooding or measurably impact structures downstream from streamflow, sediment, or other factors.

Pre-implementation: Safety hazards such at the project site are minimal, as extensive exclusion fencing for listed species including California tiger salamander keep workers from the quarries on either side of Alameda Creek out of the floodplain and channel. The existing Er-Con mat protecting the pipeline does have the potential to back up water and increase flood risk at the project site, and its removal will reduce potential flooding. This safety hazard is addressed by the project. Removal of the Er-Con mat at the site will reduce the need for entering the floodplain or creek for maintenance. Post-project implementation, the exclusion fencing at the quarry will remain in place, keeping workers and others at the quarries safe and out of the floodplain.

Post-implementation: After implementation, confirm that the identified safety hazards have been eliminated or diminished.

3.5 Community Enhancement

This project will incorporate a significant outreach and education plan to: bring youth and members of the public to the SFPUC brand new Watershed Center a couple of miles away from the project site in Sunol to learn about the watershed, its native species, and the benefits of restoration including this project. CalTrout staff will work to train educators at the Watershed Center on

importance of native fish and their life cycle, advise on curriculum development about the trout exhibit at the Center, and develop messaging and materials for an exhibit about our project.

The Project Team will confirm that the outreach and education project(s) associated with the barrier removal were completed.

4 SUMMARY OF ALL REQUIRED MONITORING & MAINTENANCE

After project construction in 2025, an as-built survey will be conducted by McBain Associates. This survey will include topographic and bathymetric surveying to determine the as-built terrain. The as-built survey will be documented in an as-built report, which will also include hydraulic modeling of the as-built terrain and an assessment of salmonid fish passage based on that as-built terrain. The as-built survey may identify deficiencies in the construction which would then be corrected in the next year if the project was not constructed according to the design or does not meet fish passage requirements. Monitoring of fish passability (channel width, gradient, and jump height) will be conducted 1 year and 2 years after the project, for a total of 3 years.

CalTrout will conduct upstream adult salmonid monitoring in Alameda Creek after construction through implementation of a PIT tag array. Currently, no steelhead can pass the barrier. These post-construction fish observations will be compared to the existing network of PIT tag arrays in the region pre-construction.

For water quality, monthly grab sample measurements of temperature and dissolved oxygen will be taken prior to construction, during construction, and for a year after construction. Visual observations of any turbid runoff will also be completed monthly during the wet season (October 1 – April 30th) if the site is accessible. These records will be documented in the as-built report as well.

Vegetative cover will be monitored with a drone photo 2 years after project construction, and compared to cover prior to the project. This and other monitoring will be reported to permitting agencies in post-construction monitoring reports. A summary of the project evaluation metrics and methods (tools) used to measure each metric is provided in Table 2.

The project is designed to restore physical and biological processes (i.e. sediment transport). In fact, it is designed to enhance in-channel dynamism in the reach, preventing a static channel maintained in place by riparian berms. Therefore, long-term maintenance of specific features is not the goal. As gravel and soil from the project is mobilized through natural processes, the Alameda Creek channel will change location. This is a natural process and part of the project purpose, rather than something to be corrected.

Post-project monitoring will be performed for 10 years after construction. Post-project monitoring reports will include monitoring data, identification and discussion of any problems, corrective measures, and any maintenance to be performed. Table 2 also includes identified maintenance triggers and actions.

Table 1: Summary Project Evaluation Metrics, Details, and Maintenance Actions

Metric	Tool	Location	Timing	Reporting	Maintenance
Adult steelhead passing upstream	PIT tag array	1 location within the Project site	During steelhead migration season, after construction – 2025 on for 10 years	Post-project Monitoring Report to NMFS	If steelhead are not observed upstream within 2 years after removal, additional fill or excavation may be required.
Juvenile steelhead presence	SFPUC outmigrant surveys	1 location within the Project site	Pre-project in spring Post-project in spring	Post-project Monitoring Report to NMFS	N/A
Site passability	As-built topography and bathymetry along with an as-built 2D hydraulic model	Er-Con Mat site	Design As-built	As-built Report	If the project does not meet fish passage criteria, additional fill or excavation may be required.
Flood reduction	As-built topography and bathymetry along with a 2D hydraulic model	Er-Con Mat site	Design As-built	As-built Report	If the project increases 100-year flood elevations upstream or downstream of the site, additional excavation may be required.
Channel Width	Measurement	Immediately upstream of Er-Con Mat, at crest of Er-Con Mat, and immediately downstream of Er-Con Mat	Pre-project As-built 1 year after 2 years after	As-built Report	N/A
Channel Gradient	2023 pre-project and As-built topography longitudinal profile	Entire Project site (extent of barrier influence on water surface slope)	Pre-project As-built 1 year after 2 years after	As-built Report	If pre and post project average channel gradients not equal, additional fill or excavation may be required.

Metric	Tool	Location	Timing	Reporting	Maintenance
Jump Height	Largest abrupt discontinuity in the channel gradient, greater than 5-10 feet of longitudinal distance, that would require a fish to jump	Er-Con Mat site	Pre-project As-built 1 year after 2 years after	As-built Report	If jumps exist post construction, additional fill or excavation may be required.
Terrain	As-built terrain in comparison to the design	Entire Project area	Design As-built	As-built Report	If the design was not followed, additional fill or excavation may be required.
Vegetation	As-built report documenting plantings and invasive plant removal	Entire Project area	As-built	As-built Report	N/A
Water Temperature	Hand-held temperature sensor or hourly-recording temperature sonde	Upstream of project and 300 feet downstream of project site	Monthly from 5/2025 – 11/2026	Post-project Monitoring Report	N/A
Dissolved Oxygen	Hand-held dissolved oxygen sensor or hourly-recording DO sonde	Upstream of project and 300 feet downstream of project site	Monthly from 5/2025 – 11/2026	Post-project Monitoring Report	N/A
Flow	USGS Gage Alameda Creek at Welch Creek	Welch Creek	Hourly 11/1/2024 – 12/31/2026	Post-project Monitoring Report	N/A
Turbidity	Hand-held H. F. Scientific Micro TPI Portable Turbidimeter or similar	Upstream of project and 300 feet downstream of project site	Monthly from 5/2025 – 11/2026	Post-project Monitoring Report	N/A
Visual turbidity / runoff monitoring	Visual inspection	Entire Project Site	Monthly during rainy season (October 1 – April 30) until Notice of Completion unless not safely accessible	Post-Construction Monitoring Report to the Central Valley RWQCB	If turbid runoff observed, implement additional BMPs per SWPPP

Metric	Tool	Location	Timing	Reporting	Maintenance
Visual Pollutant Monitoring	Eye; if any visible construction-related pollutants reach surface waters, grab samples analyzed using 40 Code of Federal Regulations (CFR) Part 136	Project site where pollutant reaches Alameda Creek	When discharge observed	Within 10 days to SMARTS Annual Report	If runoff observed, implement additional BMPs per SWPPP
pH	Hanna Instruments portable pH/EC/TDS/Temperature Meter or similar	Project site	3 times per day during a qualifying rain event	SMARTS reporting online	N/A
Project Completed	Pre-project and Post-project photos. Photos should be taken from the four cardinal directions and from established photo points for comparison to pre-project photo documentation.	Throughout site at Photopoints	2022/2023 Existing Conditions 2025/2026 As-Built	Post-construction report within 30 days to USACE per RGP 16 Post-construction Reports to USFWS and RWQCB	N/A
60% vegetative cover	Drone image & vegetative mapping from drone image	Reference site Project site	Pre-project As-built 1 year after seeding 2 years after seeding	Post-Construction Report to USFWS by December 1 Post-Project Monitoring Report to NMFS	If vegetation is less than 50% cover 1 year after seeding, replace plants / re-seed area. If less than 60% cover 2 years after seeding, re-plant or re-seed area.
Fish Relocation Data	Number of listed salmonids killed or injured, the number and size (in millimeters) of listed salmonids captured and removed	Project Site	As-Built	Post Construction Implementation Report to NOAA Restoration Center	N/A
Annual O&M, Liability Costs	Averaged over 5 years	N/A	Pre-project Post-project	Post-project Monitoring Report	N/A

Metric	Tool	Location	Timing	Reporting	Maintenance
Safety Hazard	Confirm elimination of the Er-Con mat, a potential recreation hazard	N/A	Pre-project Post-project	Post-project Monitoring Report	N/A
Civic or Community Engagement	Watershed Center exhibit and training for Center staff	N/A	Pre-project Post-project	Post-project Monitoring Report	N/A