Print Form

Appendix C

Notice of Completion & Environmental Document Transmittal

2017112068

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #

Project Title: The 2017 Fisheries Habitat Restoration Project

Lead Agency: Dept. Fish and Wildlife, Watershed Restoration Grants Branch | Contact Person: Timothy Chorey

Mailing Address: 1416 9th Street, Rm. 1266 | Phone: 916-327-8842

City: Sacramento | Zip: 95814 | County: Sacramento

Project Location: County: Various coastal counties | City/Nearest Community: Various coastal communities

Cross Streets: _____ | Zip Code: _____

Longitude/Latitude (degrees, minutes and seconds): ____° ____′ ____″ N / ____° ____′ ____″ W | Total Acres: _____

Assessor's Parcel No.: _____ | Section: _____ | Twp.: _____ | Range: _____ | Base: _____

Within 2 Miles: State Hwy #: _____ | Waterways: _____

Airports: _____ | Railways: _____ | Schools: _____

Document Type:

CEQA: ☐ NOP ☐ Draft EIR | NEPA: ☐ NOI | Other: ☐ Joint Document
☐ Early Cons ☐ Supplement/Subsequent EIR | ☐ EA | ☐ Final Document
☐ Neg Dec (Prior SCH No.) _____ | ☐ Draft EIS | ☐ Other: _____
☒ Mit Neg Dec Other: _____ | ☐ FONSI

Governor's Office of Planning & Research
After 12PM
NOV 29 2017
STATE CLEARINGHOUSE

Local Action Type:

☐ General Plan Update ☐ Specific Plan ☐ Rezone ☐ Annexation
☐ General Plan Amendment ☐ Master Plan ☐ Prezone ☐ Redevelopment
☐ General Plan Element ☐ Planned Unit Development ☐ Use Permit ☐ Coastal Permit
☐ Community Plan ☐ Site Plan ☐ Land Division (Subdivision, etc.) ☒ Other: Restoration

Development Type:

☐ Residential: Units _____ Acres _____
☐ Office: Sq.ft. _____ Acres _____ Employees _____
☐ Commercial: Sq.ft. _____ Acres _____ Employees _____
☐ Industrial: Sq.ft. _____ Acres _____ Employees _____
☐ Educational: _____
☐ Recreational: _____
☐ Water Facilities: Type _____ MGD _____
☐ Transportation: Type _____
☐ Mining: Mineral _____
☐ Power: Type _____ MW _____
☐ Waste Treatment: Type _____ MGD _____
☐ Hazardous Waste: Type _____
☐ Other: _____

Project Issues Discussed in Document:

☐ Aesthetic/Visual ☐ Fiscal ☐ Recreation/Parks ☐ Vegetation
☐ Agricultural Land ☐ Flood Plain/Flooding ☐ Schools/Universities ☐ Water Quality
☐ Air Quality ☐ Forest Land/Fire Hazard ☐ Septic Systems ☐ Water Supply/Groundwater
☐ Archeological/Historical ☐ Geologic/Seismic ☐ Sewer Capacity ☐ Wetland/Riparian
☐ Biological Resources ☐ Minerals ☐ Soil Erosion/Compaction/Grading ☐ Growth Inducement
☐ Coastal Zone ☐ Noise ☐ Solid Waste ☐ Land Use
☐ Drainage/Absorption ☐ Population/Housing Balance ☐ Toxic/Hazardous ☐ Cumulative Effects
☐ Economic/Jobs ☐ Public Services/Facilities ☐ Traffic/Circulation ☒ Other: Watershed

Present Land Use/Zoning/General Plan Designation:

Project Description: *(please use a separate page if necessary)*
This project uses grant funds approved by the California Legislature to initiate activities that are designed to restore salmon and steelhead habitat.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Revised 2010

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

____	Air Resources Board	____	Office of Historic Preservation
____	Boating & Waterways, Department of	____	Office of Public School Construction
____	California Emergency Management Agency	X	Parks & Recreation, Department of
____	California Highway Patrol	____	Pesticide Regulation, Department of
X	Caltrans District #1245	____	Public Utilities Commission
____	Caltrans Division of Aeronautics	X	Regional WQCB #1234
____	Caltrans Planning	____	Resources Agency
____	Central Valley Flood Protection Board	____	Resources Recycling and Recovery, Department of
____	Coachella Valley Mtns. Conservancy	____	S.F. Bay Conservation & Development Comm.
X	Coastal Commission	____	San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
____	Colorado River Board	____	San Joaquin River Conservancy
____	Conservation, Department of	____	Santa Monica Mtns. Conservancy
____	Corrections, Department of	____	State Lands Commission
____	Delta Protection Commission	____	SWRCB: Clean Water Grants
____	Education, Department of	X	SWRCB: Water Quality
____	Energy Commission	____	SWRCB: Water Rights
____	Fish & Game Region # ____	____	Tahoe Regional Planning Agency
____	Food & Agriculture, Department of	____	Toxic Substances Control, Department of
X	Forestry and Fire Protection, Department of	____	Water Resources, Department of
____	General Services, Department of		
____	Health Services, Department of	____	Other: ____
____	Housing & Community Development	____	Other: ____
____	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date November 30, 2017 Ending Date December 29, 2017

Lead Agency (Complete if applicable):

Consulting Firm: ____
Address: ____
City/State/Zip: ____
Contact: ____
Phone: ____

Applicant: Dept. Fish & Wildlife Watershed Restoration Grants Branch
Address: 1416 9th Street, Room 1266
City/State/Zip: Sacramento, CA 95814
Phone: 916. 327. 8842

Signature of Lead Agency Representative: ____ **Date:** 11/27/17

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

Notice of Determination

Appendix D

To:

☒ Office of Planning and Research

U.S. Mail: P.O. Box 3044, Sacramento, CA 95812-3044

Street Address: 1400 Tenth St., Rm 113, Sacramento, CA 95814

☐ County Clerk
County of: _____
Address: _____

From:

Public Agency: Department of Fish and Wildlife
Address: 1700th 9th Street, 2nd Floor
Sacramento, CA 95811
Contact: Timothy Chorey
Phone: 916-327-8842

Lead Agency (if different from above):
_____
Address: _____
Contact: _____
Phone: _____

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

State Clearinghouse Number (if submitted to State Clearinghouse): 2017112068

Project Title: The 2017 Fisheries Habitat Restoration Project

Project Applicant: California Department of Fish and Wildlife

Project Location (include county): Various coastal counties

Project Description:

This is to advise that the California Department of Fish and Wildlife (☒ Lead Agency or ☐ Responsible Agency) has approved the above described project on 2-28-18 (date) and has made the following determinations regarding the above described project.

1. The project [☐ will ☒ will not] have a significant effect on the environment.
2. ☐ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ☒ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [☒ were ☐ were not] made a condition of the approval of the project.
4. A mitigation reporting or monitoring plan [☒ was ☐ was not] adopted for this project.
5. A statement of Overriding Considerations [☐ was ☒ was not] adopted for this project.
6. Findings [☒ were ☐ were not] made pursuant to the provisions of CEQA.

This is to certify that the final EIR with comments and responses and record of project approval, or the negative Declaration, is available to the General Public at:

830 S Street, Sacramento, CA 95811

Signature (Public Agency): Matt Wells Title: Branch Chief (Acting)

Date: 2-28-18 Date Received for filing at OPR: _____

Governor's Office of Planning & Research

FEB 28 2018

STATE CLEARINGHOUSE

Authority cited: Sections 21083, Public Resources Code.
Reference Section 21000-21174, Public Resources Code.

Revised 2011

California Department of Fish and Wildlife
Fisheries Restoration Grant Program
1700 9th Street
Sacramento, CA 95814

SCH No. 2017112068
Project title: The 2017 Fisheries Habitat Restoration Project

Mitigated Negative Declaration Adoption
(Pursuant to the California Environmental Quality Act, Article 6, Section 15074)

These projects use grant funds approved by the California Legislature to initiate activities that are designed to restore salmon and steelhead habitat in coastal streams and watersheds. Years of poor land management within California's watersheds, combined with natural events have altered native habitats. These impacts have limited the ability of fish to survive and successfully reproduce in coastal streams that historically produced large populations of salmon and steelhead. These proposed projects are designed to increase populations of wild anadromous fish in coastal streams by restoring their habitat.

The projects objectives are to improve spawning success for adult salmon and steelhead as well as to increase survival for eggs, embryos, and rearing juvenile salmonids. Bank erosion and riparian enhancement treatments improve spawning conditions and embryo survival by reducing sediment yield to streams. Upslope road decommissioning or upgrading also help address these widespread problems. The replacement of migration barriers at stream crossings with bridges or natural stream bottom culverts allow adult and juvenile salmonids access to additional spawning and rearing habitats. The installation of instream habitat improvement structures recruit and sort spawning gravel for adult salmon and steelhead, and create summer rearing pool and over-wintering habitat for juveniles.

Location and custodian of the mitigated negative declaration (MND) documents:

California Department of Fish and Wildlife,
Fisheries Restoration Grant Program
1700 9th Street
Sacramento, CA 95814

Attention: Timothy Chorey
Office: (916) 327-8842
Fax: (916) 327-8854

Determination:
Initial study, mitigation measures, and MND documents have been prepared by the California Department of Fish and Wildlife (CDFW), Fisheries Restoration Grant Program (FRGP). On the basis of this study, it is determined these proposed actions with the incorporation of the identified mitigation measures will not have a significant (negative) effect on the environment for the following reasons:

The Finding:
Although these projects may have the potential to cause minor short-term impacts on soil, vegetation, wildlife, water quality, and aquatic life, the measures that shall be incorporated into the project will diminish impacts to insignificant level (see initial study and environmental checklist).

Basis for the Finding:
Based on the initial study, it was determined that there would not be significant adverse environmental effects resulting from implementing the proposed project. In addition, these projects are expected to achieve a net benefit to the environment by enhancing and maintaining quality salmonid spawning and rearing habitat in the eleven-county project area.

The CDFW finds that implementing these proposed projects will not have a significant environmental impact.

This MND consists of all of the following:

- Introduction - Project Description and Background Information
- Initial Study Environmental Checklist Form
- Explanation of Response to Initial Study Environmental Checklist Form
- Appendix A.
    - Table of Non-physical and Action Items
    - State-wide Action Items Location Maps
- Appendix B. Mitigation Measures, Monitoring and Reporting Program For the 2016 Fisheries Restoration Grant Program, the Steelhead Report and Restoration Card Program, and the Forest Land Anadromous Restoration projects
- Appendix C. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities
- Appendix D. Procedure for the Programmatic Evaluation of Paleontological Resources for the Fisheries Restoration Grant Program
- Appendix E. Procedure for the Programmatic Evaluation of Archaeological Resources for the Fisheries Restoration Grant Program

Monitoring Plan:
Project monitoring is considered an important element in the activity development and implementation process. The monitoring process provides performance control during the activity and also helps provide a measure of the benefits, insight, and guidance for future projects.

Activity during implementation is overseen by a CDFW grant manager and is geared to ensure that all regulatory environmental issues are strictly addressed including air, water, and avoiding impacts to sensitive plant and animal species. During implementation, activities are carefully monitored to make sure plans are followed and that the correct materials and techniques are used so that the objectives of the activities are met while protecting the environment.

Post-activity monitoring begins with information collected immediately after the activity is completed and documents whether the project was completed as designed and according the grant specifications. This information includes documenting the exact location where the activity has occurred with reference points and survey marks. Final project reports should contain "as-built" descriptions with design drawings and photographs (both before and after the activity) are collected. A complete activity description including the objectives of the activity must be retained.

The next phase of post-activity monitoring is designed to assess the efficacy of the project and shall occur within one to three years after an action item is complete. The CDFW shall randomly select 10 percent of the action items within each project work type for effectiveness/validation monitoring. A random sample, stratified by project type and region, shall be chosen from the pool of new restoration projects approved for funding each year. This evaluation shall be recorded on standard project evaluation forms. Effectiveness monitoring addresses the physical response associated with an activity, while validation monitoring evaluates fish response to the project. Pre-treatment monitoring shall be preformed for newly selected projects, and post-treatment monitoring will be preformed within three years following project completion.

Complete monitoring specifications are included on the CDFW's web site, http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp. Additional details on monitoring and reporting requirements are presented in Appendix B.

Adoption Statement

Pursuant to Section 21082.1 of the California Environmental Quality Act (CEQA), the CDFW has independently reviewed and analyzed the Initial Study and Negative Declaration for these proposed projects and finds these documents reflect the independent judgment of the CDFW. The CDFW, as lead agency, also confirms the project mitigation measures and monitoring plan detailed in these documents are feasible and shall be implemented as stated in the MND. The CEQA initial study findings and the MND was adopted by:

Date: 2-28-18

Matt Wells, Chief,
Watershed Restoration Grant Branch

STATE OF CALIFORNIA

THE RESOURCES AGENCY

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

MITIGATED NEGATIVE DECLARATION

FOR

THE 2017 FISHERIES HABITAT RESTORATION PROJECT IN HUMBOLDT, MARIN, MENDOCINO, MONTEREY, SAN LUIS OBISPO, SAN MATEO, SANTA BARBARA, SISKIYOU, SONOMA, AND VENTURA COUNTIES AND REQUIRED AGREEMENT REGARDING PROPOSED STREAM OR LAKE ALTERATION

Prepared By:

Fisheries Restoration Grant Program

This Report Has Been Prepared Pursuant to the
California Environmental Quality Act of 1970
State of California
The Resources Agency
California Department of Fish and Wildlife

INITIAL STUDY
AND
MITIGATED NEGATIVE DECLARATION
FOR
THE 2017 FISHERIES HABITAT RESTORATION PROJECT
IN
HUMBOLDT, MARIN, MENDOCINO, MONTEREY, SAN LUIS OBISPO, SAN MATEO, SANTA BARBARA, SISKIYOU, SONOMA, AND VENTURA COUNTIES
AND
REQUIRED AGREEMENT REGARDING PROPOSED STREAM OR LAKE ALTERATION

The Project: This project uses grant funds approved by the California Legislature to initiate activities that are designed to restore, enhance, and protect salmon and steelhead habitat in coastal and central valley streams and watersheds. Years of poor land management within California's watersheds which combined with natural events has altered native habitats. This has limited the ability of fish to survive and successfully reproduce in coastal and central valley streams that historically produced large populations of salmon and steelhead. These proposed projects are designed to increase populations of wild anadromous fish in coastal and central valley streams by restoring their habitat.

The project's objectives are to improve spawning success for adult salmon and steelhead as well as to increase survival for eggs, embryos, and rearing juvenile salmonids. Bank erosion and riparian enhancement treatments improve spawning conditions and embryo survival by reducing sediment yield to streams. Upslope road decommissioning or upgrading also help address these widespread problems. The replacement of migration barriers at stream crossings with bridges or natural stream bottom culverts allow adult and juvenile salmonids access to additional spawning and rearing habitats. The installation of instream habitat improvement structures recruit and sort spawning gravel for adult salmon and steelhead, and create summer rearing pool and over-wintering habitat for juveniles.

The Finding: Although the projects may have the potential to cause minor short-term impacts on soil, vegetation, wildlife, water quality, and aquatic life, the measures that shall be incorporated into the project will lessen such impacts to a level that is less than significant (see initial study and environmental checklist).

Basis for the Finding: Based on the initial study, it was determined there would be no significant adverse environmental effects resulting from implementing the proposed project. In addition, the project is expected to achieve a net benefit to the environment by enhancing and maintaining quality salmonid spawning and rearing habitat in the ten-county project area.

The California Department of Fish and Wildlife (CDFW) finds that implementing the proposed projects will have no significant environmental impact.

Therefore, this mitigated negative declaration is filed pursuant to the California Environmental Quality Act (CEQA), Public Resources Code § 21080 (c2). This proposed mitigated negative declaration consists of all of the following:

- **Introduction - Project Description and Background Information**
- **Initial Study Environmental Checklist Form**
- **Explanation of Response to Initial Study Environmental Checklist Form**
- **Appendix A.**
    - **Non-physical Items**
    - **Action Items**
    - **State-wide Action Items Location Maps**
- **Appendix B. Mitigation Measures, Monitoring and Reporting Program For the 2017 Fisheries Habitat Restoration Project**
- **Appendix C. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities**
- **Appendix D. Procedure for the Programmatic Evaluation of Paleontological Resources for the Fisheries Habitat Restoration Project**
- **Appendix E. Procedure for the Programmatic Evaluation of Archaeological Resources for the Fisheries Habitat Restoration Project**

DETAILED PROJECT DESCRIPTION AND BACKGROUND INFORMATION

FOR

THE 2017 FISHERIES HABITAT RESTORATION PROJECT
IN
HUMBOLDT, MARIN, MENDOCINO, MONTEREY, SAN LUIS OBISPO, SAN MATEO, SANTA BARBARA, SISKIYOU, SONOMA, AND VENTURA COUNTIES
AND
REQUIRED AGREEMENT REGARDING PROPOSED STREAM OR LAKE ALTERATION

INTRODUCTION

The 2017 Fisheries Habitat Restoration (FHR) project include Fisheries Restoration Grant Program (FRGP) projects, the Steelhead Report and Restoration Card (SHRRC) Program projects, and the Forest Land Anadromous Restoration (FLAR) projects in Humboldt, Marin, Mendocino, Monterey, San Luis Obispo, San Mateo, Santa Barbara, Siskiyou, Sonoma, and Ventura counties. These projects are subject to review under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). The FHR project involves funding, in whole or in part, of 68 habitat restoration items. These 68 restoration items are divided into 35 action items and 33 non-physical items.

The 35 action items, which are discussed in detail in the environmental analysis that follows (listed in Appendix A, Action Items) are the principal focus of the environmental analysis set forth below.

The 33 non-physical activities are implemented within various counties of the CDFW region. These non-physical items involve grants for projects such as watershed evaluation, assessment, project planning, technical training, monitoring, and public involvement. Each of these non-physical items are identified in Appendix A, Non-Physical Items. If reviewed individually, these projects would likely fall under categorical exemptions such as CEQA Guidelines § 15262 (Feasibility and Planning Studies), § 15306 (Information Collection), and § 15313 (Acquisition of Lands for Wildlife Conservation Purposes). However, as part of the FHR project, these activities are included within the analysis of this Initial Study and mitigated negative declaration (MND). Because these activities are limited to non-physical activities that would not be anticipated to result in any environmental impacts or result in significant impacts due to unusual circumstances, they would not incrementally add to any potentially significant impacts that may result from the non-physical Items. Therefore, these activities are not discussed further in the analysis.

This Initial Study and MND describe and analyze the potential significant impacts of all 68 action items and non-physical items. These 68 items represent all funding applications that have been received in response to the FHR Proposal Solicitation Notice and received initial review by CDFW. At the time this document is

being prepared, CDFW has not made final funding decisions on these items. Therefore, some of the items described in this document may not receive funding from the CDFW. This analysis includes all potential items in order to disclose the greatest possible potential impacts that could result from CDFW's implementation of the FHR project.

This Initial Study and the MND analyze the environmental impacts that might result from implementation of the proposed FHR project. The initial study and MND also serve to address potential environmental impacts that may occur to the extent an individual restoration activity requires a Streambed Alteration Agreement (SAA) from the CDFW (See Fish and Game Code, § 1600 et seq.). Construction of all or a portion of some of the individual restoration activities may actually occur in subsequent years, depending on the terms for each respective individual grant provided by the CDFW.

PROJECT GOAL AND OBJECTIVES

The primary goal of the FHR project is to maintain and restore natural watershed processes that create habitat characteristics favorable to salmonids.

The objectives of the FHR action items are to enhance the capability of streams to produce wild anadromous salmonids by maintaining, restoring, and improving stream habitat essential to salmonid production.

Finally, it is the CDFW's objective to implement this project while not causing a significant adverse effect on the environment, or reducing the number or restricting the range of an endangered, threatened, or rare species.

BACKGROUND

The CDFW may grant funds for habitat restoration to public and nonprofit organizations, and Native American tribes. Sections 1501 and 1501.5 of the Fish and Game Code and Public Resource Code 6217.1 pertain to activities funded by the CDFW.

The FRGP was established in 1981 and is administered by the CDFW. This program was initiated by the precipitous drop in the population of fish in coastal streams, mainly salmon and steelhead. This program was developed as a mechanism to administer grant funds designated for the restoration of fish populations. Through the past several decades to the present time, funds allocated by the California Legislature have been used in this grant program in an effort to rebuild fish populations (see Fish and Game Code § 6900 et seq.). Initially, grants were awarded in three categories: stream restoration, fish rearing, and education. Since 1997, a more holistic restoration approach has been emphasized that facilitates habitat enhancement throughout the watershed.

There are many factors responsible for the decline of California salmon and steelhead stocks. One important factor is the degradation of stream habitats.

Activities in watersheds including logging, mining, road building, livestock grazing, water diversions, and dam construction have seriously impacted the ability of fish to survive and reproduce. For example, excessive fine-sediment has reduced egg and fry survival, removal of riparian vegetation has contributed to increased water temperatures, habitats have been impaired by water diversions, and culverts and dams have blocked fish passage. Habitat destruction has been instrumental in drastically reducing native anadromous fish populations. Natural events such as wildfire, drought, and floods have exacerbated these problems and accelerated the alteration of habitat further. The resulting decline in fish populations has caused extreme financial hardship to a once thriving commercial fishery and drastically reduced, or in some cases eliminated, a very popular sport fishery. Poor ocean conditions resulting in the collapse of the marine food chain along with the various factors stated above has culminated in the population crash of the Central Valley Chinook salmon in 2008 and 2009. This event prompted the closure of recreational and commercial ocean salmon season in 2008 and 2009. Most stocks have been reduced to the point where listing under the Federal and State Endangered Species Acts has become necessary.

The FRGP was instituted because the critical need to restore salmon and steelhead habitat was recognized. Guided by the *California Salmonid Stream Habitat Restoration Manual* 4th Edition (Flosi et al., 2010), hundreds of habitat restoration actions funded by the FRGP have been completed by government agencies, Indian Tribes and nonprofit groups. Activities have included revegetation with livestock exclusion fencing, riparian planting, removal of barriers to fish passage, bank stabilization and other bank protection structures, decommissioning of roads, and improving drainage systems on existing roads. Instream structures such as boulder clusters, wing deflectors, and log cover have also been used. Road crossings that have impeded fish migration have been replaced with bridges or culverts with natural stream bottoms allowing fish to access additional stream reaches. Finally, other watershed improvement activities include installation of fish screens to prevent entrainment of juvenile salmon and steelhead. These actions create spawning and nursery habitat, provide escape cover and prevent fine sediments from entering streams. Project monitoring has shown significant habitat improvements in streams where this work has taken place. A gradual rebuilding of salmon and steelhead populations is expected as this program continues.

The SHRRC program gathers angler information which is used by CDFW to make fisheries management and regulatory decisions as well as track angling trends. Funds generated from Report Card sales support the program and are also used to fund restoration projects that help conserve, monitor, and recover steelhead populations statewide. Since SHRRC funds are generated by anglers, restoration projects must benefit steelhead and have either a direct or indirect benefit to anglers.

The FLAR funds projects in forested watersheds to restore conditions beneficial to State and/or federally listed coho salmon, Chinook salmon, or steelhead trout. FLAR projects are funded by the Timber Regulation and Forest Restoration Fund and are administered by FRGP. FLAR projects must address legacy impacts of

forest management such as impeded fish passage at forest road stream crossings, sediment discharge from old forest roads and landings, and lack of in-stream large woody debris providing rearing habitat.

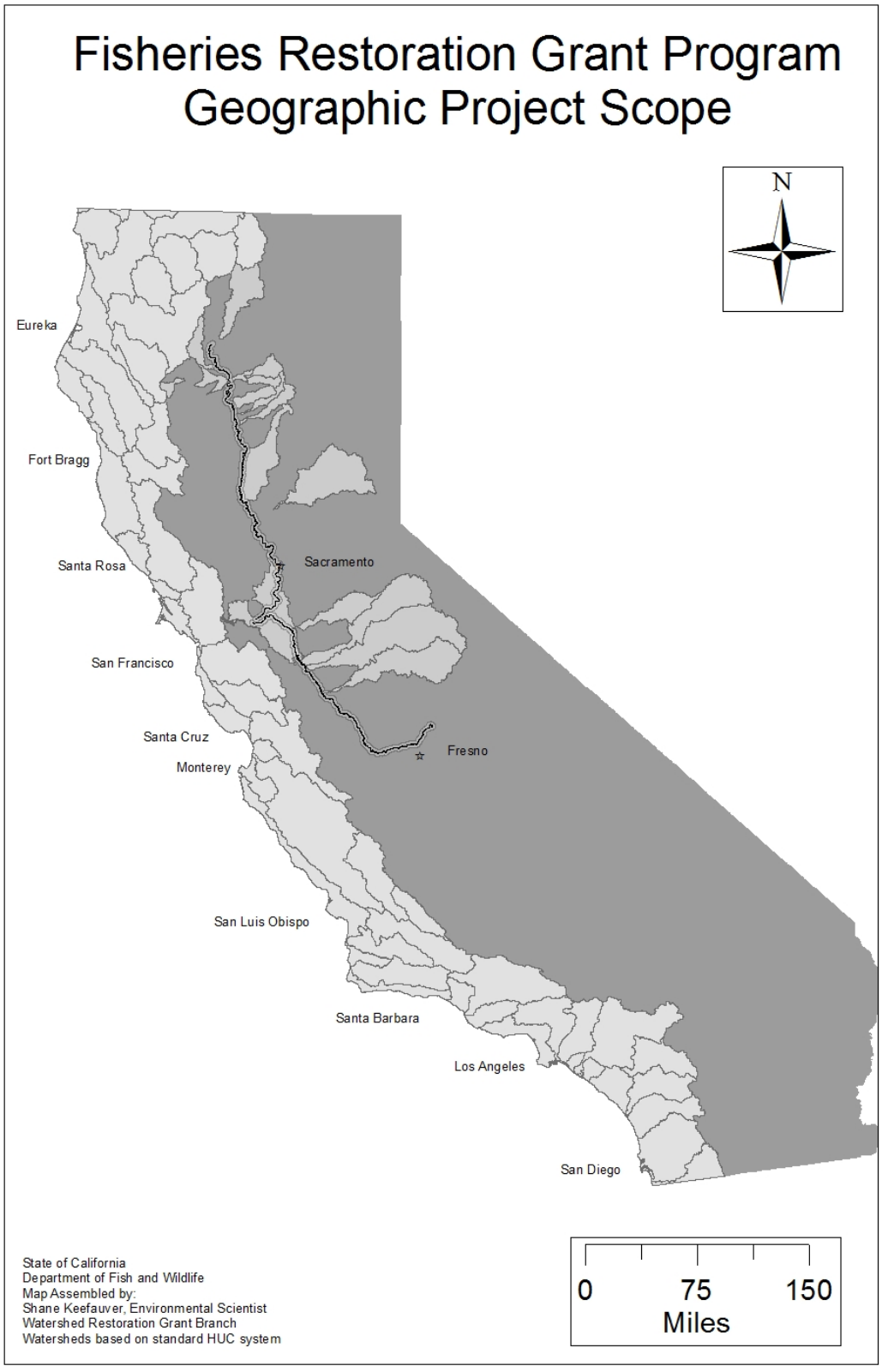
PROJECT LOCATION

Activities performed in the FHR occur in watersheds that have been subjected to significant levels of logging, road building, mining, grazing, and other activities that have reduced the quality and quantity of stream habitat available for native anadromous fish.

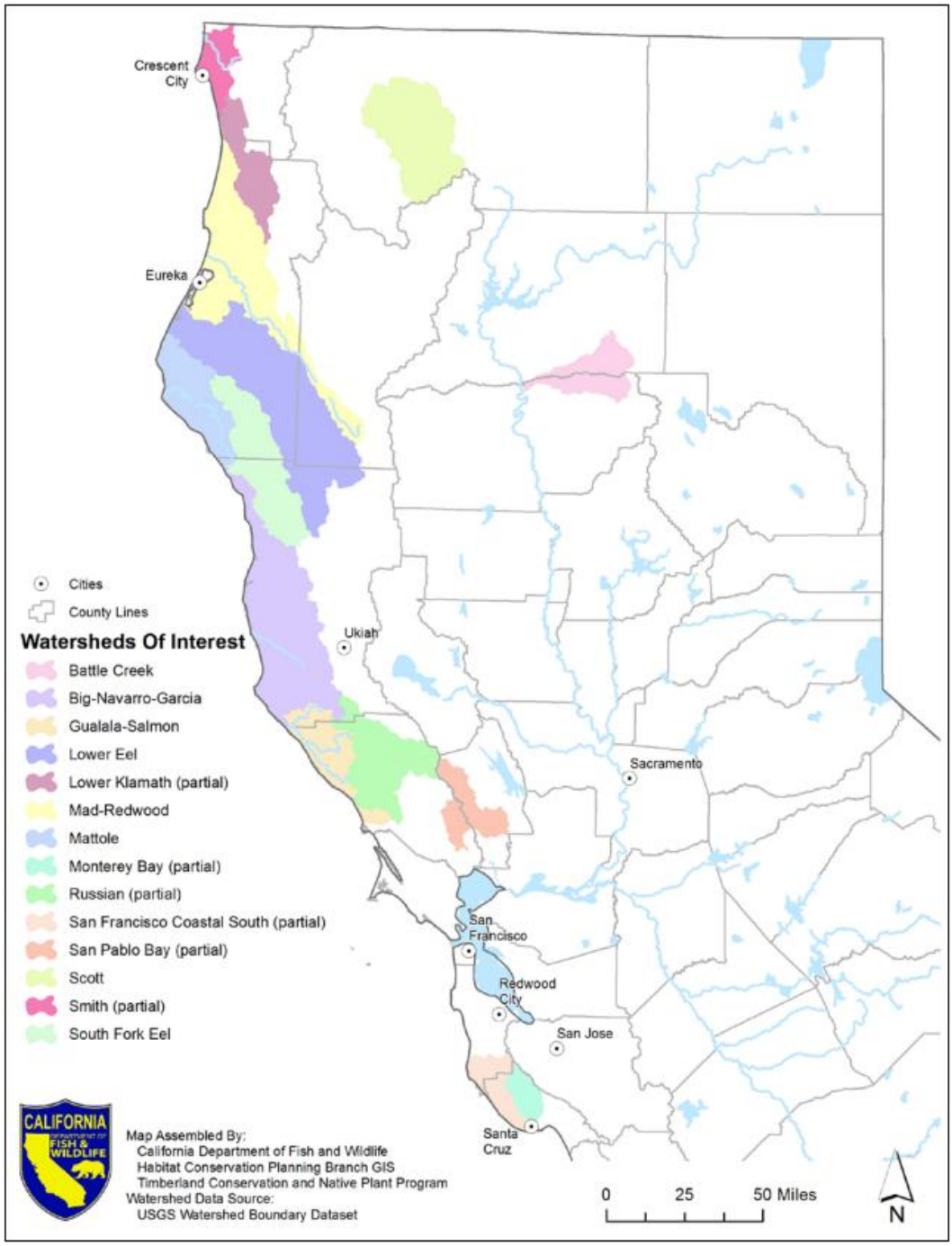
Coastal watersheds previously dominated by mature redwood and Douglas fir forests, contain extensive road and skid trail systems from tractor logging. These previous mature, forested areas can now be found in various seral stages of vegetative recovery and are predominate in the coastal FRGP region. Action items are implemented within the stream course to improve fish habitat. Upslope restoration actions improve fish habitat by reducing the input of fine sediment to the stream environment.

Inland locations are usually in watersheds dominated by pine and fir forests, often with steep unstable terrain; some inland locations are in valley areas in agricultural use. Most restoration activities are intended to reduce sediment delivery to streams, and provide spawning and rearing habitat in the streams. Streams flowing through valley areas will be treated to stabilize stream banks and increase riparian vegetation.

Map 1 illustrates the FRGP geographic range, which include the coastal limits of anadromy and the inland range of anadromy in the Central Valley. Projects focused on restoring habitat impacted by forest management are located on private and nonfederal public forests are depicted in Map 2.



Map 1: Area covered by FRGP



Map 2: Area covered by Forest Land Anadromous Restoration

SCHEDULE

The activities carried out in the FHR project will typically occur during the annual period of dry weather. Stream work is normally confined to the period of June 15 through November 1 or the first significant fall rainfall, whichever comes first. This is to take advantage of low stream flows and is outside the spawning and egg/alevin incubation period of salmon and steelhead.

Generally, upslope work occurs during the same approximate period. Road decommissioning and other sediment reduction activities are dependent on soil moisture content. Equipment access on dirt roads and the ability of equipment to move soil is inhibited by wet conditions. The scheduling of upslope work may also be affected by the avoidance of nesting or breeding seasons of birds and terrestrial animals.

Some activities may continue after November 1, but the extent of such activities is limited through grant conditions and compliance with any required permit. Post-November 1 activities are generally limited to hand planting of tree seedlings, which typically does not begin until December 1 and may continue until the end of March. Planting during the wet season is necessary to ensure the best survival of seedlings.

PROJECT DESCRIPTION

The CDFW, through the FRGP, releases an annual Proposal Solicitation Notice (Solicitation) for proposals that cover fishery restoration, watershed assessment, and planning work throughout California. Following initial review by the CDFW Technical Review Team (TRT), proposals are sent to appropriate fishery staff for field review, comment, and scoring, using standardized evaluation criteria. The evaluation process requires consideration of benefits to the fishery resources, the benefit for targeted species, project costs, and positive or negative impacts to the environment. The need for work in particular drainages or sites is also evaluated and reviewed utilizing the watershed assessment and planning work funded through the program, and from other CDFW and agency programs at work in California. After CEQA review is completed, the Director of the CDFW reviews the recommendations and makes the final funding decision. Grants are then written for the approved non-physical and action items.

The FRGP operates under two Regional General Permits (RGP) issued by the U.S. Army Corps of Engineers (USACE). These permits cover most of the action items in the FHR project. RGP12 (file number: 2003-27922N) was issued in 2010 and renewed in 2016 by the USACE San Francisco District and covers action items implemented within the regulatory boundaries of the San Francisco District. RGP78 (file number: SPL-2003-01123-BAH) was issued in 2009 and re-issued in 2014 by the USACE Los Angeles District and covers action items implemented within the

regulatory boundaries of the Los Angeles District. The RGPs allow the CDFW, grantees, and other individuals and groups to conduct fishery habitat restoration activities using methods described in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al 2010) that have been evaluated by CDFW biologists. The National Oceanic and Atmospheric Administration (NOAA) and the U.S. Fish and Wildlife Service (USFWS) have issued biological opinions, which are incorporated into the corresponding RGPs. The biological opinions address the impacts of the CDFW's FRGP and stipulate the mitigations that shall be implemented to avoid and/or minimize impacts to listed species.

The FRGP shall submit an annual application for a programmatic Section 401 Water Quality Certificate to the State Water Resources Control Board for the FHR project covered by the RGP12 and RGP78. A description of project work and methods to prevent impacts on water quality shall be provided annually to the State Water Resources Control Board and to the appropriate regional boards.

The CDFW's lake and streambed alteration agreement process (Fish and Game Code § 1600 et seq.) is an integral part of stream restoration planning and implementation. An agreement is developed for each action item which defines required measures to minimize disturbance to the stream environment. Procedures to accomplish this task are contained in the CDFW Lake and Streambed Alteration Program (1600) webpage https://www.wildlife.ca.gov/Conservation/LSA. Activities such as installing replacement culverts to provide fish passage, operating equipment in or near streams, and installing bank stabilizing structures are all discussed in the context of minimizing impacts, and all required measures for species protection discussed in this document are incorporated into the agreement for each project.

All features of this project requiring CEQA review are being provided in sufficient detail to facilitate public review and clearly define the environmental evaluation. In order to achieve this goal, the FHR project items are considered to fall into two categories corresponding to similar activities and requirements for CEQA review. These two categories of items are as follows.

Public Involvement, Planning, Research, Monitoring, and Habitat Acquisition – Non-physical Items

Non-physical items in this category include watershed evaluation, assessment, planning, habitat acquisition, and monitoring projects. The names of 33 non-physical items in this category are presented in a list in Appendix A, Non-physical Items. The non-physical items all qualify as either statutory or categorical exemptions under CEQA Guidelines § 15262 (Feasibility and Planning Studies), § 15306 (Information Collection), § 15313 (Acquisition of Lands for Wildlife Conservation Purposes), and § 15321 (Enforcement Actions by Regulatory Agencies). These non-physical items will not have a significant effect on physical conditions including land, air, water, minerals, plants, animals, ambient noise, historic sites, or aesthetics. Based on these facts, these types of non-physical items will not be discussed further in this document.

Restoration Element - Major Action Items

There is a notable difference in the level of activity found under this category. The names of the 35 major action items (action items) in this category are presented in a list in Appendix A, Action Items. The location of each action item is illustrated on a state-wide and on CDFW regional level maps in Appendix A. A detailed description of each action item in this element is also located in Appendix A, sorted by county.

Stream bank stabilization may include the use of boulder and cobble armoring of eroding banks, log cribbing, willow mattresses, or willow siltation baffles. Revegetation of riparian habitat normally involves the use of willow sprigs or willow or alder seedlings or transplants to stabilize banks and slopes, promote long-term shade and channel stability, and enhance large-wood recruitment. Indigenous stocks (when available) shall be used for all planting projects. Upslope earthmoving and culvert replacement require large size material and increased volumes to be moved by heavy equipment and, in so doing, involve certain limited construction activities. The techniques that are used for these action items have proven successful on many coastal streams and are detailed in the current version of the *California Salmonid Stream Habitat Restoration Manual* 4th edition. This manual describes in detail how the work shall be performed in the field.

Typically, these stream habitat restoration activities use dump trucks to deliver logs, root wads, or quarry rock to staging areas, and front-end loaders to deliver material to restoration sites. Existing stream crossings are used to access the stream in most cases. If stream crossings do not exist, the least damaging access points are selected based upon the size, type, and density of riparian vegetation. Where use of such access points is necessary, riparian vegetation can be affected, particularly the upper part of plants may be damaged, with the roots and lower parts receiving minimal damage. Plants damaged in this way usually re-sprout and recover. Access to restoration activity sites are identified before implementation of the action item and shall not create bank erosion or cause the removal of riparian trees. Staging areas at the activity sites are set up on dry stream banks where there is a minimum, and less than significant, impact to vegetation. Disturbed or bare mineral soils resulting from work activities, which are subject to surface erosion, are seeded and straw mulched.

Hydraulic excavators or backhoes may be used to excavate trenches or keyways in stream banks to anchor logs or boulder structures. Excavators are used to place materials, construct instream structures, and stabilize stream banks with boulders and logs. Willow cuttings are usually placed into the keyway trenches around the logs or boulders and then the trench is backfilled with cobble and native soil. This procedure anchors the structure into the stream bank, accelerates the establishment of willows around the structure, and prevents the stream from scouring around the newly placed structure.

Action items that stabilize stream banks or small stream-side landslides shall armor and buttress the landslide or stream bank using boulders, logs, root wads, and loose rock revetment. Revetments are designed with logs, root wads, and boulders that extend into the stream to provide instream cover and velocity breaks for salmonids. Smooth riprap, however, which accelerates water velocities along the

stream bank, is not permitted under this program. When practical, the bank will be sloped back to a minimum 1.5 to 1 slope. A toe trench will be excavated at the toe of the landslide or eroding bank. The excavated trench shall be backfilled with boulders and will extend up to the high-water mark. Rock from the toe trench, up to the high-water mark, shall be of a size that will withstand normal high flows. Revetment shall extend upstream and downstream of the unstable reach and shall be keyed into the stable banks.

Runoff from above the slide or eroding banks shall be diverted away from the area being stabilized. The slide face shall be re-vegetated using indigenous plants. Willow cuttings shall be placed in the toe trenches. Browse protectors shall be used on seedlings to prevent predation by browsing animals.

All work, except for the revegetation, shall take place during the summer and fall (low flow period) and shall be completed by November 1 or before the first significant seasonal rainfall, whichever comes first. Planting of seedlings takes place after December 1, or when sufficient rainfall has occurred, to ensure the best chance of survival of the seedlings, but in no case later than April 15. All habitat improvements shall be done in accordance with techniques described in the *California Salmonid Stream Habitat Restoration Manual* 4th edition.

Upslope action items upgrade or decommission roads by implementing all or part of the following tasks: road ripping or decompacting; installing or maintaining rolling dips (critical dips); installing or maintaining waterbars and crossroad drains; replacing, maintaining or cleaning culverts; outsloping roadbeds; re-vegetating work sites; and excavating stream crossings with spoils stored on site or end-hauled.

Sites which are expected to erode and deliver sediment to the stream are the only locations where work shall be authorized under this category. Work shall not be authorized to improve aesthetic values only.

Removal of road and skid trails shall include retrieving unstable material sidecast during original road construction and excavation of stream crossings and other watercourse fill. Stream crossings shall be excavated to original width, depth, and slope to expose natural channel morphology and armor. Side slopes will generally match original contours above and below the road. Culverts that are replaced in fish bearing reaches of streams shall be done in a manner to allow for unimpeded upstream and downstream fish passage.

When fill material is placed on road benches for permanent storage, the road bench shall be ripped or decompacted first. The fill shall then be placed against the cutbank and shaped to blend with the surrounding topography that existed prior to road construction. Outsloping of the roadbed will occur as needed, to reduce potential sediment delivery to the stream where there is insufficient fill available to recontour the site, or where there is evidence that the overall long-term stability of the site does not justify a full recontour treatment. Where practical, fill shall be compacted to the top of the filled cut to reduce the potential for fill cut failure. Spoil material shall be stored in stable locations where it will not erode. If stable spoils storage sites are not available within the project area, they will be end-hauled to a stable storage site outside of the project area. Areas chosen for this purpose shall be devoid of tree and

shrub vegetation. Upon completion of each site, woody debris shall be scattered over the surface of the restored area as mulch.

Road crossing removal may involve some removal of vegetation that has grown in sediment that has been deposited upslope of road prisms. Most of this vegetation shall be used as coarse wood mulch on bare soils to reduce surface erosion. Some of the material shall be transplanted on-site as one component of the restoration action items. In all cases, disruption of existing vegetation shall be minimized.

Culvert replacement requires diverting stream flow around the project site and excavating the existing culvert with heavy equipment. Normally concrete footings are constructed to support a new bottomless culvert or bridge. If appropriate, grade control structures are incorporated into the project area to prevent excessive down-cutting of the stream. All work concerning culvert replacement shall be consistent with current CDFW and NOAA criteria concerning fish passage. Current NOAA fish passage guidelines can be found on the web at: http://www.westcoast.fisheries.noaa.gov/fish_passage/solutions/index.html. CDFW fish passage guidelines can be found in Part IX of the *California Salmonid Stream Habitat Restoration Manual* 4th edition, available at http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp.

Fish screens are constructed within existing irrigation diversions to prevent entrainment of juvenile salmon and steelhead. Fish screens are often composed of a concrete foundation and walls. A steel framework supports perforated screen panels with a mechanical cleaning system. A stream flow bypass carries the fish back to the stream. Current NOAA and CDFW fish screen criteria can be found in Appendix S of the *California Salmonid Stream Habitat Restoration Manual* 4th edition.

Appendix A contains a list of major action item titles, locations, and descriptions of work that shall be implemented at each site. The action item designs are reviewed by the CDFW and are implemented by grantees utilizing heavy equipment and some hand labor crews. During a pre-project inspection, the grantee and the CDFW will tour the entire activity area and identify the sites and techniques necessary to carry out the recommendations. The site-specific recommendations shall be listed in an inspection report which will be acknowledged by the grantee's signature, as a required element of the activity. The CDFW shall continue to inspect the work site during and after completion of the action item. All road upgrading or decommissioning shall be done in accordance with techniques described in Part X of the *California Salmonid Stream Habitat Restoration Manual 4th edition*, available at http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp. All culvert replacement projects shall be done in accordance with techniques and criteria consistent with current CDFW and NOAA guidelines concerning fish passage. Implementation of each major action item shall be conditioned and controlled to prevent any potentially significant impacts under CEQA.

Complete site plans and prescriptions for action and non-physical items located in Del Norte, Humboldt, Lake, Mendocino, Siskiyou, Tehama, and Trinity counties are available for review at the California Department of Fish and Wildlife,

Northern Regional Office at 1455 Sandy Prairie Court, Suite J, Fortuna, California 95540. For an appointment to view this information, contact Senior Environmental Scientist, Trevor Tollefson at (707) 725-1072, Monday through Friday, between the hours of 9 a.m. and 4 p.m.

Complete site plans and prescriptions for action and non-physical items located in Alameda, Marin, Napa, San Francisco, San Mateo, Santa Clara, Santa Cruz, and Sonoma counties are available for review at the California Department of Fish and Wildlife, Bay Delta Region, office of Senior Environmental Scientist, Gail Seymour, 3633 Westwind Blvd., Santa Rosa, California 95403. Appointments may be made by telephoning (707) 576-2813, Monday through Friday, between the hours of 9 a.m. and 4 p.m.

Complete site plans and prescriptions for action and non-physical items located in Merced, Monterey, and San Luis Obispo counties are available for review at the California Department of Fish and Wildlife, Central Region, office of Senior Environmental Scientist, Margaret Paul, 20 Lower Ragsdale Dr. Ste. 100, Monterey, California 93940. Appointments may be made by telephoning (831) 649-2882, Monday through Friday, between the hours of 9 a.m. and 4 p.m.

Complete site plans and prescriptions for action and non-physical items in Los Angeles, Orange, San Diego, Santa Barbara, Riverside, and Ventura counties are available for review at the California Department of Fish and Wildlife, South Coast Region, office of Senior Environmental Scientist, Mary Larson, 4665 Lampson Ave, Suite C, Los Alamitos, California 90720 and 1933 Cliff Drive, Suite 9, Santa Barbara, CA 93109. Appointments may be made by telephoning (562) 342-7186, Monday through Friday, between the hours of 9 a.m. and 4 p.m.

Complete site plans and prescriptions for the non-physical item in Sacramento, Nevada, and Yuba counties are available for review at the California Department of Fish and Wildlife, Fisheries Restoration Grant Program headquarters, office of Timothy Chorey 1700 9th Street, 2nd Floor, Sacramento, CA 95811. Appointments may be made by telephoning (916) 327-8842, Monday through Friday, between the hours of 9 a.m. and 4 p.m.

Environmental Assessment of Each Major Action Item

Each action item is assigned to the appropriate category using the established criteria for each category. The work to be completed for each action item is carefully evaluated to make this determination. Once this evaluation process is completed, the action items described under the Restoration Element - Major Action Items section, are subjected to a systematic environmental analysis. This analysis ultimately prescribes site-specific conditions which must be applied in order to avoid potentially significant negative effects on the environment, including such effects on endangered, rare, or threatened species and their habitat.

First, all major action items listed in Appendix A shall comply with CDFW policies to protect rare, endangered, and listed animal species. A review of the CDFW's CNDDB for the entire ten-county project location indicated which animal species found on a State or Federal special status list may be present at the work

sites. This site specific information is also attached to each statement of work in Appendix A. Mitigation measures to avoid impacts to these species are presented along with other mitigation measures in Appendix B; Mitigation Measures, Monitoring and Reporting Program. In the absence of site-specific information, species identified as having potential to be affected at a work site shall be assumed present at the work site and mitigation measures to avoid impact to that species shall be implemented. Any site-specific surveys to confirm the presence, or absence, of a listed animal species at a work site will be performed by qualified biologists according to protocols described in Appendix B. Streambed Alteration Agreements and grants for each site shall be conditioned to avoid impacts to any special status species that could potentially be affected at that site. The CDFW shall ensure that the grantee or responsible party is aware of all specific conditions that apply to their work site. Also, the CDFW shall inspect the work site before, during, and after completion of the action item to ensure compliance with mitigation measures to avoid potential impacts to endangered, rare, or threatened species. Any violation of the specific recommendations shall be immediately rectified. Failure or inability to rectify a particular recommendation will cause all work to cease at that site until a remediation plan is developed.

Second, all major action items listed in Appendix A shall comply with CDFW policies to conduct rare plant surveys. A qualified botanist shall be contracted to complete the surveys using standard protocols. Rare plant surveys shall be conducted following the Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (California Department of Fish and Wildlife, 2009), Appendix C. A review of the CDFW's current California Natural Diversity Data Base (CNDDB) for each project located in the entire ten-county programmatic project area is attached to the statement of work for each major action item listed in Appendix A and indicates which plant species found on a State or Federal special status list that could potentially be affected at the work sites. Rare plant surveys shall be completed prior to any ground disturbing activities. If any potentially significant impact cannot be avoided, the action item shall not be implemented. Any site specific recommendations made by a CDFW biologist, or other qualified biological consultant, to avoid any potentially significant impacts shall become part of the work plan and incorporated into the measures required in the issued streambed alteration agreement (Fish and Game Code § 1600 et seq.). The CDFW’s grant managers shall ensure that the grantee or responsible party is aware of, and implements, these site specific conditions during routine inspections. The CDFW shall inspect the work site before, during, and after completion of the action item. Any violation of the specific recommendations shall be immediately rectified. Failure, or inability, to rectify a particular recommendation shall cause all work to cease until a remediation plan is developed that avoids the potentially significant impact.

Third, all major action items listed in Appendix A shall comply with CDFW policies to conduct cultural resource surveys, including archaeological or paleontological surveys (if necessary). A qualified cultural resource specialist(s) shall

be contracted to complete the surveys using standard protocols. Research shall be done on available cultural data repositories and a review of cultural resources with regional experts to identify possible areas of importance within the ten-county programmatic project area will occur. Site specific detailed research shall be done for projects sites deemed likely to encounter cultural resources (Appendix C & D). Review of cultural surveys shall be completed prior to any ground disturbing activities. If any potentially significant impact cannot be avoided, the action item shall not be implemented. Any site specific recommendations made by a qualified cultural specialist, to avoid any potentially significant impacts shall become part of the work plan and incorporated into the measures required in the issued streambed alteration agreement (Fish and Game Code § 1600 et seq.). The CDFW's grant managers shall ensure that the grantee or responsible party is aware of, and implements, these site specific conditions during routine inspections. The CDFW shall inspect the work site before, during, and after completion of the action item. Any violation of the specific recommendations shall be immediately rectified. Failure, or inability, to rectify a particular recommendation shall cause all work to cease until a remediation plan is developed that avoids the potentially significant impact.

Through careful design, scheduling, and monitoring, any and all potentially significant impacts associated with the action items shall be avoided or mitigated to below a level of significance under CEQA. To ensure that each action item adheres to avoidance and mitigation measures, a CDFW grant manager is assigned to each action item. Additional details regarding implementation of action items, including required mitigation measures, are detailed in the environmental checklist section below.

Monitoring

Project monitoring is considered an important element in the activity development and implementation process. The monitoring process provides performance control during the activity and also helps provide a measure of the benefits, insight, and guidance for future projects.

Activity during implementation is overseen by a CDFW grant manager and is geared to ensure that all regulatory environmental issues are strictly addressed including air, water, and avoiding impacts to sensitive plant and animal species. During implementation, activities are carefully monitored to make sure plans are followed and that the correct materials and techniques are used so that the objectives of the activities are met while protecting the environment.

Post-activity monitoring begins with information collected immediately after the activity is completed and documents whether the project was completed as designed and according to grant specifications. This information includes documenting the exact location where the activity has occurred with reference points and survey marks. Final project reports should contain "as-built" descriptions with design drawings and photographs (both before and after the activity) are collected. A complete activity description including the objectives of the activity must be retained.

The next phase of post-activity monitoring is designed to assess the efficacy of the project and shall occur within one to three years after an action item is complete. The CDFW shall randomly select ten percent of the action items within each project work type for effectiveness/validation monitoring. A random sample, stratified by project type and region, shall be chosen from the pool of new restoration projects approved for funding each year. This evaluation shall be recorded on standard project evaluation forms. Effectiveness monitoring addresses the physical response associated with an activity, while validation monitoring evaluates fish response to the project. Pre-treatment monitoring shall be performed for newly selected projects, and post-treatment monitoring shall be performed within three years following project completion.

Complete monitoring specifications can be found in Part VIII of the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al 2010) (http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp). Additional details on monitoring and reporting requirements are presented in Appendix B.

REFERENCES

California Department of Fish and Game. Lake and Streambed Alteration Program (1600) webpage https://www.wildlife.ca.gov/Conservation/LSA

California Department of Fish and Game. 2000. Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities. The Resources Agency, State of California, Sacramento, CA.

Flosi, G, S. Downie, J. Hopelain, M. Bird, R. Coey, and B. Collins. 1998, 2009, 2010. *California Salmonid Stream Habitat Restoration Manual*. Fourth Edition. Calif. Fish and Game. The most current version of the manual is available at: http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp.

Flosi, G, S. Downie, M. Bird, R. Coey, and B. Collins. 2003, 2006, 2009, 2010. *California Salmonid Stream Habitat Restoration Manual*. Volume II, Fourth Edition. Calif. Fish and Game. The most current version of the manual is available at: http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp.

Hagans and Weaver. 1994. Handbook for Forest and Ranch Roads. 161 p. Prepared by William E. Weaver, Ph.D. and Danny K. Hagans, Pacific Watershed Associates for the Mendocino County Resource Conservation District, 405 Orchard Ave., Ukiah, CA 95482.

ENVIRONMENTAL CHECKLIST FORM

1. Project Title: **The 2017 Fisheries Habitat Restoration Project in Humboldt, Marin, Mendocino, Monterey, San Luis Obispo, San Mateo, Santa Barbara, Siskiyou, Sonoma, and Ventura Counties.**

2. Lead Agency Name and Address:

   California Department of Fish and Wildlife
   Watershed Restoration Grants Branch
   Fisheries Restoration Grant Program
   1416 9th Street, Room 1266
   Sacramento, CA 95814

3. Contact People and Phone Numbers:

   Timothy Chorey
   (916) 327-8842
   Watershed Restoration Grants Branch, Fisheries Restoration Grant Program
   1416 9th Street, Room 1266
   Sacramento, CA 95814

   Trevor Tollefson
   (707) 725-1072
   Northern Region
   1455 Sandy Prairie Ct. Suite J
   Fortuna, CA 95540

   Manfred Kittel
   (707) 576-2813
   Bay Delta Region
   7329 Silverado Trail
   Napa, CA 94558

   Margaret Paul
   (831) 649-2882
   Central Region
   20 Lower Ragsdale Dr. Ste. 100
   Monterey, CA 93940

   Mary Larson
   (562) 342-7186
   South Coast Region
   4665 Lampson Ave.
   Los Alamitos, CA 90720

4. Project Location: Various sites in Humboldt, Marin, Mendocino, Monterey, San Luis Obispo, San Mateo, Santa Barbara, Siskiyou, Sonoma, and Ventura Counties (Appendix A).

5. Project Sponsor's Name and Address:

   California Department of Fish and Wildlife
   Watershed Restoration Grants Branch
   Fisheries Restoration Grant Program Headquarters
   1416 9th Street, Room 1266
   Sacramento, CA 95814

6. General Plan Designation: Various

7. Zoning: Various

8. Description of Project: Implementation of 23 action items for restoration of anadromous salmonid habitat (Appendix A). These action items include measures to improve anadromous fish passage, reduce erosion and sedimentation, enhance instream habitat, improve water quality and improve juvenile survival.

9. Surrounding Land Uses and Setting: Briefly describe the project's surroundings: Action items will be surrounded by lands consisting of agriculture, private holdings, forests used for timber production as well as national, state, and county parks.

10. Other Public Agencies Whose Approval Is Required: U.S Army Corps of Engineers, North Coast Regional Water Quality Control Board, San Francisco Bay Regional Water Quality Control Board, and Central Coast Regional Water Quality Control Board, Los Angeles Regional Water Quality Control Board, and Central Valley Regional Water Quality Control Board.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

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

This project will not have a "Potential Significant Impact" on any of the environmental factors listed above; therefore, no boxes are checked.

DETERMINATION:

On the basis of this initial evaluation:

☐	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
☒	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
☐	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
☐	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
☐	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required

Rebecca Fris, Acting Chief,
Watershed Restoration Grant Branch

11/27/17
Date

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

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
II. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒
IV. BIOLOGICAL RESOURCES: Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒
V. CULTURAL RESOURCES: Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐
VI. GEOLOGY AND SOILS: Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☒
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
VII. GREENHOUSE GAS EMISSIONS: Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐
VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☒	☐	☐

IX. HYDROLOGY AND WATER QUALITY: Would the project:

a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☒	☐	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow	☐	☐	☐	☒
X. LAND USE AND PLANNING: Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b)Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒
XI. MINERAL RESOURCES: Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒
XII. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XIII. POPULATION AND HOUSING: Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
XIV. PUBLIC SERVICES:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XV. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒
XVI. TRANSPORTATION/TRAFFIC: Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

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

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

XIX. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	☒
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

EXPLANATION OF RESPONSES TO INITIAL STUDY ENVIRONMENTAL CHECKLIST

I. AESTHETICS

a) The project will not have an adverse effect on a scenic vista. Such an impact will not occur because the project will stabilize, restore, and revegetate damaged and eroded sites to produce a more natural and aesthetically pleasing appearance.

b) The project will not damage scenic resources such as trees, rock outcroppings, and historic buildings. Such an impact will not occur because the project will not disturb large trees or other scenic features in the process of restoring damaged sites.

c) The project will not substantially degrade the existing visual character or quality of the work sites and their surroundings. Such an impact will not occur because in most cases the restoration project will restore the natural character of disturbed sites. Where non-natural structures (such as fish screens) are constructed, they will be of small size and compatible with the appearance of their surroundings.

d) The project will not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area of the worksites. Such an impact will not occur because none of the restoration project action items requires installation of artificial lighting.

II. AGRICULTURE AND FOREST RESOURCES

a) The project will not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program (FMMP) of the California Resources Agency, to non-agricultural use. Such an impact will not occur because most project worksites are located away from FMMP designated farmland. Project actions associated with farmland (such as fish screens) are designed to allow continued use of farmland with reduced impacts to anadromous salmonids.

b) The project will not conflict with existing zoning for agricultural use or a Williamson Act contract. Fisheries habitat restoration actions will not change existing land use.

c) The project will not conflict with existing zoning for, or cause rezoning of, forestland, timberland, or timber zoned Timberland Production. Fisheries habitat restoration actions will not change existing land use.

d) There will be no loss of forestland and the project will not result in the conversion of forestland to non-forest use. Road decommissioning projects in forestland will reduce fine sediment delivery to the streams while restoring forestland by planting with native vegetation.

e) The project will not involve other changes in the existing environment, which due to their location or nature, could not result in conversion of farmland to non-agricultural use. Fisheries habitat restoration actions either are away from, or are compatible with, existing agricultural uses.

III. AIR QUALITY

a) The project will not conflict with or obstruct implementation of the applicable air quality plan. Such an impact will not occur because implementation of the project does not create any features that would be a source of air pollution.

   The work window for restoration activities is generally limited from June 15 to November 1. Under a worst-case scenario, the most work that a project can have in a single field season is eighteen weeks and the most number of years a project has to be completed is four years. Based on the worst-case scenario, the CDFW finds that each restoration activity will not likely adversely affect air quality plans with the use of vehicle and heavy equipment because of the short duration of each restoration activity. For most projects, work does not occur for the entire eighteen-week field season and most restoration activities do not take four years to implement. Also, projects do not need to be implemented in consecutive years. Thus, the amount of time it takes to complete a restoration activity varies. Additionally, not all projects require the use of heavy equipment (although heavy equipment may be used to transport materials to the work site) and not all projects occur simultaneously. Calculating the emissions from a single restoration activity to use as an example would not be representative of the other restoration activities in Appendix A for the reasons listed above.

b) The project will not violate any air quality standard or contribute substantially to an existing or projected air quality violation. Such an impact will not occur because of the limited scope of construction activities and the fact that work sites are located in rural areas that are in overall attainment of air quality standards.

c) The project will not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors). Such an impact will not occur because the project involves no ongoing sources of air pollution.

d) The project will not expose sensitive receptors to substantial pollutant concentrations. Such an impact will not occur because the project will not significantly increase pollutant concentrations.

e) The project will not create objectionable odors affecting a substantial number of people. Project actions are designed to restore natural habitat conditions for salmonids, and will not create any stagnant water that might produce objectionable odors.

IV. BIOLOGICAL RESOURCES

a) The project will not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW), National Oceanic and Atmospheric

Administration (NOAA) or U. S. Fish and Wildlife Service (USFWS). Such an impact will not occur because project activities are designed to improve and restore stream habitat, to provide a long-term benefit to both anadromous salmonids and other fish and wildlife. The project will be implemented in a manner that will avoid short-term adverse impacts to rare plants and animals and cultural resources during construction; the mitigation measures that will be implemented to avoid short-term impacts to rare plants and animals and cultural resources are described in Appendices B, C, D, and E. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance. In addition,

Species Impacts for the following species include (mitigation measures are included in Appendix B):

i. Arroyo toad (*Anaxyrus californicus*)

The arroyo toad was federally listed as endangered in 1994. Typically found in coastal areas, the toad ranges from Salinas River Basin in Monterey and San Luis Obispo Counties south to Arroyo San Simón in northern Baja California, México. The preferred habitat for arroyo toad during breeding season (February–July) includes low gradient sections of slow moving streams which have adjacent stream terraces, sandbars, and shallow pools. In non-breeding months, this species can be found in a variety of upland habitats such as coastal sage scrub, chaparral, sycamore-cottonwood woodlands, oak, woodlands and grasslands.

During the implementation of a project, activities such as (but not limited to) channel dewatering, unscreened pumping, heavy equipment usage, work with hand tools, removal of riparian vegetation, spills from refueling vehicles, and introduction of non-native species into streams may have the potential to impact arroyo toad—this does not result in habitat removal and/or degradation. All impacts that occur are temporary and can be minimized to avoid take of the species. Furthermore, many of these projects involve restoring the riparian corridor that is absent.

ii. California freshwater shrimp (*Syncaris pacifica*)

In 1998, the US Fish and Wildlife Service listed California freshwater shrimp (CAFS) as endangered. The distribution of CAFS is limited to four drainage units in the California counties of Marin, Sonoma, and Napa: 1) tributary streams of the lower Russian River drainage, that flow westward to the Pacific Ocean, 2) coastal streams flowing westward directly into the Pacific Ocean, 3) streams draining into Tomales Bay, and 4) streams flowing southward into San Pablo Bay. California freshwater shrimp depend on the availability of slow moving perennial water adjacent to continuous, stable, well vegetated stream banks, or deep stable undercuts banks during winter high flows.

Salmonid restoration projects typically enhance or create habitat that is also suitable for CAFS. Although project activities in wetted stream habitats may directly impact individuals when present, project activities in dry stream habitats will not have a direct impact on individuals. Mitigation measures are implemented to avoid directly impacting individuals when present however, some short term direct and indirect impacts can occur.

iii. California red-legged frog *(Rana draytonii)*

The California red-legged frog (CRLF) was listed as threatened in the Federal Registry in 1996. This species is the largest native frog in the western United States and is primarily found in streams and drainages along the California coast, ranging from southern Mendocino County south to northwestern Baja California. An eastern extension of this population can be found in the Sierra Nevada foothills, though a majority of the species is found in Monterey, San Louis Obispo, and Santa Barbara counties. Individuals found in coastal areas are active year round and those found farther inland are less active during the colder months. Breeding season is typically November through March, slightly earlier in southern regions. This species of frog prefers permanent quiet bodies of water but can be found in damp thickets and forest as well as along riparian corridors.

Impacts to the CRLF have the potential to occur during project implementation activities such as (but not limited to) channel dewatering, degradation of water quality, heavy equipment usage, work with hand tools, removal of riparian vegetation, spills from refueling vehicles, and introduction of non-native species into stream. All impacts that occur are temporary and can be minimized to avoid take of the species and does not result in habitat removal and/or degradation. Furthermore, many of these projects involve restoring the riparian corridor that is absent.

iv. California tiger salamander (*Ambystoma californiense)*

The central California population of California tiger salamander was federally listed as threatened in 2004 but had been endangered in Santa Barbara County since 2000 and in Sonoma County since 2002. The state of California listed the entire population as threatened in 2010. The salamander can be found coastally from Sonoma to Santa Barbara counties as well as in the Central Valley and surrounding foothills—primarily in grassland or open woodland areas from Alameda County south to Monterey County and east to Merced and Madera counties. This nocturnal salamander breeds during the rainy season (November – May) depositing egg masses in standing water. Outside of estivation, the California tiger salamander spends a majority of its time underground finding refuge in animal burrows.

Impacts to the species are highly unlikely as most implementation projects occur in or near the stream and riparian corridor. Upslope projects are typically limited to road upgrading and decommissioning in areas that are steep, eroding, and often in areas vegetated with trees and shrubs. The species uses

ponds and vernal pools for breeding and grassland habitat for estivation, both of which are usually not in proximity to anadromous fish-bearing streams.

v. Chinook salmon (*Oncorhynchus tshawytscha*), Coho salmon (*Oncorhynchus kisutch*), steelhead trout (*Oncorhynchus mykiss*), and coastal cutthroat trout (*Oncorhynchus clarki clarki*)

Winter-run chinook has been listed as endangered by the state since 1989 and federally since 1994. Spring-run chinook was listed in 1999 as threatened by both the state of California and USFWS. Depending on the evolutionary significant unit (ESU) of the coho salmon, the species is listed either as threatened or endangered; federally since 1996 and by the state since 2005. In 1997, USFWS listed the distinct population segment (DPS) of the southern California steelhead as endangered. The four other DPS of steelhead (south central, central, Central Valley, and northern) have been federally listed as threatened as early as 1997. Although, coastal cutthroat trout is not listed as threaten or endangered, it is listed as a species of special concern.

Salmonids can be found throughout the coastal and inland river systems of north and central California. The salmonid lifecycle involves adults maturing in the ocean, migrating back to their home streams and spawning, embryos incubating, fry emerging, juveniles growing , and smolts migrating to the estuary to acclimate to saltwater and moving out into the ocean.

Habitat loss and modification are believed to be the major factors determining the current status of salmonid populations. Conservation and recovery of salmonid depend on having diverse habitats with connections among those habitats. While all of the work proposed under this program will enhance habitat for one or more of these species, impacts to the species have the potential to occur during project implementation activities such as, but not limited to, channel dewatering, disturbance of banks, and fish relocation. All impacts are temporary and can be minimized to avoid take of the species.

vi. Foothill yellow-legged frog (*Rana Boylii*)

The foothill yellow-legged frog (FYLF) is a candidate species for state listing as threatened. The foothill yellow-legged frog inhabits lower elevation creeks, streams, and rivers. The species may be found in the project area. They breed in the spring and tadpoles emerge in the summer. The FYLF require flowing water, are not found in standing water, and will stay close to streams during breeding season.

Impacts to the FYLF have the potential to occur during project implementation activities such as, but not limited to, channel dewatering, degradation of water quality, heavy equipment usage, work with hand tools, removal of riparian vegetation, spills from refueling vehicles, and introduction of non-native species into stream. All impacts that may occur are temporary, can be minimized to avoid take of the species, and do not result in habitat removal and/or degradation. Furthermore, many of these projects involve restoring the riparian corridor that is absent or degraded.

vii. Least Bell's vireo (*Vireo bellii pusillus)*

The least Bell's vireo was listed as endangered federally in 1986 and by the state in 1980. The breeding season distribution of these small, monogamous, territorial birds range from coastal southern California east to the foothill Central Valley with the majority of the population found in San Diego County (March – September). In colder, non-breeding months, the least Bell's vireo migrates south into Baja California. Many return to their same lowland riparian territory to breed, with some building nests in the same scrub used the previous year.

Impacts to the species have the potential to occur as a result of removal of riparian vegetation (willows and low scrub) during the spring and summer or from disturbance within a 0.25 mile radius of the sites. Typically removal of riparian vegetation for the purpose of implementing a project does not occur, but is minimal when it does. Many projects involve restoring the riparian corridor that is absent. Removal of willow branches for revegetation at restoration sites has the potential to degrade existing vireo habitat. Noise from heavy equipment has the potential to cause nesting birds to abandon nests. All impacts are temporary and can be minimized to avoid take of the species.

viii. Marbled murrelet (*Brachyramphus marmoratus*)

In 1992, the marbled murrelet was federally listed as threatened and as endangered by the State. As coastal birds that range from Alaska to Santa Barbara County, CA, they can be found nesting and brooding along the California coastline in old-growth or mature forests from April to September and possibly using the same nest in successive years. In the winter, they can be found using the same habitat for roosting and courtship.

Noise from heavy equipment has the potential to cause nesting birds to abandon nests. Limiting such work (e.g. culvert removal or placement of large woody debris) to the fall and winter months will greatly reduce adverse effects. Projects will not remove or degrade suitable habitat, only restore and protect habitat.

ix. Northern spotted owl (*Strix occidentalis caurina*)

The Northern spotted owl has been federally listed threatened since 1990 and has recently (2013) been listed as a threatened species candidate by the state of California. Old growth and mature forests of northwestern California and Pacific Northwest are the preferred habitat for these monogamous, territorial, medium-sized birds of prey. A pair of owls can occupy up to a 40 sq. km territory, nesting in hollow trees and cliff crevices from February to June.

Noise from heavy equipment has the potential to cause nesting birds to abandon nests. Preventing such work (e.g. culvert removal or placement of large woody debris) from occurring during February to July will greatly reduce adverse effects. Projects will not remove or degrade suitable habitat, only restore and protect habitat.

x. Point Arena mountain beaver (*Aplodontia rufa nigra*)

In 1991, the US Fish and Wildlife listed the Point Arena mountain beaver (PAMB) as an endangered species. This beaver is a burrowing rodent found in coastal Mendocino County, in an area of approximately 24 square miles (from about 2 miles north of Bridgeport Landing south to about 5 miles south of the town of Point Arena, and from the coast to about 5 miles inland). Mountain beaver inhabit underground burrow systems, associated with moist areas with well drained soils and lush herbaceous vegetation. Populations of PAMB are typically found in riparian, coastal scrub, or dune scrub habitats; however, they may occur in any habitat with brushy or herbaceous cover. The presence of PAMB is evaluated by surveying for burrows of characteristic size and shape, with signs of recent activity.

Potential impacts to PAMB from salmonid habitat improvement projects include disruption of nesting or other activities due to equipment noise; collapse or damage to burrows from heavy equipment, riparian planting, or foot traffic; and removal of vegetation (such removal is usually temporary, but may nonetheless impact PAMB).

xi. San Francisco garter snake (*Thamnophis sirtalis tetrataenia*)

The San Francisco garter snake (SFGS) was federally listed as endangered in 1967 and by the State in 1970. The SFGS is listed as a fully protected species under Fish and Game Code Section 5050. Endemic to California, this multi-colored garter snake is only found from southern San Francisco County south to San Mateo County in grasslands or wetlands near ponds, marshes, and sloughs. Breeding season starts in spring. Females bare live young from June to September. Typically found in densely vegetative ponds nears hills however, the San Francisco garter snake will find animal burrows when ponds dry up in the summer months and will go into a dormant state.

Due to the fully protected status of the SFGS, potential for take of the SFGS will be avoided through the implementation of the avoidance measures listed in Appendix B: Mitigation measures, monitoring and reporting program for the 2017 Fish Habitat Restoration Project. “Take” is defined in Section 86 of the Fish and Game Code as catch, pursue, capture or attempt to catch, pursue and capture.

xii. Southwestern Willow flycatcher (*Empidonax traillii extimus*)

The southwestern willow flycatcher (a sub species of the Willow flycatcher, *Empidonax trailli*) was placed on the federal species list in 1995 as endangered. Extirpated from most of its California range, this small migratory bird has been reported to return to various river systems in southern California during breeding season. Breeding season is from May to September, with a majority of breeders returning to the same sites in areas of dense mature riparian woodlands along streams and rivers. Native vegetation is preferable for

nesting, but this bird will also nest in thickets of non-native species (e.g. tamarisk and Russian olive).

Impacts to the southwestern willow flycatcher have the potential to occur as a result of removal of riparian vegetation (willows and low scrub) during the spring and summer or from disturbance within a 0.25 mile radius of the sites. Typically, removal of riparian vegetation for the purpose of implementing a project does not occur, but is minimal when it does. Many projects involve restoring the riparian corridor that is absent. Removal of willow branches for revegetation at restoration sites has the potential to degrade existing southwestern Willow flycatcher habitat. Noise from heavy equipment has the potential to cause nesting birds to abandon nests. All impacts are temporary and can be minimized to avoid take of the species.

xiii. Tidewater goby (*Eucyclogobius newberryi*)

The tidewater goby was listed by the state of California for protection in 1987, and federally listed in 1994. The species, which is endemic to California, is typically found in coastal lagoons, estuaries, and marshes with relatively low salinities. Tidewater gobies can withstand a range of habitat conditions: they have been documented in waters with salinity levels from 0 to 42 parts per thousands, temperatures from 8 to 25^{o} C, depths from 25 to 200 cm, and dissolved oxygen levels of less than one milligram per liter. Reproduction occurs from late April or May to July and as late as November or December, depending on the seasonal temperature and rainfall.

Measures to reduce impacts to tidewater goby habitat will include adjusting the timing of projects to avoid disruption to breeding activities, the use of silt fencing to reduce sediment loads and as barricades around project sites, and installing coffer dams above and below project sites. Additional measures include, moving individual tidewater gobies found within the enclosures prior to dewatering, minimizing project areas, and requiring qualified biologists to oversee project activities.

xiv. Willow flycatcher (*Empidonax trailli*)

The Willow flycatcher was listed as endangered by the State of California in 1991. This small migratory bird can be seen during their summer migration throughout a majority of northern and western US. In California, the Willow flycatcher can be found primarily in dense moist willow thickets and riparian woodlands in northern California and along the western side of the Sierras. During spring (May to June), adults can be seen in north central California counties during the spring migration to their breeding sites farther north. Fall migration occurs primarily in August as the travel to the winter habitats in Central and South America.

Impacts to the Willow flycatcher have the potential to occur as a result of removal of riparian vegetation (willows and low scrub) during the spring and summer or from disturbance within a 0.25 mile radius of the sites. Typically

removal of riparian vegetation for the purpose of implementing a project does not occur, but is minimal when it does. Many projects involve restoring the riparian corridor that is absent. Removal of willow branches for revegetation at restoration sites has the potential to degrade existing Willow flycatcher habitat. Noise from heavy equipment has the potential to cause nesting birds to abandon nests. All impacts are temporary and can be minimized to avoid take of the species.

b) The project will not have a substantial adverse effect on any riparian habitat or other sensitive natural communities identified in local or regional plans, policies and regulations, or by the California Department of Fish and Wildlife or U. S. Fish and Wildlife Service. Such an impact will not occur because the project actions are designed to correct past habitat degradation and restore and enhance riparian habitat and associated upland habitats. In accordance with the Regional General Permits 12, 78, and the § 401 Water Quality Certification, construction of action items is allowed during the summer dry season (generally June 15-November 1) to avoid impacts to aquatic habitats. Work that is permitted after November 1 is limited to hand planting of seedlings. Planting of seedlings generally occurs after December 1, or when there is sufficient rainfall to ensure the best survival chance of the seedlings. Mitigation measures to avoid impacts to riparian habitat are found in Appendix B: Mitigation measures, monitoring, and reporting program for the 2016 Fisheries Restoration Grant Program (§ IV subsection C).

   Furthermore, the CDFW LSAAs include project-specific terms and conditions that set out reasonable measures determined by CDFW to be necessary to protect fish and wildlife resources that may be affected by the project.

c) The project will not have a substantial adverse effect on federally protected wetlands as defined by § 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. The project actions will have either no effect on wetlands or will be beneficial to wetlands.

d) The project will not substantially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. The project will enhance the movement of anadromous fish by the replacement or removal of culverts and bridges that are barriers to fish migration.

e) The project will not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Such an impact will not occur because project actions are designed to restore and enhance biological resources. Some minor disturbance of grasses and shrubs will occur where stream structures are keyed into the stream banks. Care will be taken not to disturb any mature trees. Riparian vegetation will be reestablished where construction activities disturb existing plants, and additional native plants will be planted to enhance the riparian vegetation.

f) The project will not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan. Such a conflict will not occur because the project restoration actions will not have a significant adverse impact on any species or habitat. Project actions are designed to restore the natural character of the fish and wildlife habitat at the project work sites. The project specifically supports the California Salmon, Steelhead Trout and Anadromous Fisheries Program Act (Fish and Game Code § 6900 et. seq.)

V. CULTURAL RESOURCES

a) The project will not cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines § 15064.5. While ground disturbance will be required to implement the project at some work sites that have the potential to affect historical resources, this potential impact will be avoided through implementation of the protective measures presented in Appendix B, Mitigation Measures, Monitoring and Reporting Program and Appendix E, Procedure for the Programmatic Evaluation of Archaeological Resources for all work sites. Resources identified during site-specific surveys will be protected before ground-disturbing activities are permitted at a site. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

b) The project will not cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines § 15064.5. While ground disturbance will be required to implement the project at some work sites that have the potential to affect archaeological resources, this potential impact will be avoided through implementation of the protective measures presented in Appendix B, Mitigation Measures, Monitoring and Reporting Program for all work sites. Resources identified during site-specific surveys will be protected before ground-disturbing activities are permitted at a site. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

c) The project will not directly or indirectly destroy any unique paleontological resources or sites, or unique geologic features. While ground disturbance to implement the project at some work sites has the potential to affect these resources, this potential impact will be avoided through implementation of the protective measures presented in Appendix B, Mitigation Measures, Monitoring and Reporting Program and Appendix D, Procedure for the Programmatic Evaluation of Paleontological Resources for all work sites. Resources identified during site-specific surveys will be protected before ground-disturbing activities are permitted at a site. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

d) The project will not disturb any human remains, including those interred outside of formal cemeteries. While ground disturbance will be required to implement the project at some work sites that have the potential to affect these resources, this

potential impact will be avoided through implementation of the protective measures presented in Appendix B, Mitigation Measures, Monitoring and Reporting Program for all work sites. Resources identified during site-specific surveys will be protected before ground-disturbing activities are permitted at a site. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

VI. GEOLOGY AND SOILS

a) The project will not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area, or based on other substantial evidence of a known fault. Such an impact will not occur because the project does not create any structures for human habitation.

    i. The project will not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. Such an impact will not occur because the project does not create any structures for human habitation.

    ii. The project will not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. Such an impact will not occur because the project does not create any structures for human habitation.

    iii. The project will not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. Such an impact will not occur because the project does not create any structures for human habitation.

b) The project will not result in substantial soil erosion or the loss of topsoil. Such an impact will not occur because implementation of the restoration project is designed to contribute to an overall reduction in erosion and sedimentation. Existing roads will be used to access work sites. Ground disturbance at most work sites will be minimal, except for road improvements or decommissioning. Road improvements and decommissioning will involve moving large quantities of soil from road fills and stream crossings to restore historic land surface profiles and prevent chronic erosion and sediment delivery to streams. The potential for substantial soil loss associated with road improvement and decommissioning will be avoided through implementation of the mitigation measures presented in Appendix B, Mitigation Measures, Monitoring and Reporting Program. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

c) Some project worksites are on unstable soils; however, the project will not increase the risk of landslides, lateral spreading, subsidence, liquefaction, or collapse. The project actions are designed to stabilize conditions at these sites in order to reduce sediment delivery to salmonid habitat. Actions implemented to stabilize sites may not be successful in all cases, but site instability will not be increased when compared to existing conditions.

d) Some project work sites will be located on expansive soil; however, the project will not create substantial risks to life or property. Such an impact will not occur because the project will create no habitations, and the majority of the restoration actions will not create rigid structures that could be damaged by expansive soils. The few rigid structures to be created by the project (such as fish screens) will be engineered to withstand expansive soils, if they are present.

e) The project will not create any sources of waste water requiring a septic system.

VII. GREENHOUSE GAS EMISSIONS

The project will emit greenhouse gases (GHG) through the use of fuel to operate vehicles and heavy equipment. The work window for restoration activities is generally limited from June 15 to November 1. Construction is limited to at most eighteen weeks during that window, and work must be completed within four years. However, for most projects, work does not occur for the entire eighteen week field season and most restoration activities do not take four years to implement. Some action items do not require heavy equipment use at the restoration site, but may use vehicles to transport materials. Furthermore, for an individual restoration action, GHG emissions may fluctuate during the implementation, as vehicles and equipment will be necessary to varying degrees. Watershed restoration projects often require more time to construct (six to twelve weeks) then other action items. Projects may be completed in a single year of construction, or may require several years. Thus, the amount of time it takes to complete a restoration activity and the use of heavy equipment varies greatly among the actions. Although the project construction schedules and details are constrained by permit and grant conditions, the exact details cannot be specifically stated at this time. However, based on the short duration and small scale of the action items, the project will not generate a significant increase in GHG emissions above existing baseline levels because action items are discrete, limited in scope and implemented during a short time period.

a) Additionally, some action items involve decommissioning of existing paved or dirt roads in forested landscapes. The decommissioned roads are re-planted with native conifer tree species. Additionally, when plants are removed to implement the restoration activity, the replanting ratio is 1:2 (for every plant removed, two native plants are planted). Once established native habitat restoration requires little to no maintenance and therefore little to no GHG emissions and will increase the presence of native plant species that sequester carbon dioxide.

b) Due to each action item’s short duration, small scale, and minimal on-going maintenance, the project will not conflict with an applicable plan, policy or regulation

adopted for the purpose of reducing the emissions of GHG. The short term impacts to the GHG levels are less than significant. Furthermore, the long term impacts to the GHG levels from re-vegetation actions will aid in decreasing the GHG levels by reforesting areas where roads have been removed and where restoration work has been done.

VIII. HAZARDS AND HAZARDOUS MATERIALS

a) The project will not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Any potential significant hazard associated with the accidental release of coolant and petroleum products used with equipment during construction will be avoided through implementation of the mitigation measures presented in Appendix B, Mitigation Measures, Monitoring and Reporting Program. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

b) The project will not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. At work sites requiring the use of heavy equipment, there is a small risk of an accident upsetting the machine and releasing fuel, oil, and coolant. The potential for accidental release will be reduced to a less than significant level through implementation of the mitigation measures presented in Appendix B, Mitigation Measures, Monitoring and Reporting Program. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

c) The project will not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. Such impact is avoided because the project will not create any feature that will emit hazardous substances.

d) The project worksites are not located on any site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

e) No project work site is located within an airport land use plan or within two miles of a public airport or public use airport.

f) No project work site is located within the vicinity of a private airstrip.

g) The project will not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. Except for the case of road decommissioning, the project has no effect on access. The planned decommissioning of selected unused wild land roads will not have a significant impact on emergency vehicle access.

h) The project will not expose people or structures to a significant risk of loss, injury, or death involving wild land fires. At work sites requiring the use of heavy equipment, there is a small risk of an accidental spark from equipment igniting a fire. The potential for accidental fire will be reduced to a less than significant level through

implementation of the mitigation measures presented in Appendix B, Mitigation Measures, Monitoring and Reporting Program. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

IX. HYDROLOGY AND WATER QUALITY

a) The project will not violate any water quality standards or waste discharge requirements. There is the potential for minor short-term increase in turbidity during installation of instream structures or culvert removal, however the mitigation measures described in Appendix B Mitigation, Monitoring and Reporting will assure that the project actions are in compliance with water quality standards. As a result, mitigation measures will ensure that any potentially significant short-term impacts are avoided or mitigated to below a level of significance.

b) The project will not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. Upslope restoration activities will return drainage to historic patterns thereby decreasing surface runoff and increasing infiltration to the ground water.

c) The project will not substantially alter the existing drainage pattern of the work sites in a manner that would result in substantial erosion or siltation on- or off-site. Such an impact will not occur because the project actions are designed to produce decreased erosion overall. Instream habitat structures, such as boulder weirs or flow deflectors, will produce local redistribution of sediments. These structures will produce a local redistribution of bed load, facilitating the deposition of spawning gravel in riffles, and improving scour to maintain pools for juvenile fish habitat. This local redistribution of bed load will not produce a net increase of erosion.

d) The project will not substantially alter the existing drainage pattern of the work sites, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site. The project will decrease the risk of flooding through upslope restoration activities that will return drainage to historic patterns, thereby increasing infiltration and decreasing surface runoff.

e) The project will not create or contribute runoff water that would exceed the capacity of existing or planned storm-water drainage systems, or provide substantial additional sources of polluted runoff. Such an impact will not occur because upslope restoration activities will stabilize slopes and return drainage to historic patterns, thereby decreasing surface runoff and decreasing the silt load delivered to streams in the area of the project.

f) The project will not substantially degrade water quality. During placement of stream habitat structures and culvert replacement, some minor turbidity may be generated. The potential for degradation of water quality will be reduced to a less than significant level through implementation of the mitigation measures presented in Appendix B, Mitigation Measures, Monitoring and Reporting Program. Some short-term minor increase in turbidity may also occur as the streambed around instream structures adjusts during the first high stream flow following activity completion. However, this is not expected to produce a significant increase over background turbidity. As a result, mitigation measures will ensure that any potentially significant short-term impacts to water quality are avoided or mitigated to below a level of significance.

g) The project will not place housing within a 100-year flood hazard area as mapped on any flood hazard delineation map. No housing will be created as part of this project.

h) The project will not place within a 100-year flood hazard area structures which would significantly impede or redirect flood flows. Culvert removal and replacement to be done as part of the project will remove existing impediments to flood flows. Instream habitat structures, such as boulder weirs, deflectors, and bank armor, are built to change the direction and velocity of stream flow. However, these structures are small (sized to affect conditions in the low flow channel) and will not impede flood flows.

i) The project will not expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam. Such an impact will be avoided because all instream structures to be created are small and will not significantly impede flood flows.

j) The project will not expose people or structures to a significant risk of inundation by seiche, tsunami, or mudflow. Such an impact will not occur because project actions are designed to improve or stabilize conditions at the work sites. Upslope restoration actions will reduce the chance of mudflow by stabilizing disturbed areas, and restoring natural drainage patterns. Project work sites are not located in areas at risk to inundation by seiche or tsunami.

X. LAND USE AND PLANNING

a) The project will not physically divide an established community. This impact will not occur because no culvert removal or road decommissioning is proposed in any established community.

b) The restoration activities that comprise this project do not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. Such an impact will not occur because the project's restoration activities are designed to be compatible with local land use plans and ordinances.

c) The project will not conflict with any applicable habitat conservation plan or natural community conservation plan. Such an impact will not occur because project actions are designed to improve aquatic habitat conditions without adversely affecting any other species or their habitats.

XI. MINERAL RESOURCES

a) The project will not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. Such an impact will not occur because project actions are only designed to stabilize and restore habitat and soils within the actions area.

b) The project will not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. Such an impact will not occur because no mineral resource recovery sites occur at the project work sites.

XII. NOISE

a) The project will not result in exposure of persons to, or generation of noise levels in excess of, standards established in the local general plan or noise ordinance, or applicable standards of other agencies. There may be a minor temporary increase in noise levels at those work sites requiring the use of heavy equipment. While such short-term increase in noise will not produce a significant increase in the noise level in the general environment, there is a potential for equipment noise to affect workers in close proximity to equipment producing noise levels ≥85 db, such as chainsaws or backhoes. However, such an impact will not occur because personnel operating noisy equipment will be required to wear hearing protection. As a result, mitigation measures will ensure that any potentially significant noise impacts are avoided or mitigated to below a level of significance.

b) The project will not result in exposure of persons to, or generation of, excessive ground-borne vibration or ground-borne noise levels. Such an impact will not occur because only minor amounts of ground-borne vibration or noise will be generated short-term at those work sites requiring the use of heavy equipment.

c) The project will not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. Such an impact will not occur because most project structures are passive (i.e., contain no moving parts). The only exceptions are the proposed fish screens, which will contain moving brushes to clean the screens. These brushes are driven by slow speed (10-15 RPM) water wheels and will not substantially increase ambient noise levels where installed.

d) The project will not result in a substantial temporary, or periodic, increase in ambient noise levels in the project vicinity above levels existing without the project. Such an impact will not occur because only minor amounts of noise will be generated temporarily at those work sites requiring the use of heavy equipment. At those sites near nesting or breeding sites for listed species, heavy equipment will only be used

outside the sensitive periods for nesting or breeding, as described in Appendix B, Mitigation Measures, Monitoring and Reporting Program. As a result, mitigation measures will ensure that any potentially significant noise impacts are avoided or mitigated to below a level of significance.

e) None of the project work sites are located within two miles of a public airport or public use airport.

f) None of the project work sites are located within the vicinity of a private airstrip.

XIII. POPULATION AND HOUSING

a) The project will not induce substantial population growth in an area, either directly or indirectly. Such an impact will not occur because the project will not construct any new homes, businesses, roads, or other human infrastructure.

b) The project will not displace any existing housing and will not necessitate the construction of replacement housing elsewhere.

c) The project will not displace any people and will not necessitate the construction of replacement housing elsewhere.

XIV. PUBLIC SERVICES

a) The project will not have any significant environmental impacts associated with new or physically altered governmental facilities. Issuance of restoration grants to government agencies could, in some cases, lead to minor increases in staffing to complete projects. Such increases will not lead to any significant adverse impacts, because the increases are short term, and no significant construction will be required to accommodate additional staff.

XV. RECREATION

a) The project would not increase the use of existing neighborhood and regional parks, or other recreational facilities. Such an impact will not occur because the project actions will restore anadromous fish habitat and do not significantly alter human use or facilities at existing parks or recreational facilities. Overall, the Restoration Program is expected to increase recreation opportunities by assisting in restoring populations of anadromous fish.

b) The project does not include recreational facilities and does not require the construction or expansion of recreational facilities.

XVI. TRANSPORTATION/TRAFFIC

a) The project will not conflict with any applicable plans, ordinances or policies that establish measures of effectiveness for the performance of the circulation systems. Such a conflict will not occur because the project will result in only minor temporary

increases in traffic to primarily wild land sites during implementation of habitat improvement measures.

b) The project will not conflict, either individually or cumulatively, with any applicable congestion program established by the county congestion management agency for designated roads or highways. Such an impact will not occur because the habitat improvement actions will not generate a significant amount of traffic at each individual work site and because the work sites are dispersed throughout the coastal counties.

c) The project will not result in any change in air traffic patterns.

d) The project will not alter roads in any way that will substantially increase hazards to transportation. The proposed project will reduce hazards to transportation, because the proposed project will correct and reduce landslide and erosion damage on the selected rural roads.

e) The project will not result in inadequate emergency access. Such an impact will not occur because during replacement of small road crossings, an alternate route for traffic will be provided around the construction.

f) The project will not significantly affect parking capacity or demand for parking.

g) The project will not conflict with adopted policies, plans, or programs supporting alternative transportation.

XVII. TRIBAL CULTURAL RESOURCES

a) The project will not cause substantial adverse change in the significance a of tribal cultural resource listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resource Code 5020.1(k). Although ground disturbance is required to implement the project, impacts to tribal cultural resources will be avoided through implementation of the protective measures presented in Appendix B: Mitigation Measures, Monitoring and Reporting Program; Appendix D: Procedures for the Programmatic Evaluation of Paleontological Resources; and Appendix E: Procedure for the Programmatic Evaluation of Archeological Resources for all work sites, where applicable. Resources identified during site-specific surveys will be protected before any ground-disturbing activities are permitted at a site. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

   On November 1, 2017, in compliance with PRC § 21080.3.1 and the CDFW Tribal Communication Policy, the CDFW requested a list of Tribes potentially affected by the 2017 Fisheries Habitat Restoration (FHR) project from the Native American Heritage Commission. Upon receipt of the listed Tribes and their contacts, the CDFW provided official notification by letter on November 8, 2017, of the FHR project to those Tribal contacts. The CDFW Tribal Liaison will address requests for formal consultation on the FHR project.

b) The project will not cause substantial adverse change in the significance of a tribal cultural resource determined by the CDFW to be significant pursuant to the criteria set forth in subdivision (c) of Public Resources Code section 5024.1. Restoration sites will consist mainly of cleanup and revegetation. The CDFW will apply the criteria set forth in subdivision (c) of the Public Resources Code section 5024.1 to potential tribal cultural resources identified during site-specific surveys and will consider the significance of the resource to California Native American tribes. Tribal cultural resources identified during site-specific surveys will be protected before any ground-disturbing activities are permitted at a site. Potential impacts to tribal cultural resources due to ground disturbance activities will be avoided through implementation of the protective measures presented in Appendix B: Mitigation Measures, Monitoring and Reporting Program; Appendix D: Procedures for the Programmatic Evaluation of Paleontological Resources; and Appendix E: Procedure for the Programmatic Evaluation of Archeological Resources for all work sites, where applicable. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

XVIII. UTILITIES AND SERVICE SYSTEMS

a) The project will not produce wastewater.

b) The project will not require, or result in the construction of, new water or wastewater treatment facilities or expansion of existing facilities. Such an impact will not occur because the project will not produce wastewater.

c) The project will not cause significant adverse environmental effects associated with the construction of new storm water drainage facilities or expansion of existing facilities.

d) The project will have sufficient water supplies available to serve the project from existing entitlements and resources.

e) The project will not produce wastewater.

f) The project will not generate solid waste requiring disposal in a landfill.

XIX. MANDATORY FINDINGS OF SIGNIFICANCE

a) The project does have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory. However, the potential is reduced to less than significant by implementing the mitigation measures in Appendix B: Mitigation Measures, Monitoring and Reporting Program. The project shall be implemented in a manner that will avoid short-term adverse impacts to rare plants and animals, and cultural resources during construction. The project activities are designed to improve and

restore stream habitat; thereby providing long-term benefits to both anadromous salmonids and other fish and wildlife.

b) The project does not have adverse impacts that are individually limited, but cumulatively considerable. Cumulative adverse impacts will not occur because potential adverse impacts of the project are only minor and temporary in nature. It is the goal of the project that the beneficial effects of habitat enhancement actions will be cumulative over time and contribute to the recovery of listed anadromous salmonids.

c) The project does not have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly. The habitat enhancement measures implemented as part of this project will contribute to improved water quality, increased soil stability, and the recovery of listed salmonids, all of which will be beneficial to human beings.

Non-Physical Items

Project ID	Proj. Type	Prop. No.	Title	Applicant	County	Focus	CDFW Region
725503	PI	015	Watershed Stewards Program - Year 25	California Conservation Corps - Watershed Stewards Program	All counties	FRGP	1
725563	PL	090	Passage Assessment Database (PAD) 2018-2020	Pacific States Marine Fisheries Commission	All counties	FRGP	2
725598	TE	129	North Coast Water Conservation, BMP, and Water Rights Education Series	Salmonid Restoration Federation	All counties	FRGP	1
725559	PD	085	Lower Stotenburg Creek Coho Habitat Enhancement Design Project	Smith River Alliance	Del Norte	FRGP	1
725578	MD	106	Mill Creek LCM Station, Smith River, California	Smith River Alliance	Del Norte	FRGP	1
725511	MO	025	Monitoring and Evaluation of Salmonid Habitat Restoration 2017	Pacific States Marine Fisheries Commission	Del Norte, Humboldt, Trinity, Siskiyou, Sonoma, Marin, Mendocino, Napa	FRGP	1, 3
725524	PD	043	Redwood Creek, South Fork Eel Flow Enhancement Project Design	Salmonid Restoration Federation	Humboldt	FRGP	1
725560	PD	086	Squaw Creek Coho Habitat Improvement Design Project	Pacific Coast Fish, Wildlife and Wetlands Restoration Association (PCFWWRA)	Humboldt	FRGP	1
725561	PD	087	Lindsay Creek Coho Barrier Removal Design Project	Pacific Coast Fish, Wildlife and Wetlands Restoration Association (PCFWWRA)	Humboldt	FRGP	1

Non-Physical Items

Project ID	Proj. Type	Prop. No.	Title	Applicant	County	Focus	CDFW Region
725566	PD	093	Ryan Creek Off Channel Habitat Improvement Project	Pacific Coast Fish, Wildlife and Wetlands Restoration Association	Humboldt	FRGP	1
725574	PD	102	Cannibal Island Restoration Feasibility Study	California Trout	Humboldt	FRGP	1
725595	PD	125	City of Eureka Humboldt Bay Tributary Restoration Feasibility Study	City of Eureka	Humboldt	FRGP	1
725538	MD	059	South Fork Eel River Adult Steelhead SONAR Monitoring project	California Trout, Inc.	Humboldt, Mendocino	SHRRC	1
725569	TE	096	Mattole River Water Conservation Technical Assistance Program Phase II	Sanctuary Forest	Humboldt, Mendocino	FRGP	1
725602	MO	134	Evaluation of Constructed Off Channel Habitat Projects	Mid Klamath Watershed Council	Humboldt, Siskiyou	FRGP	1
725576	MD	104	Topanga Creek Steelhead Life Cycle Monitoring 2018-2020	Pacific States Marine Fisheries Commission	Los Angeles	FRGP	5
725588	PI	116	Santa Clara River Steelhead Coalition	California Trout, Inc.	Los Angeles, Ventura	FRGP	5
725603	PL	135	Upper Walker Creek Watershed Road Related Sediment Source Assessment	Marin Resource Conservation District	Marin	FRGP	3
725528	MD	048	Mendocino Coast Salmonid Life Cycle and Regional Monitoring	Pacific States Marine Fisheries Commission	Mendocino	FRGP	1
725535	MD	055	CA Coastal Salmonid Population Monitoring in the Russian River (2019)	Sonoma County Water Agency	Mendocino, Sonoma	FRGP	1, 3

Non-Physical Items

Project ID	Proj. Type	Prop. No.	Title	Applicant	County	Focus	CDFW Region
725517	PD	032	Big Sur River Concrete Ford Alternative Design Project – Riverside	Trout Unlimited, Inc.	Monterey	FRGP	4
725581	PI	109	South Coast Steelhead Coalition	California Trout, Inc.	Orange, Riverside, San Diego	FRGP	5
725507	MD	019	Scott Creek Life Cycle Monitoring Station, 2018-2021	Regents of the University of California	Santa Cruz	FRGP	3
725496	PD	007	North Cow Creek Fish Barrier Removal (BVWD)	Western Shasta Resource Conservation District	Shasta	SHRRC	1
725508	PD	021	French Creek In-stream and Off Channel Habitat Enhancement - PD Phase 2	Scott River Watershed Council	Siskiyou	FRGP	1
725537	PL	058	Salmon River Spawning Gravel Assessment	Salmon River Restoration Council	Siskiyou	FRGP	1
725546	MO	070	Effectiveness & Validation Monitoring-Scott River Beaver Dam Analogues	Scott River Watershed Council	Siskiyou	FRGP	1
725584	PI	112	Salmon River Public Involvement in Restoration	Salmon River Restoration Council	Siskiyou	FRGP	1
725497	PD	008	Kidd Creek Fish Passage Design Project	Trout Unlimited, California	Sonoma	FRGP	3
725562	PD	088	Dutch Bill Creek Water Conservation Design Project	Gold Ridge Resource Conservation District	Sonoma	FRGP	3
725589	PD	118	Upper Mark West Creek Salmonid Habitat Enhancement Project	Sonoma Resource Conservation District	Sonoma	FRGP	3
725565	MD	092	Ventura River Steelhead Abundance and PIT Tag Monitoring 2018-2020	Pacific States Marine Fisheries Commission	Ventura	FRGP	5

Non-Physical Items

Project ID	Proj. Type	Prop. No.	Title	Applicant	County	Focus	CDFW Region
725558	MD	084	Southern California steelhead DIDSON and Life Cycle Monitoring 2018-2020	Pacific States Marine Fisheries Commission	Ventura, Santa Barbara	FRGP	5

Proj. Type

MD: monitoring status
MO: Monitoring watershed restoration
PD: Project design
PI: Public Involvement and Capacity Building (includes AmeriCorps projects)
PL: Watershed evaluation, assessment, and planning
TE: Private sector technical training and education

Focus

FRGP: Fisheries Restoration Grant Program
SHRRC: Steelhead Report and Restoration Card

Action Items

Proj ID	Proj. Type	Prop. No.	Title	Applicant	County	Focus	CDFW Region
725504	HI	016	Fish Creek Instream Habitat Enhancement Project	Eel River Watershed Improvement Group	Humboldt	FRGP	1
725530	HI	050	Little Van Duzen Instream Habitat Enhancement Project	Eel River Watershed Improvement Group	Humboldt	FRGP	1
725544	HI	068	Jordan Creek Instream Habitat Enhancement Project	Eel River Watershed Improvement Group	Humboldt	FRGP	1
725553	FP	079	Fish Passage Improvement Project at 12th Street	City of Fortuna	Humboldt	FRGP	1
725564	HI	091	Instream Habitat Enhancement of Salmon Creek, Humboldt Bay Tributary	Eel River Watershed Improvement Group	Humboldt	FRGP	1
725567	HR	094	Lower Mattole River and Estuary Riparian Enhancement Project, Phase 2	Mattole Restoration Council	Humboldt	FRGP	1
725580	HI	108	Freshwater Creek Off-Channel Habitat Enhancement Project	Redwood Community Action Agency	Humboldt	FRGP	1
725512	HB	026	Fish Passage and Off-Channel Habitat Restoration at Roy's Pools	Salmon Protection and Watershed Network	Marin	FRGP	3
725554	HI	080	Floodplain and Instream Habitat Restoration on San Geronimo Creek	Salmon Protection and Watershed Netowrk	Marin	FRGP	3
725575	HI	103	San Geronimo Valley Landowner Assistance Program- Restoring Coho Habitat	Marin Resource Conservation District	Marin	FRGP	3
725498	FP	009	Skunk Train Coho Sediment Reduction and Fish Passage Improvement Project	Trout Unlimited, Inc.	Mendocino	FRGP	1

Action Items

Proj ID	Proj. Type	Prop. No.	Title	Applicant	County	Focus	CDFW Region
725505	HU	017	Rockpile Creek Sediment Reduction & Instream Barrier Removal	The Conservation Fund	Mendocino	FRGP	1
725506	HI	018	Dunn Creek Habitat Enhancement Project	Eel River Watershed Improvement Group	Mendocino	FRGP	1
725515	HI	030	Redwood Creek (HT) Instream Habitat Enhancement Project	Eel River Watershed Improvement Group	Mendocino	FRGP	1
725527	HI	047	James Creek Coho Stream Habitat Enhancement Project-Phase II	Mendocino Land Trust	Mendocino	FRGP	1
725529	HI	049	North Fork Noyo River-Dewarren Creek Coho Habitat Enhancement Project	California Conservation Corps	Mendocino	FRGP	1
725531	HU	051	Coulborn & Sebbas Cks Sediment Reduction & Salmonid Habitat Enhancement	Mattole Salmon Group	Mendocino	FRGP	1
725532	HI	052	Middle Fork of North Fork Noyo River Coho Habitat Enhancement Project	California Conservation Corps	Mendocino	FRGP	1
725533	HI	053	North Fork Big River Coho Stream Habitat Enhancement Project - Phase II	California Conservation Corps	Mendocino	FRGP	1
725548	HU	073	Little North Fork Noyo Sediment Reduction and Coho Recovery Project	Trout Unlimited	Mendocino	FRGP	1
725549	HI	074	Upper Little North Fork Noyo Coho Habitat Enhancement Project	Trout Unlimited	Mendocino	FRGP	1
725572	HU	99	Hare Creek and Bunker Gulch Road Decommissioning Implementation Project	Mendocino Land Trust	Mendocino	FLAR	1

Action Items

Proj ID	Proj. Type	Prop. No.	Title	Applicant	County	Focus	CDFW Region
725607	HU	139	Dry Dock Restoration Road Decommissioning and Road to Trail Project	California Department of Parks and Recreation	Mendocino	FLAR	1
725514	FP	028	Cachagua Creek Fish Passage Restoration Project - Valley Creek Park	Trout Unlimited, Inc.	Monterey	FRGP	4
725547	HI	071	Chorro Creek Ecological Reserve Floodplain Restoration Project	The Bay Foundation of Morro Bay (Morro Bay National Estuary Program, MBNEP)	San Luis Obispo	FRGP	4
725597	FP	127	Alpine Creek Fish Passage Project	San Mateo County Resource Conservation District	San Mateo	FRGP	3
725521	FP	037	Fish Passage Improvement at Crossing 9, Quiota Creek	Cachuma Operation and Maintenance Board	Santa Barbara	FRGP	5
725552	FP	078	Little Springs Migration Barrier Removal	Northwest California Resource Conservation & Development Council	Siskiyou	FRGP	1
725592	HI	121	Kelly Gulch Fisheries and Riparian Habitat Enhancement Phase I and III	Salmon River Restoration Council	Siskiyou	FRGP	1
725499	HI	010	Green Valley Creek 2017 Coho Instream Habitat Enhancement Project	Gold Ridge Resource Conservation District	Sonoma	FRGP	3
725516	HU	031	Franchini Creek Sediment Reduction Project	The Conservation Fund	Sonoma	FRGP	3
725591	HB	120	Dempster Vineyard Dam Removal Project	Gold Ridge Resource Conservation District	Sonoma	FRGP	3
725593	HI	122	2017 Tannery Creek Coho Instream Habitat Enhancement Project	Gold Ridge Resource Conservation District	Sonoma	FRGP	3

Action Items

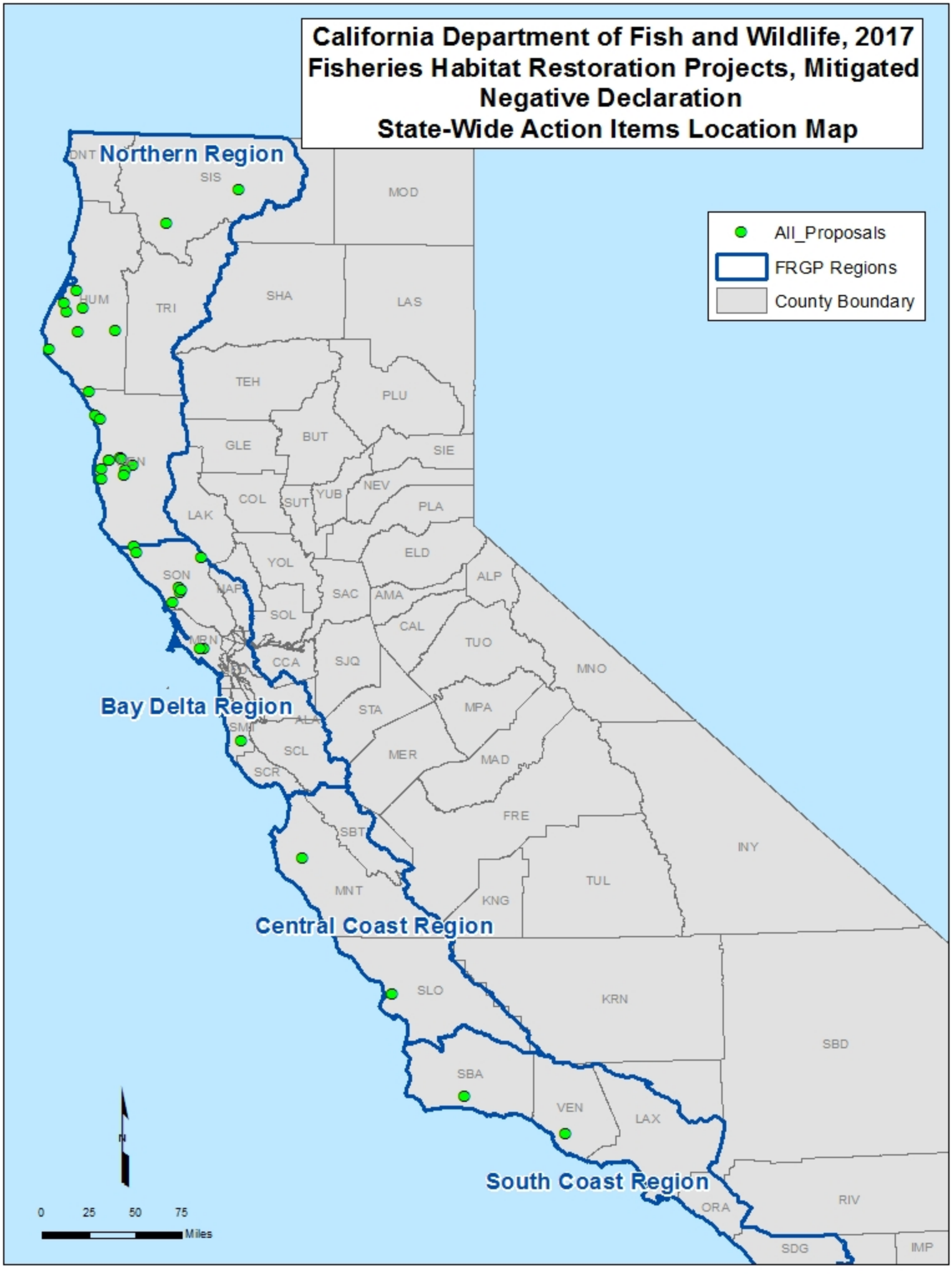
Proj ID	Proj. Type	Prop. No.	Title	Applicant	County	Focus	CDFW Region
725596	HB	126	Iron Horse Vineyards Dam Removal	Gold Ridge Resource Conservation District	Sonoma	FRGP	3
725586	HR	114	Arundo Free Watershed Campaign	Ventura County Watershed Protection District	Ventura	FRGP	5

Proj. Type

FP: Fish passage at stream crossings
HB: Instream barrier modification for fish passage
HI: Instream habitat restoration
HR: Riparian restoration
HU: Watershed restoration (upslope)

Focus

FRGP: Fisheries Restoration Grant Program
FLAR: Forest Land Anadromous Restoration


California Department of Fish and Wildlife, 2017
Fisheries Habitat Restoration Projects, Mitigated Negative Declaration
State-Wide Action Items Location Map
All_Proposals
FRGP Regions
County Boundary
Northern Region
Bay Delta Region
Central Coast Region
South Coast Region
DNT
SIS
MOD
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MER
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KNG
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KRN
SBD
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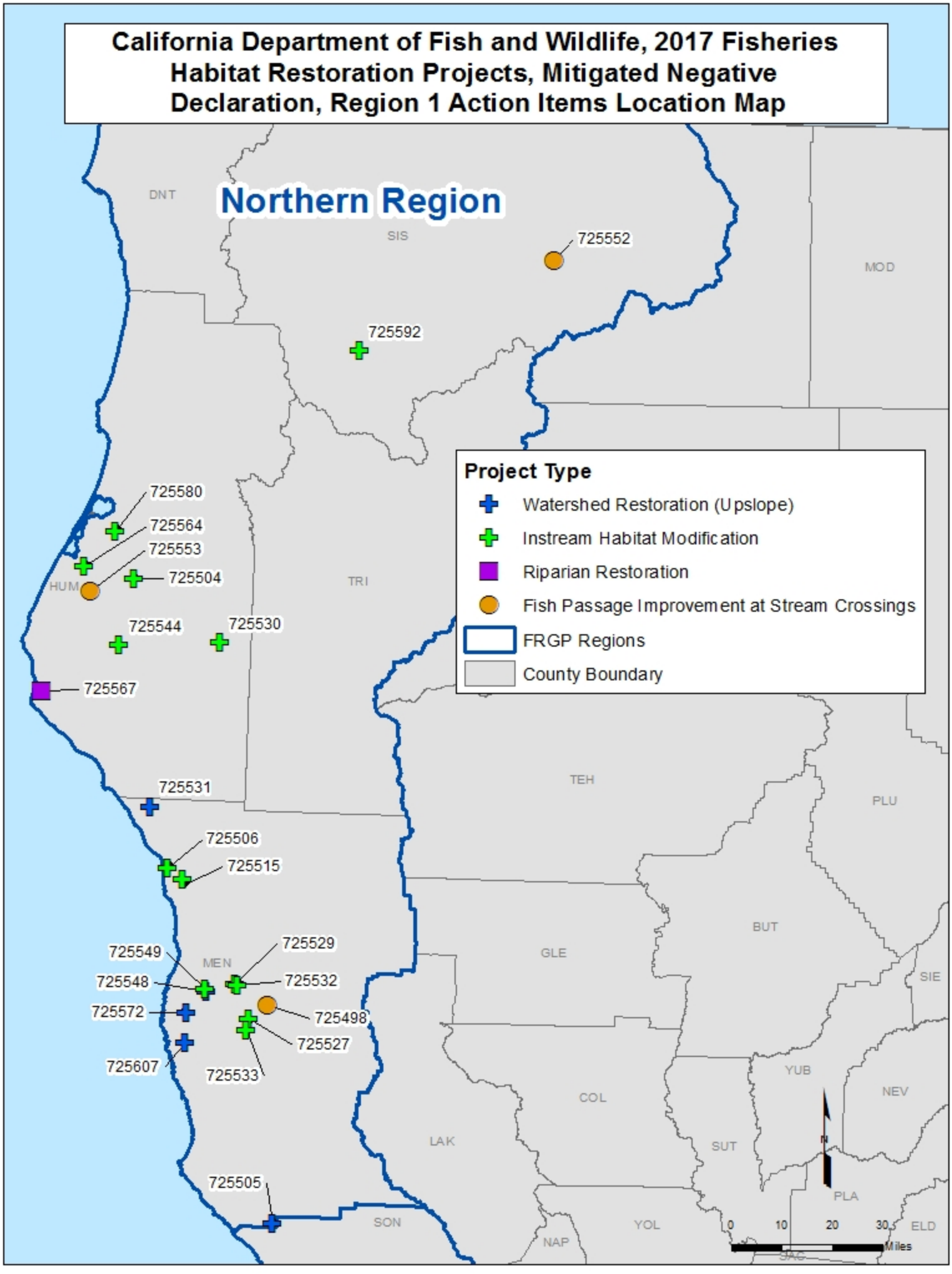
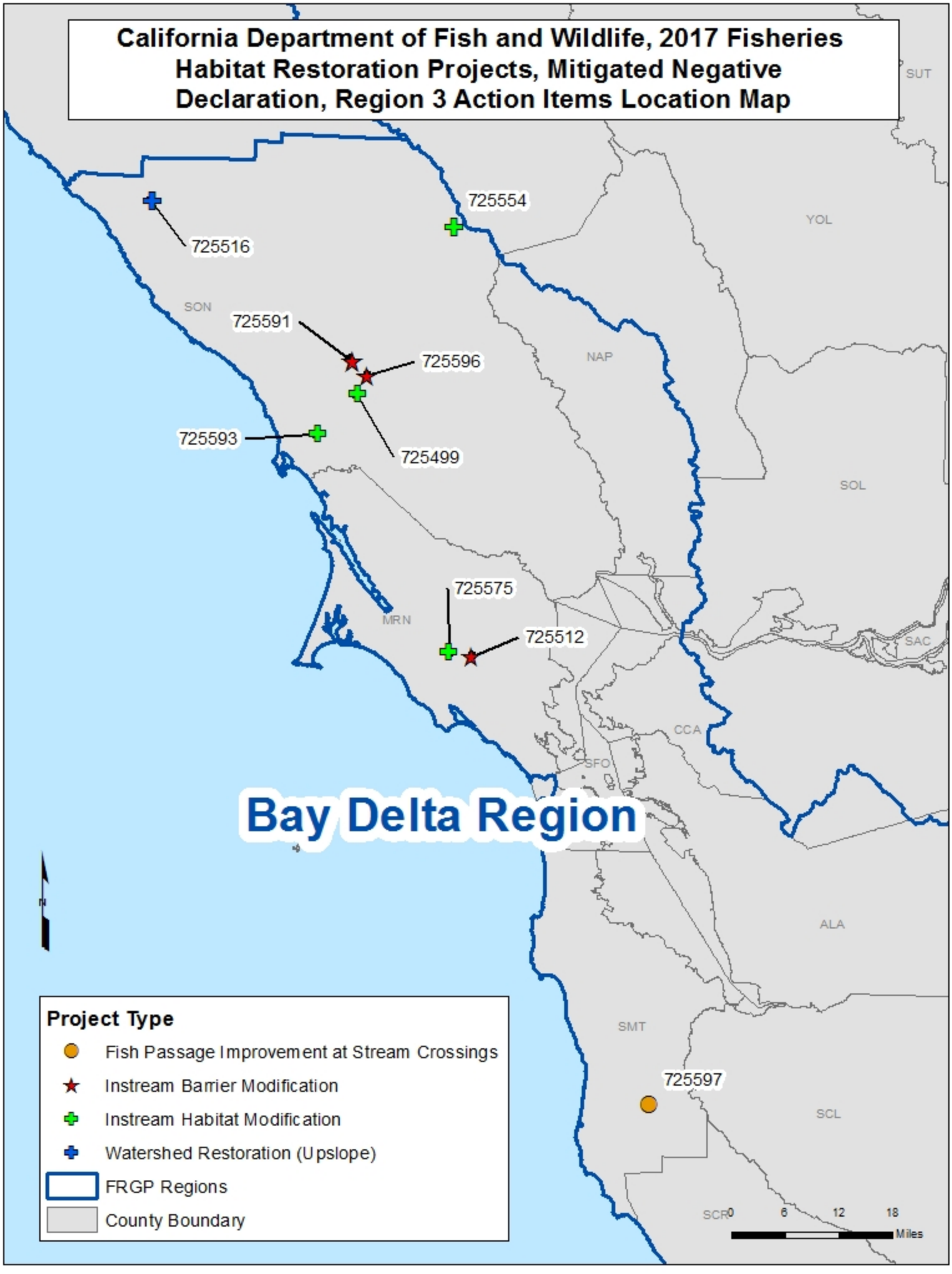
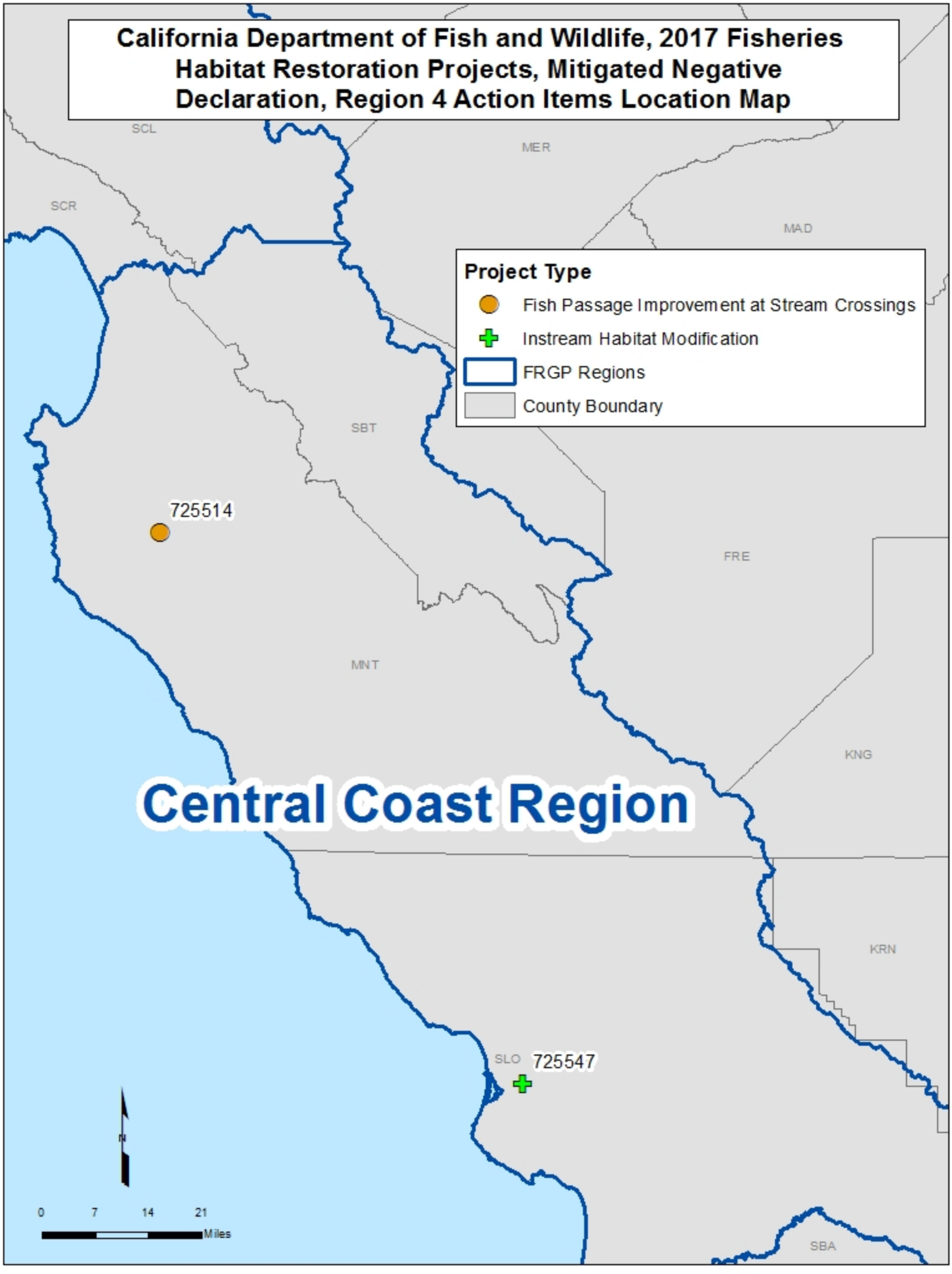
75
Miles

California Department of Fish and Wildlife, 2017 Fisheries Habitat Restoration Projects, Mitigated Negative Declaration, Region 1 Action Items Location Map




California Department of Fish and Wildlife, 2017 Fisheries Habitat Restoration Projects, Mitigated Negative Declaration, Region 3 Action Items Location Map
725554
725516
725591
725596
725593
725499
725575
725512
725597
Bay Delta Region
SUT
YOL
SON
NAP
SOL
MRN
SAC
CCA
SFO
ALA
SMT
SCL
SCR
Project Type
Fish Passage Improvement at Stream Crossings
Instream Barrier Modification
Instream Habitat Modification
Watershed Restoration (Upslope)
FRGP Regions
County Boundary
0 6 12 18
Miles


California Department of Fish and Wildlife, 2017 Fisheries Habitat Restoration Projects, Mitigated Negative Declaration, Region 4 Action Items Location Map
SCL
MER
SCR
MAD
Project Type
Fish Passage Improvement at Stream Crossings
Instream Habitat Modification
FRGP Regions
County Boundary
SBT
725514
FRE
MNT
KNG
Central Coast Region
KRN
SLO
725547
N
0
7
14
21
Miles
SBA

California Department of Fish and Wildlife, 2017 Fisheries Habitat Restoration Projects, Mitigated Negative Declaration, Region 5 Action Items Location Map

Introduction: The Eel River Watershed Improvement Group (ERWIG) will add 56 logs/rootwads to create 21 features along 0.54 miles of Fish Creek. This project is necessary because the *Recovery Strategy for California Coho Salmon (*California Department of Fish and Game [CDFG], 2004), characterizes Fish Creek as having a "10-50% consistent presence" of Coho Salmon, a "medium" risk of extinction for the Southern Oregon Northern California Coastal Coho (SONCC) Evolutionarily Significant Unit, and a "medium" restoration and management potential. The *Van Duzen River Basin Assessment* (CDFG 2013) makes recommendations to "Increase depth, area or shelter complexity in pools, by adding LWD [large woody debris] or combinations of boulders and LWD" within the greater Lawrence Creek Watershed. The 2012 *Stream Inventory Report: Fish Creek* makes recommendation to "increase [complex] woody cover in the pools and flat water habitat units." The reports also state that, "Adding high quality complexity with woody cover in the pools is desirable". "Installing large wood structures that will increase or deepen pool habitat is recommended."

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Part VII (Flosi et al 1998).

Objectives: The goal of this project is to place instream structures, guided by assessment results. The objectives of this project include:

- Place 21 LWD features containing 56 logs to enhance pool depths, increase pool cover and recruit woody debris.
- Plant 100 conifers to provide shade and wood for future recruitment.
- Bring the LWD count in the project reach to a total of 76 (142 per mile) to meet the target value of >85 pieces per mile as outlined in the *Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon (*Oncorhynchus kisutch) (National Oceanic and Atmospheric Administration 2014).
- Place LWD in Fish Creek to provide shelter and deepen existing pools.

Project Description:

Location: The project reach on Fish Creek begins at the confluence with Lawrence Creek and extends upstream 0.54 miles. Of the 21 features, eight are downstream of the Lawrence Mainline Road Bridge and 13 are upstream of the bridge. The middle of the project reach is located at 40.63265500, -123.99515100.

Project Set up: The Project Manager will oversee the project with assistance from the Project Associate (Tasks 1, 2, 3, 4, 5, 7 and 8). The Project Associate will assist with agreement oversight, purchasing and invoicing, and reporting (Tasks 1, 4, and 8).

The Bookkeeping Subcontractor will pay out employees, vendors and subcontractors (Task 4).

The Fish Habitat Subcontractor (FHS) will participate in project preparation, implementation, tree planting, and collecting metrics. The FHS will ensure tools and materials are supplied throughout the project duration. Additionally the FHS will provide onsite training and direction to ensure features meet the criteria set by the *California Salmonid Stream Habitat Restoration Manual*, Part VII (Flosi et al. 1998). The FHS will anchor the structures according to design and anchoring specifications. The FHS will also move LWD into position using a grip hoist come along. The FHS will plant trees. (Tasks 2, 3, 5, 6, and 7.)

The Heavy Equipment Subcontractor (HES) will be responsible for placing LWD at the features where access is available. The HES will bring heavy equipment to and from the worksite. The HES will also provide a Licensed Timber Operator to fall trees and buck them into logs for placement by excavator and/or the FHS. (Task 3.)

As cost-share, the landowner will provide a Hydrologist to provide guidance and collaboration (Tasks 3 and 5); a Lead Biologist to provide oversight and guidance (Tasks 3 and 5); and a Staff Biologist to provide oversight and guidance (Tasks 3 and 5). The landowner will also provide an Area Forester – Registered Professional Forester (RPF) to outline access guidelines and be the day-to-day contact. The RPF will determine what trees can be felled for use in this project. Trees will be chosen that are safe to fall and will not significantly alter the canopy cover (Tasks 2, 3, 5 and 6).

Materials: Materials necessary for this project include Tools and Materials necessary for structure construction including timber bits, timber extensions, drills, portable band saws, ground fault connection interrupters, wire rope, cable clamps, rice straw, waders, markers, flagging, threaded rebar, metal nuts and plates, and generators. Materials supplied as cost-share by the landowner include conifer seedlings, and conifer logs and rootwads.

Tasks: Place 21 LWD features containing 56 logs along 0.54 miles of Fish Creek and plant 100 trees by accomplishing the following tasks:

Task 1. Agreement Oversight: ERWIG will oversee the Agreement. The Project Manager and Project Associate will communicate and coordinate with the landowner representative to obtain entry permits, coordinate implementation schedules, obtain wood donation, and go over project implementation details. Upon receipt of a Notice to Proceed, the Project Manager will prepare *Notification of Lake or Streambed Alteration*, hire subcontractors and provide management and direction to subcontractors throughout the duration of the project. All reporting, billing and invoicing will be pursuant to Agreement and regulatory guidelines. The Project

Manager will work with a Bookkeeping Subcontractor to provide fiscal management.

Task 2. Subcontractor Preparation and Training: ERWIG train all subcontractors about landowner concerns and protocols before they enter the property to begin project work. The training will include security issues, permit requirements, Agreement requirements and road protocols. ERWIG will ensure that all subcontractors understand that ONLY those designated to work on the project are allowed on the property. The ERWIG will work closely with subcontractors to ensure that no actions result in the delivery of sediment to the stream channel when delivering, staging, and placing large wood in the stream. ERWIG and its subcontractors will be aware of the status of various roads within the project area, and will not enter any decommissioned roads with heavy equipment, or do anything that might cause significant impacts on the hydrology of decommissioned road segments.

Task 3. Final Feature Design and Site Preparation: The Project Manager and FHS will prepare site specific designs based on channel morphology, access, and LWD availability. They will submit designs for landowner and Grantor Project Manager approval. The landowner's Hydrologist, Lead Biologist, Staff Biologist and RPF will provide consultation on this phase of the project. The Project Manager along with the FHS will flag sites for wood selection, staging, and installation; clear brush as needed; and designate staging areas for wood along project reaches. The RPF will choose trees that are suitable for falling for project needs.

Task 4. Purchasing, including billing and invoicing: Tools and materials will be purchased prior to the start of implementation and on an as needed basis throughout the project. Billing and invoicing will take place in a prompt manner.

Task 5. Project Implementation: Under the direction of the Project Manager and FHS, with oversight from landowner's staff, site construction on 21 LWD features will begin. Source a combination of downed logs and live trees. The Heavy Equipment Subcontractor Licensed Timber Operator will procure logs from the riparian zone by selectively cutting down trees to fall into the creek. Logs may be bucked down in order to create multiple usable logs when necessary with the goal of maintaining the largest whole tree material available. The Heavy Equipment Subcontractor Licensed Equipment Operator will place downed logs into the stream in accordance with design plans. When necessary, the FHS will move LWD into position using a grip hoist come along. Use this method for placing and securing rootwads to logs while anchoring is taking place as well. Site construction, wood placement, and anchoring will be in accordance with the *California Salmonid Stream Habitat Restoration Manual*, Part VII (Flosi et al. 1998).

The project will utilize living riparian trees as anchors by wedging the logs between them where feasible. The FHS will then anchor the sites according to design and anchoring specifications. The FHS will use one-inch threaded rebar to anchor logs to mature riparian trees, and each other. Holes will be drilled through the logs and their anchor trees, using a drill, timber bit, and drill bit extensions when necessary. One-inch rebar will be strung through the log and secured with nuts and washers. The FHS will be supervised by the Project Manager. Structures will be complex consisting of logs fastened together along with stumps with rootwads attached. Erosion control methods will be employed as required at each structure to eliminate the possibility of sediment transport to the stream.

To address concerns over invasive species follow the *California Department of Fish and Wildlife Aquatic Invasive Species Decontamination Protocol* (CDFW 2013), U.S. Department of the Interior-Bureau of Reclamation 2012 *Inspection and Cleaning Manual for Equipment and Vehicles to Prevent the Spread of Invasive Species* and the ERWIG's decontamination protocol. Implementation will be phased to allow for wood development and to accommodate decontamination protocols. Tools and materials will be purchased, repaired and rented on an as needed basis.

Task 6. Riparian Planting: The FHS will return to the project site in the winters of 2018, 2019, 2020, 2021 and/or 2022 to plant 100 conifer seedlings along 0.6 miles of riparian zone, with a primary focus in areas lacking sufficient conifer cover.

Task 7. Progress reports, Post-Project Data and Photo Collection: Following implementation, photos will be taken of the project and metrics will be collected which satisfy the Agreement Annual Reports and Final Report. Write and deliver progress reports along with invoices.

Task 8. Reporting: The Project Manager and Project Associate will write and deliver Annual Reports and a Final Report to the Grantor Project Manager.

Deliverables: The following will be delivered as part of this project:

- Twenty-one LWD features constructed and anchored in place containing a total of 56 logs and rootwads along with 21 yards of small woody debris.
- One-hundred conifers.
- Progress reports with each invoice and Annual Reports for the duration of the project.
- A Final Report.

Timelines:

Task 1. Upon approval through March 31, 2022, coordinate with landowners for project entry, prepare *Notification of Lake or Streambed Alteration*, hire subcontractors and procure LWD. Oversee and coordinate the project.

Task 2. Upon approval through October 31, 2021, oversee and coordinate the project and ensure that subcontractors are trained and operate under landowner protocols.

Tasks 3 & 4. Upon approval through March 1, 2022, finalize design, label features, and purchase tools and materials.

Task 5. June 15, 2018 through October 31, 2018, June 15, 2019 through October 31, 2019, June 15, 2020 through October 31, 2020, and June 15, 2021 through October 31, 2021. Project implementation, installation of approved LWD structures. Erosion control will be installed as project features are completed.

Task 6. December 1, 2018 through March 1, 2019, December 1, 2019 through March 1, 2020, December 1, 2020 through March 1, 2021, December 1, 2021 through March 1, 2022 riparian plantings will occur after completion of features.

Task 7. June 15, 2018 through March 1, 2022 post-project description, photos and quantitative metrics will be collected. Progress reports will be written and delivered for invoicing.

Task 8. November 15, 2018, November 15, 2019, November 15, 2020, November 15, 2021 & March 31, 2022, post project photos and metrics will be delivered in an Annual Report, and a Final Report.

Additional Requirements: The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a "notice to proceed" letter has been received from the Grantor Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW. The Grantee should use the largest whole tree material available.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Manager. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Iaqua Buttes (4012368) OR Arcata South (4012471) OR Korbel (4012378) OR Maple Creek (4012377) OR McWhinney Creek (4012461) OR Mad River Buttes (4012367) OR Hydesville (4012451) OR Owl Creek (4012358) OR Yager Junction (4012357))

Possible species within the Iaqua Buttes Quad and surrounding quads for 725504 Fish Creek Instream Habitat Enhancement Project, T03N R02E S19, Humboldt County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
alpine marsh violet *Viola palustris*	PDVIO041G0	None	None	G5	S1S2	2B.2
American manna grass *Glyceria grandis*	PMPOA2Y080	None	None	G5	S3	2B.3
bald eagle *Haliaeetus leucocephalus*	ABNKC10010	Delisted	Endangered	G5	S3	FP
Bald Mountain milk-vetch *Astragalus umbraticus*	PDFAB0F990	None	None	G4	S2	2B.3
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S2	
bensoniella *Bensoniella oregona*	PDSAX02010	None	Rare	G3	S2	1B.1
black-crowned night heron *Nycticorax nycticorax*	ABNGA11010	None	None	G5	S4	
bristle-stalked sedge *Carex leptalea*	PMCYP037E0	None	None	G5	S1	2B.2
bunchberry *Cornus canadensis*	PDCOR01040	None	None	G5	S2	2B.2
California globe mallow *Iliamna latibracteata*	PDMAL0K040	None	None	G2G3	S2	1B.2
chinook salmon - California coastal ESU *Oncorhynchus tshawytscha*	AFCHA0205S	Threatened	None	G5	S1	
coast checkerbloom *Sidalcea oregana ssp. eximia*	PDMAL110K9	None	None	G5T1	S1	1B.2
coast cutthroat trout *Oncorhynchus clarkii clarkii*	AFCHA0208A	None	None	G4T4	S3	SSC
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Cooper's hawk *Accipiter cooperii*	ABNKC12040	None	None	G5	S4	WL
Del Norte salamander *Plethodon elongatus*	AAAAD12050	None	None	G4	S3	WL
double-crested cormorant *Phalacrocorax auritus*	ABNFD01020	None	None	G5	S4	WL

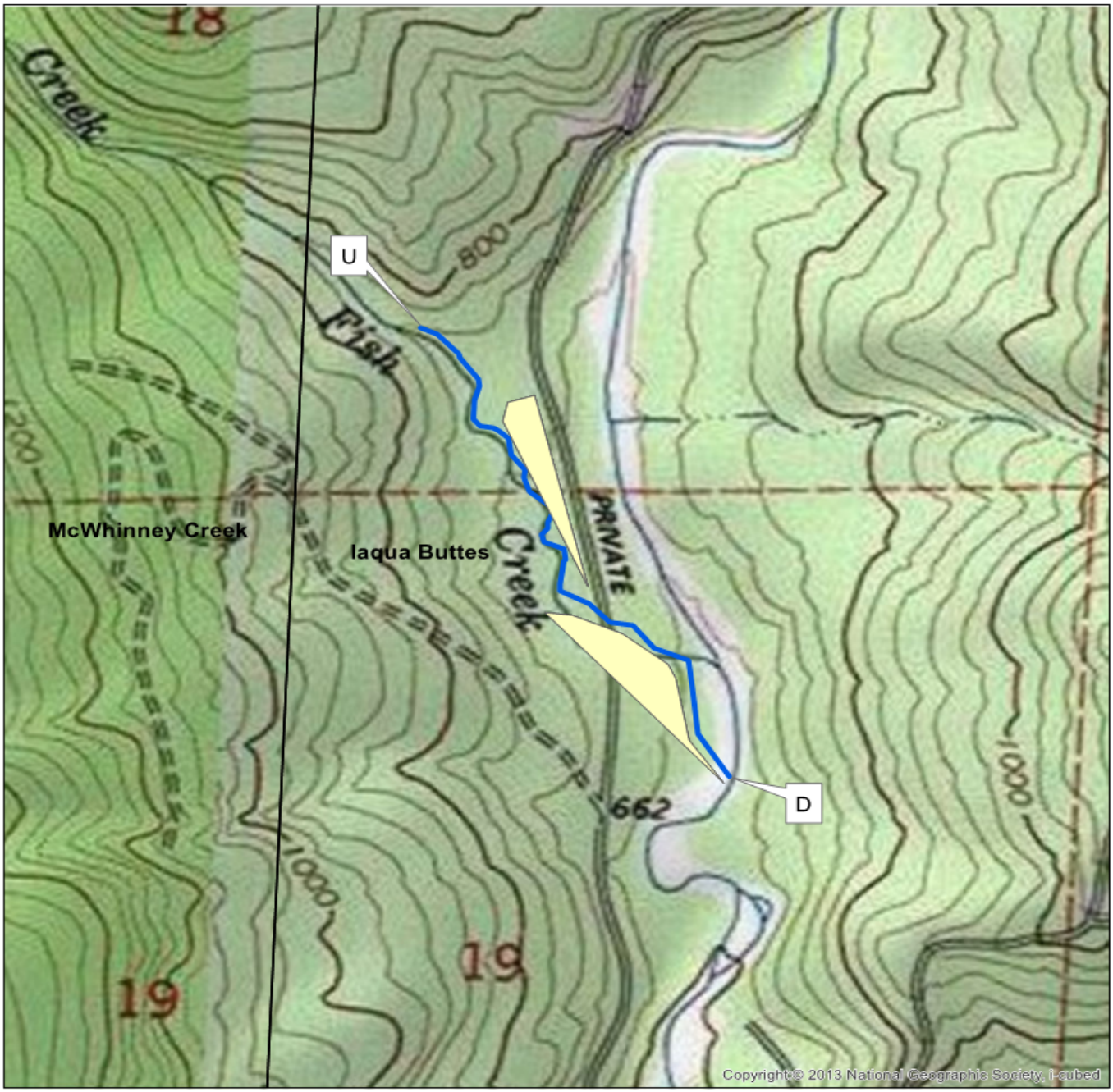
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
eulachon *Thaleichthys pacificus*	AFCHB04010	Threatened	None	G5	S3	
fisher - West Coast DPS *Pekania pennanti*	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
ghost-pipe *Monotropa uniflora*	PDMON03030	None	None	G5	S2	2B.2
giant fawn lily *Erythronium oregonum*	PMLIL0U0C0	None	None	G4G5	S2	2B.2
golden eagle *Aquila chrysaetos*	ABNKC22010	None	None	G5	S3	FP
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
great burnet *Sanguisorba officinalis*	PDROS1L060	None	None	G5?	S2	2B.2
green sturgeon *Acipenser medirostris*	AFCAA01030	Threatened	None	G3	S1S2	SSC
Howell's montia *Montia howellii*	PDPOR05070	None	None	G3G4	S2	2B.2
Humboldt Bay owl's-clover *Castilleja ambigua var. humboldtiensis*	PDSCR0D402	None	None	G4T2	S2	1B.2
Humboldt marten *Martes caurina humboldtensis*	AMAJF01012	None	Candidate Endangered	G5T1	S1	SSC
Humboldt mountain beaver *Aplodontia rufa humboldtiana*	AMAFA01017	None	None	G5TNR	SNR	
Kneeland Prairie pennycress *Noccaea fendleri ssp. californica*	PDBRA2P041	Endangered	None	G5?T1	S1	1B.1
leafy-stemmed mitrewort *Mitellastra caulescens*	PDSAX0N020	None	None	G5	S4	4.2
long-eared myotis *Myotis evotis*	AMACC01070	None	None	G5	S3	
longfin smelt *Spirinchus thaleichthys*	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Lyngbye's sedge *Carex lyngbyei*	PMCYP037Y0	None	None	G5	S3	2B.2
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
marbled murrelet *Brachyramphus marmoratus*	ABNNN06010	Threatened	Endangered	G3G4	S1	
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
minute pocket moss *Fissidens pauperculus*	NBMUS2W0U0	None	None	G3?	S2	1B.2
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
North Central Coast Summer Steelhead Stream *North Central Coast Summer Steelhead Stream*	CARA2634CA	None	None	GNR	SNR	
northern clustered sedge *Carex arcta*	PMCYP030X0	None	None	G5	S1	2B.2
Northern Coastal Salt Marsh *Northern Coastal Salt Marsh*	CTT52110CA	None	None	G3	S3.2	
northern goshawk *Accipiter gentilis*	ABNKC12060	None	None	G5	S3	SSC
northern meadow sedge *Carex praticola*	PMCYP03B20	None	None	G5	S2	2B.2
northern microseris *Microseris borealis*	PDAST6E030	None	None	G5	S1	2B.1
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon fireweed *Epilobium oreganum*	PDONA060P0	None	None	G2	S2	1B.2
Oregon goldthread *Coptis laciniata*	PDRAN0A020	None	None	G4	S3	4.2
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
pale yellow stonecrop *Sedum laxum ssp. flavidum*	PDCRA0A0L2	None	None	G5T4Q	S4	4.3
Point Reyes salty bird's-beak *Chloropyron maritimum ssp. palustre*	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
robust false lupine *Thermopsis robusta*	PDFAB3Z0D0	None	None	G2	S2	1B.2
running-pine *Lycopodium clavatum*	PPLYC01080	None	None	G5	S3	4.1
sandy beach tiger beetle *Cicindela hirticollis gravida*	IICOL02101	None	None	G5T2	S2	
seacoast ragwort *Packera bolanderi var. bolanderi*	PDAST8H0H1	None	None	G4T4	S2S3	2B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
seaside bittercress *Cardamine angulata*	PDBRA0K010	None	None	G5	S1	2B.1
sharp-shinned hawk *Accipiter striatus*	ABNKC12020	None	None	G5	S4	WL
Siskiyou checkerbloom *Sidalcea malviflora ssp. patula*	PDMAL110F9	None	None	G5T2	S2	1B.2
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
summer-run steelhead trout *Oncorhynchus mykiss irideus*	AFCHA0213B	None	None	G5T4Q	S2	SSC
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
Upland Douglas Fir Forest *Upland Douglas Fir Forest*	CTT82420CA	None	None	G4	S3.1	
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western lily *Lilium occidentale*	PMLIL1A0G0	Endangered	Endangered	G1	S1	1B.1
western pearlshell *Margaritifera falcata*	IMBIV27020	None	None	G4G5	S1S2	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western sand-spurrey *Spergularia canadensis var. occidentalis*	PDCAR0W032	None	None	G5T4	S1	2B.1
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
white-footed vole *Arborimus albipes*	AMAFF23010	None	None	G3G4	S2	SSC
norther spotted owl *Strix occidentalis caurina*	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 76

Project Location Topographic Map
Fish Creek Instream Habitat Enhancement Project
Iaqua Buttes Quad, Humboldt County
Fish Creek



Fish Creek Project Site (Instream)

Tree Planting Areas

0 0.2 0.4 Miles

N

Eel River Watershed Improvement Group
February 2017

Introduction: The Eel River Watershed Improvement Group (ERWIG) will add eight large woody debris (LWD) features to a one-half mile reach of the Little Van Duzen River. These features will include a total of 16 structures and 43 pieces of LWD, including 24 key pieces. The LWD features will increase shelter, add habitat complexity, and enhance pools. In addition, 150 conifers will be planted along the stream bank to provide shade and future LWD recruitment.

This project is necessary as the Little Van Duzen River provides spawning and rearing habitat for anadromous winter and summer steelhead, both of which have drastically declined from their historical numbers. Summer steelhead in particular are at great risk of extirpation from the Van Duzen River and the Eel River Watershed as a whole. The Little Van Duzen is the primary spawning and rearing grounds for summer steelhead in the Van Duzen River Watershed. The legacy impacts of historical forest management practices combined with natural processes, including the 1964 flood, have resulted in the Little Van Duzen River lacking LWD, shelter and quality pools.

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Parts VII and XI (Flosi et al 1998 and 2002).

Objectives: The goal of this project is to place large wood in the anadromous reaches of tributaries where it will provide beneficial habitat elements. The objectives of this project include:

- Add 8 LWD features, containing 16 structures and 43 pieces of LWD (24 as key pieces) over 0.5 miles of the Little Van Duzen River.
- Bring the LWD count in the project reach to a total of 45 (90 per mile), and key piece count to 25 (3.1 per 100m) to meet the target values of >60 pieces of LWD per mile, and >3 key pieces per 100m as outlined in *Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon (*Oncorhynchus kisutch) (National Oceanic and Atmospheric Administration 2014).
- Build all LWD structures to provide beneficial habitat year round and to last greater than 10 years.
- Improve habitat conditions for steelhead that have been negatively affected by the legacy impacts of forest management.

Project Description:

Location: The project is located on the Little Van Duzen River. The downstream end of the project reach is approximately 1.85 miles upstream from the confluence with the Van Duzen River and approximately 0.72 miles upstream of the confluence with Burr Creek. The project reach extends 0.5 miles up the Little Van Duzen River. The upstream end of the project reach is 0.5 miles downstream of

the confluence with Butte Creek. The center of the project reach is located at 40.45890900: -123.65800200.

Project Set Up: The Project Manager will conduct Agreement oversight with assistance from the Project Associate (Tasks 1, 2, 3, 4, 5, 7 and 8). The Project Associate will assist with Agreement oversight, purchasing, invoicing, and reporting (Tasks 1, 4, and 8).

The Bookkeeping Subcontractor will pay out employees and subcontractors and keep the project on budget (Task 4).

The Fish Habitat Subcontractor (FHS) will participate in project preparation, implementation, tree planting, and collecting metrics. The FHS willl provide logistical support ensuring tool and material needs are met without delay throughout the project duration. Additionally, the FHS will provide onsite training and direction to ensure features meet the criteria in the *California Salmonid Stream Habitat Restoration Manual*, Part VII (Flosi et al. 1998). The FHS will anchor the structures according to design and anchoring specifications. The FHS will also move LWD into position using a grip hoist come along. The FHS will also plant trees. (Tasks 2, 3, 5, 6, and 7.)

The Registered Professional Forester Subcontractor (RPF) will carefully select trees in the riparian zone to cut and fall into the creek according to project design specifications (Task 3).

The Heavy Equipment Subcontractor will provide a Licensed Excavator Operator responsible for placing LWD at the features where access is available (Task 5). The Heavy Equipment Subcontractor will also provide a Licensed Timber Operator to fall trees identified by the RPF for use in the project, and to buck up trees into specified logs and remove branches if necessary (Task 5). The Heavy Equipment Subcontractor will bring the heavy equipment to and from worksite (Tasks 3 and 5).

The Geotechnical Consultant Subcontractor will locate and mark boulders suitable for drilling and anchoring (Tasks 3 and 5).

The Biological Subcontractor will recommend best practices for causing the least disturbance to animal habitats during project implementation. The Biological Subcontractor will oversee fish relocation for excavator crossing including aquatic life, primarily fish, from a seasonal ford and place block nets to keep fish from re-entering the crossing. (Task3).

Materials: Materials necessary for project implementation include:

- Tools and Materials for structures including 10’ by 1” threaded rod (rebar), steel nuts, steel washers, plates, drill bits and extensions, drills, band saws, chain, bar oil, band saw blades, extension cords, shear pins, ground fault interrupters, Allen wrenches, drop forged cable clamps, injectable mortar, 5/8” cable, and miscellaneous gear.
- Repair and rental of equipment.
- Provided as cost-share, logs & rootwads >1' diameter and key pieces >2' diameter and >30' long, conifer seedlings, and boulders.

Tasks: Complete the following tasks to accomplish the goals:

Task 1. Agreement Oversight: ERWIG will oversee the Agreement. The Project Manager and Project Associate will communicate and coordinate with the landowner to obtain entry permits, coordinate implementation schedules, obtain wood donation, and go over project implementation details. Upon receipt of the Notice to Proceed, the Project Manager will prepare the *Notification of Lake or Streambed Alteration*, hire subcontractors, and provide management and direction to subcontractors throughout the duration of the project. All reporting and billing will be pursuant to Agreement and regulatory guidelines. The Project Manager will work with the Bookkeeping Subcontractor to provide fiscal management.

Task 2. Subcontractor Preparation and Training: ERWIG will train all subcontractors on landowner concerns and protocols before they enter the property to begin project work. The training will include security issues, permit requirements, Agreement requirements, and road protocols. The ERWIG will ensure that all subcontractors understand that ONLY those designated to work on the project are allowed on the property. The ERWIG will work closely with subcontractors to ensure that no actions result in the delivery of sediment to the stream channel when delivering, staging, or placing large wood in the stream. ERWIG and its subcontractors will be aware of the status of various roads within the project area, and will not enter any decommissioned roads with heavy equipment, or do anything that might cause significant impacts on the hydrology of decommissioned road segments.

Task 3. Final Feature Design, Site Preparation and Pre-project Metrics: The Project Manager and FHS will prepare site-specific designs based on channel morphology, access, and LWD availability. They will submit designs for landowner and Grantor Project Manager approval. The RPF, Biological Subcontractor and Geotechnical Consultant Subcontractor will provide consultation on this phase of the project. The RPF will identify appropriate trees to fall for the project. The Geotechnical Consultant Subcontractor will identify suitable rock for anchoring, and the Biological

Subcontractor will identify ways to lesson impacts on wildlife and fish. The Project Manager along with the FHS will flag sites for wood selection, staging, and installation, clear brush as needed, and designate staging areas for wood along project reaches. The Project Manager and FHS will collect pre-project metrics at each feature. The Biological Subcontractor will remove aquatic life from a stream crossing and block net off the crossing to keep fish from re-entering the stream crossing. The crossing will be on Butte Creek and will be used twice, once to get the excavator to the work site and once to remove the excavator from the worksite. The crossing is a shallow, rocky section of creek that used as a seasonal wet ford by landowners.

Task 4. Purchasing, including Billing, Invoicing, and Subcontractor Payment: Tools and materials will be purchased prior to the start of implementation and on an as needed basis throughout the project. Billing and invoicing will take place in a prompt manner. Subcontractors will be paid for work completed.

Task 5. Project Implementation: Under the direction of the Project Manager and the FHS, with oversight from the Geologic Consultant Subcontractor, site construction on eight LWD features (16 structures) will begin. Live trees will be used as LWD sources. The Heavy Equipment Subcontractor Licensed Timber Operator will procure logs from the riparian zone by selectively cutting down trees to fall into the creek; logs may be bucked down in order to create multiple usable logs. Whole tree materials will not be cut before placement and rootwads will be kept intact, whenever possible. The Heavy Equipment Subcontractor Licensed Equipment Operator will place downed logs into the stream in accordance with design plans. When necessary, the FHS will move LWD into position using a grip hoist come along. Site construction, wood placement, and anchoring will be in accordance with the *California Salmonid Stream Habitat Restoration Manual*, Part VII (Flosi et al. 1998). The project will utilize living riparian trees as anchors by wedging the logs between them, where feasible. The FHS will then anchor the structures according to design and anchoring specifications. The FHS will use one-inch threaded rebar to anchor logs to mature riparian trees, and each other. Holes will be drilled through the logs and their anchor trees, using a drill, timber bit, and drill bit extensions when necessary. String one-inch rebar through the logs and secure with nuts and washers. When a log needs to be attached to bedrock or boulders a rock drill will be used to make 3/4" diameter and >10" deep holes in rock. Once the holes are cleaned, 5/8" galvanized cable will be glued in the holes using epoxy. The other end of the cable will be attached to a log using a looped cable)which is attached to 1" rebar that is attached to the log with a metal nut and plate (washer).

The Geologic Consultant Subcontractor will determine which boulders and section of bedrock are strong enough to be drilled into and anchored to. The Project Manager will supervise the FHS. Employee erosion control methods as required at each structure to eliminate the possibility of sediment transport to the stream. Any damage to the landowner's road caused by this project will be repaired by the Heavy Equipment Subcontractor. Tools will be repaired or rented as needed. To address concerns over invasive species, this project will follow the Eel River Watershed Improvement Group Aquatic Invasive Species Decontamination Protocol.

Task 6. Riparian Planting: The FHS will return to the project site in the winter to plant 150 conifer seedlings along 0.5 miles of riparian zone, with a primary focus in areas lacking sufficient conifer cover.

Task 7. Post-Project Data and Photo Collection: Following implementation, photos will be taken of the project and metrics will be collected which satisfy the Agreement Annual Reports and Final Report.

Task 8. Reporting: The Project Manager and Project Associate will write and deliver progress reports for invoicing, Annual Reports, and a Final Report to the Grantor Project Manager.

Deliverables: Deliver the following as part of the project:

- Sixteen LWD structures as part of eight LWD features containing 43 logs, which anchored to live trees, boulders, bedrock and each other.
- One-hundred-fifty conifers planted for future LWD recruitment.
- Progress Reports with invoices and Annual Reports for the duration of the project.
- A Final Report written and submitted to the Grantor Project Manager.

Timelines: Complete the tasks according to the following timeline:

Task 1. Upon approval through March 31, 2020: Coordinate with landowners for project entry, submit *Notification of Lake or Streambed Alteration*, and hire subcontractors. Oversee and coordinate project.

Task 2. Upon approval through October 31, 2019: oversee and coordinate project and train subcontractors to operate under landowner protocols.

Task 3. June 15, 2018 through October 31, 2019: finalize design, label features, and collect pre-project metrics.

Task 4. Upon approval through March 1, 2020: Purchasing, billing, and invoicing.

Task 5. June 15, 2018 to October 31, 2018, June 15, 2019 to October 31, 2019: Project implementation, installation of approved LWD structures along project reach. Erosion control installed as project features are completed.

Task 6. December 1, 2018 through February 28, 2019, December 1, 2019 through March 1, 2020: riparian plantings will occur.

Task 7. July 1, 2018 to March 1, 2020: post-implementation photos and metrics for each feature after the feature is completed.

Task 8. November 15, 2018, November 15, 2019, & March 31, 2020: post-project description, photos and quantitative metrics, Annual Reports, and a Final Report.

Additional Requirements: The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a "notice to proceed" letter has been received from the California Department of Fish and Wildlife (CDFW) Grantor Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW. Whole tree materials will not be cut before placement and rootwads will be kept intact, whenever possible.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the Grantor ProjectManager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for CDFW personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other native aquatic species from the project area. If the project requires dewatering of the site and the relocation of listed aquatic species, the Grantee will implement the following measures to minimize harm and mortality to listed species as well as other native aquatic species:

- Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year.

- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit, NMFS Biological Opinion, and project's Lake and Streambed Alteration Agreement (1600 permit).

- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

- Only qualified fisheries biologist that are approved by USFWS and permitted by CDFW under a California Endangered Species Act (CESA) Memorandum of Understanding (MOU) shall handle and relocate CESA listed species.

- All electrofishing shall be performed by a qualified fisheries biologist under the supervision of CDFW and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

- USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW. .

Final structure design and placement will be determined by field consultation between the Grantee and the CDFW Grant Manager. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to ensure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Larabee Valley (4012346) OR Yager Junction (4012357) OR Showers Mtn. (4012356) OR Blake Mountain (4012355) OR Bridgeville (4012347) OR Dinsmore (4012345) OR Myers Flat (4012337) OR Blocksburg (4012336) OR Black Lassic (4012335))

Possible species within the Larabee Valley quadrangle and surrounding quads for 725530 Little Van Duzen Instream Habitat Enhancement Project, T01N R05E S18, Humboldt County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American peregrine falcon *Falco peregrinus anatum*	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
Bald Mountain milk-vetch *Astragalus umbraticus*	PDFAB0F990	None	None	G4	S2	2B.3
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Cooper's hawk *Accipiter cooperii*	ABNKC12040	None	None	G5	S4	WL
fisher - West Coast DPS *Pekania pennanti*	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
giant fawn lily *Erythronium oregonum*	PMLIL0U0C0	None	None	G4G5	S2	2B.2
golden eagle *Aquila chrysaetos*	ABNKC22010	None	None	G5	S3	FP
Howell's montia *Montia howellii*	PDPOR05070	None	None	G3G4	S2	2B.2
Humboldt marten *Martes caurina humboldtensis*	AMAJF01012	None	Candidate Endangered	G5T1	S1	SSC
Humboldt milk-vetch *Astragalus agnicidus*	PDFAB0F080	None	Endangered	G2	S2	1B.1
Konocti manzanita *Arctostaphylos manzanita ssp. elegans*	PDERI04271	None	None	G5T3	S3	1B.3
long-eared myotis *Myotis evotis*	AMACC01070	None	None	G5	S3	
long-legged myotis *Myotis volans*	AMACC01110	None	None	G5	S3	
Mad River fleabane daisy *Erigeron maniopotamicus*	PDASTE1050	None	None	G2?	S2?	1B.2
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
North Central Coast Summer Steelhead Stream *North Central Coast Summer Steelhead Stream*	CARA2634CA	None	None	GNR	SNR	
northern goshawk *Accipiter gentilis*	ABNKC12060	None	None	G5	S3	SSC
northern meadow sedge *Carex praticola*	PMCYP03B20	None	None	G5	S2	2B.2
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon fireweed *Epilobium oreganum*	PDONA060P0	None	None	G2	S2	1B.2
Oregon goldthread *Coptis laciniata*	PDRAN0A020	None	None	G4	S3	4.2
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
Pacific fuzzwort *Ptilidium californicum*	NBHEP2U010	None	None	G4G5	S3S4	4.3
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
pale yellow stonecrop *Sedum laxum ssp. flavidum*	PDCRA0A0L2	None	None	G5T4Q	S4	4.3
robust false lupine *Thermopsis robusta*	PDFAB3Z0D0	None	None	G2	S2	1B.2
running-pine *Lycopodium clavatum*	PPLYC01080	None	None	G5	S3	4.1
scabrid alpine tarplant *Anisocarpus scabridus*	PDASTDU020	None	None	G3	S3	1B.3
seacoast ragwort *Packera bolanderi var. bolanderi*	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
Siskiyou checkerbloom *Sidalcea malviflora ssp. patula*	PDMAL110F9	None	None	G5T2	S2	1B.2
small groundcone *Kopsiopsis hookeri*	PDORO01010	None	None	G4?	S1S2	2B.3
small-flowered calycadenia *Calycadenia micrantha*	PDAST1P0C0	None	None	G2	S2	1B.2
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
South Fork Mountain lupine *Lupinus elmeri*	PDFAB2B1G0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
summer-run steelhead trout *Oncorhynchus mykiss irideus*	AFCHA0213B	None	None	G5T4Q	S2	SSC
Ten Mile shoulderband *Noyo intersessa*	IMGASC5070	None	None	G2	S2	
The Lassics lupine *Lupinus constancei*	PDFAB2B490	None	Candidate Endangered	G1	S1	1B.2
The Lassics sandwort *Sabulina decumbens*	PDCAR0G0Y0	None	None	G1	S1	1B.2
three-ranked hump moss *Meesia triquetra*	NBMUS4L020	None	None	G5	S4	4.2
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
Tracy's sanicle *Sanicula tracyi*	PDAPI1Z0K0	None	None	G4	S4	4.2
two-flowered pea *Lathyrus biflorus*	PDFAB25180	None	None	G1	S1	1B.1
Upland Douglas Fir Forest *Upland Douglas Fir Forest*	CTT82420CA	None	None	G4	S3.1	
water howellia *Howellia aquatilis*	PDCAM0A010	Threatened	None	G3	S2	2B.2
Wawona riffle beetle *Atractelmis wawona*	IICOL58010	None	None	G1G3	S1S2	
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
Yolla Bolly Mtns. bird's-foot trefoil *Hosackia yollabolliensis*	PDFAB2A1F0	None	None	G2	S2	1B.2
nothern spotted owl *Strix occidentalis caurina*	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 56

Project Location Topographic Map

Project Location Topographic Map
Little Van Duzen Instream Habitat Enhancement Project
Larabee Valley Quad, Humboldt County
Little Van Duzen River

Project Reach
Tree Planting Areas

Miles
0 0.25 0.5

N

Eel River Watershed Improvement Group
February 2017

Introduction: The Eel River Watershed Improvement Group (ERWIG) will install 48 pieces of large woody debris (LWD) as part of 15 features along a 0.4-mile section of Jordan Creek. Willows and conifers will be planted to provide shade, bank stabilization, and future wood recruitment and to manage riparian invasive species.

This project is necessary because timber harvest practices in the mid to late 20th century led to a lack of older conifers in Jordan Creek to supply the system with sufficient LWD. According to the *Stream Inventory Report: Jordan Creek* (California Department of Fish and Game 2010), an insufficient amount of woody cover is present in pools and flatwater habitat units in Jordan Creek. This project will address recommendation #4 that states "Increase woody cover in the pools and flatwater habitat units".

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Parts VII and XI (Flosi et al 1998 and 2002).

Objectives: The goal of this project is to supplement on-going efforts to provide short-term and long-term benefits to Coho Salmon by restoring LWD and shade through LWD placement and improvement of existing riparian zones through plantings. The objectives of this project include:

- Increase LWD within the creek, and thereby increase stream complexity, improve pool depth and frequency, provide cover for rearing salmonids, and provide velocity refugia for migrating salmonids.
- Improve riparian cover and function through increased riparian complexity, increased future instream wood recruitment, shading of invasive plants and adding to bank stability.

Project Description:

Location: The project is located on Jordan Creek, beginning 3,000 feet upstream from its confluence with the Eel River in Humboldt County, State of California. The Project site is located on the Scotia 7.5 minute United States Geological Survey Quadrangle map surrounded by Fortuna, Hydesville, Owl Creek, Taylor Peak, Redcrest, Buckeye MTN, Bull Creek, and Redcrest maps, Township 01 North, Range 01 East and Section 26. The upstream end of the project reach is located at 40.43543000: -124.04052000. The downstream end of the project reach is at 40.43934000: -124.03739000.

Project Set Up: The Project Manager will oversee the Agreement (Task 1). Upon receipt of the Notice to Proceed, the Project Manager will submit the *Notification of Lake or Streambed Alteration*, hire subcontractors, and collaborate with the landowner to obtain entry permits, coordinate implementation schedules with landowners and subcontractors (Task 2), procure wood donation and purchase,

and review project implementation details. The Project Manager will maintain project oversight and provide management and direction to subcontractors throughout the duration of the project. All reporting and billing will be pursuant to Agreement and regulatory guidelines (Task 7).

The Project Manager and Fish Habitat Subcontractor (FHS) will flag features to designate ingress/egress trails for the Heavy Equipment Subcontractor (HES) and FHS (Task 3). The Project Manager and FHS will coordinate with the Grantor Project Manager to perform pre project monitoring as required for reporting metrics and to coordinate cultural and botanical resource surveys (Task 3). In collaboration with the landowner, Project Manager, and FHS, a Registered Professional Forester (RPF) (funded with cost-share funds) will carefully select trees in the riparian zone to cut and fall into the creek according to project design specifications. A Licensed Timber Operator provided by the HES will fall the trees as outlined by the RPF and project needs (Task 3). The Log Truck Subcontractor will be responsible for transport and delivery of the LWD to the project site (Task 4). The Boulder Delivery Subcontractor will be responsible for transport and delivery of the rock/boulders to the project site (Task 4). The HES will transport heavy equipment to the site (Task 4). A Licensed Excavator Operator provided by the HES will be responsible for unloading and placing LWD and rock/boulders at the features where access is available (Task 4).

The FHS will then anchor the structures according to project design and anchoring specifications. The FHS will also move LWD into position using a grip hoist come along. Place and secure rootwads to logs while anchoring is taking place (Task 4). The FHS will provide logistical support to ensuring tool and material needs are met throughout the project duration. Additionally, the FHS will provide onsite training and direction to ensure features meet the criteria set by the *California Salmonid Stream Habitat Restoration Manual* (Flosi, et al 1998) (Task 4). The Project Associate will keep track of the budget, will conduct initial invoicing, will carry out material purchasing and will assist the Project Manager in report production (Tasks 3, 4, and 7). The Bookkeeping Subcontractor will pay subcontractors through ERWIG and file pap.

Materials: The following materials are necessary for this project:

- Tools and Materials: 10’ by 1” threaded rod (rebar), steel nuts, steel washers, conifer seedlings, drill bits & extensions, chain, bar oil, portable band saw blades, shear pins, ground fault interrupters, Allen wrenches, miscellaneous gear, drop forged cable clamps, injectable mortar, 5/8” cable, and power tools (portable band saws, drills, generators etc.).
- Equipment Repair and Rental
- Logs & rootwads: Logs and rootwads >1' diameter.

Tasks: The following tasks will be completed to accomplish the project:

Task 1. Agreement Oversight: Agreement oversight will be conducted by the Project Manager. The Project Manager will communicate and coordinate with the landowner to obtain entry permits, coordinate implementation schedules, obtain wood donation and purchase, and assess project implementation details. Upon receipt of the Notice to Proceed, the Project Manager will submit the *Notification of Lake and Streambed Alteration*, hire subcontractors, and provide management and direction to subcontractors throughout the duration of the project. All reporting and billing will be pursuant to Agreement and regulatory guidelines.

Task 2. Subcontractor Preparation and Training: ERWIG will train all subcontractors on landowner concerns and protocols before they enter the property to begin project work. The training will include security issues and road protocols. ERWIG will ensure that all subcontractors understand that ONLY those designated to work on the project are allowed on the property. ERWIG will work closely with subcontractors to ensure that no actions result in the delivery of sediment to the stream channel when delivering, staging, or placing large wood in the stream. ERWIG and its subcontractors will be aware of the status of various roads within the project area, and will not enter any decommissioned roads with heavy equipment, or do anything that might cause significant impacts on the hydrology of decommissioned road segments.

Task 3. Final Feature Design and Site Preparation: The Project Manager and FHS will prepare site specific designs based on channel morphology, equipment access, and LWD availability. They will submit designs for landowner and Grantor Project Manager approval. The Project Manager along with the FHS will flag sites for wood delivery and installation, clear brush for equipment as needed, and designate staging areas for equipment and wood along project reaches. The RPF will identify trees for falling. The Excavator will be delivered by a lowboy to the staging area. The wood will be delivered by log trucks, or self-loader, and staged along the project reach or at staging areas. The boulders will be delivered by a dump truck along the project reach or staging areas.

Task 4. Project Implementation: Under the direction of the Project Manager and the FHS, site construction on 15 LWD features will begin with wood and rock placement by excavator. A lowboy tractor-trailer will transport the excavator to the project site. Dump trucks will deliver boulders to the site. Log trucks will be used to deliver logs/rootwads to the site. Some features will involve cutting down trees in the riparian area to fall into the creek. When necessary, the FHS will move LWD into position using a grip hoist come along. This method is also used for placing and securing rootwads

to logs while anchoring is taking place. Site construction, wood placement, and anchoring will be in accordance with the *California Salmonid Stream Habitat Restoration Manual*, Part VII (Flosi et al.1998). The project will utilize living riparian trees as anchors by wedging the logs between them, where feasible. The FHS will then anchor the sites according to design and anchoring specifications. The FHS will use one-inch threaded rebar to anchor logs to mature riparian trees, and each other. Holes will be drilled through the logs and their anchor trees, using a drill, timber bit, and drill bit extensions, when necessary. One-inch rebar will be strung through the log and secured with nuts and washers. The FHS will be supervised by the Project Manager. Structures will consist of 2-4 logs fastened together along with rootwads or boulders when live anchor points are limited.

Erosion control methods will be employed as required, at each structure and along the equipment corridors to eliminate the possibility of sediment transport to the stream. Any tools that break down will be taken to a repair shop and a temporary replacement may be rented while the tool is repaired. To address concerns over invasive species, this project will follow the ERWIG Aquatic Invasive Species Decontamination Protocol.

Task 5. Riparian Planting: To promote riparian vegetation, increase canopy cover above the creek, and to establish wood for future instream recruitment, the FHS will return to the project site in the winter(s) following project implementation to plant 200 conifer seedlings and 100 willows along the 0.4 miles of riparian zone, with a primary focus in areas lacking sufficient conifer cover. Invasive species at and near to planting sites will be removed in order to increase long-term survivability of the planted trees and to improve riparian function.

Task 6. Post-Project Data and Photo Collection: Following implementation, post-implementation photos will be taken and metrics shall be collected which satisfy the Agreement Annual Reports and Final Report.

Task 7. Reporting: The Project Manager and Project Associate will write and deliver progress reports for invoicing, Annual Reports, and a Final Report to Grantor Project Manager.

Deliverables: The following will be delivered as part of this Agreement:

- A total of 48 logs/rootwads and approximately 4 tons of boulders dispersed between fifteen features along 0.4 miles of stream. Each feature will contain 1 or more LWD structures with 1-4 pieces of LWD per structure. All structures will be anchored in place.

- Removal of nonnative/invasive vegetation including *Cytisus scoparius* (Scotch Broom) and *Cortaderia selloana* (Pampas grass) along approximately 300 square feet of riparian zone.
- One-hundred native willow stakes and 200 conifers planted.
- Progress reports with invoices, and Annual Reports for the duration of the project.
- A Final Report submitted to Grantor Project Manager.

Timelines: Complete tasks according to the following timeline:

Task 1. Upon approval through March 31, 2022: oversee and coordinate project.

Task 2. Upon approval through December 31, 2021: oversee and ensure that subcontractors are trained and operate under landowner protocols.

Task 3 & 4. September 2018 through October 31, 2021: finalize design, label features, and install LWD features within the approved project reach. Manage for competitive invasive vegetation along the riparian zone where future, project related, conifer planting will take place. Erosion control will be installed as project features are completed.

Task 5. December 1, 2018 through February 28, 2019, December 1, 2019 through March 1, 2020, December 1, 2020 through February 28, 2021, December 1, 2021 through February 28, 2022: plantings will occur as needed.

Task 6 & 7. Post implementation to March 1, 2022: post-project description, photos and quantitative metrics will be delivered in Annual Reports and a Final Report.

Additional Requirements: The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a "notice to proceed" letter has been received from the Grantor Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW. The Grantee should use the largest whole tree material available.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the

standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Manager. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

The Grantee will seed and mulch all exposed soils which may deliver sediment to a stream. Mulching and seeding can occur at any time during construction but will need to be completed prior to Oct. 15. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years.

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Scotia (4012441) OR Fortuna (4012452) OR Hydesville (4012451) OR Owl Creek (4012358) OR Taylor Peak (4012442) OR Redcrest (4012348) OR Buckeye Mtn. (4012432) OR Bull Creek (4012431) OR Weott (4012338))

Possible species within the Scotia quadrangle and surrounding quads for 725544 Jordan Creek Instream Habitat Enhancement Project, T01N R01E S26, Humboldt County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S2	
chinook salmon - California coastal ESU *Oncorhynchus tshawytscha*	AFCHA0205S	Threatened	None	G5	S1	
coast cutthroat trout *Oncorhynchus clarkii clarkii*	AFCHA0208A	None	None	G4T4	S3	SSC
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Cooper's hawk *Accipiter cooperii*	ABNKC12040	None	None	G5	S4	WL
fisher - West Coast DPS *Pekania pennanti*	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
giant fawn lily *Erythronium oregonum*	PMLIL0U0C0	None	None	G4G5	S2	2B.2
golden eagle *Aquila chrysaetos*	ABNKC22010	None	None	G5	S3	FP
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
Howell's montia *Montia howellii*	PDPOR05070	None	None	G3G4	S2	2B.2
Humboldt marten *Martes caurina humboldtensis*	AMAJF01012	None	Candidate Endangered	G5T1	S1	SSC
Humboldt mountain beaver *Aplodontia rufa humboldtiana*	AMAFA01017	None	None	G5TNR	SNR	
leafy reed grass *Calamagrostis foliosa*	PMPOA170C0	None	Rare	G3	S3	4.2
long-eared myotis *Myotis evotis*	AMACC01070	None	None	G5	S3	
longfin smelt *Spirinchus thaleichthys*	AFCHB03010	Candidate	Threatened	G5	S1	SSC
long-legged myotis *Myotis volans*	AMACC01110	None	None	G5	S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
marbled murrelet *Brachyramphus marmoratus*	ABNNN06010	Threatened	Endangered	G3G4	S1	
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
minute pocket moss *Fissidens pauperculus*	NBMUS2W0U0	None	None	G3?	S2	1B.2
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
northern clustered sedge *Carex arcta*	PMCYP030X0	None	None	G5	S1	2B.2
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon goldthread *Coptis laciniata*	PDRAN0A020	None	None	G4	S3	4.2
Oregon polemonium *Polemonium carneum*	PDPLM0E050	None	None	G3G4	S2	2B.2
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
running-pine *Lycopodium clavatum*	PPLYC01080	None	None	G5	S3	4.1
seacoast ragwort *Packera bolanderi var. bolanderi*	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
sharp-shinned hawk *Accipiter striatus*	ABNKC12020	None	None	G5	S4	WL
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	PDASTE5011	None	None	G4T3	S2	1B.2
Siskiyou checkerbloom *Sidalcea malviflora ssp. patula*	PDMAL110F9	None	None	G5T2	S2	1B.2
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC

Selected Elements by Common Name

California Department of Fish and Wildlife

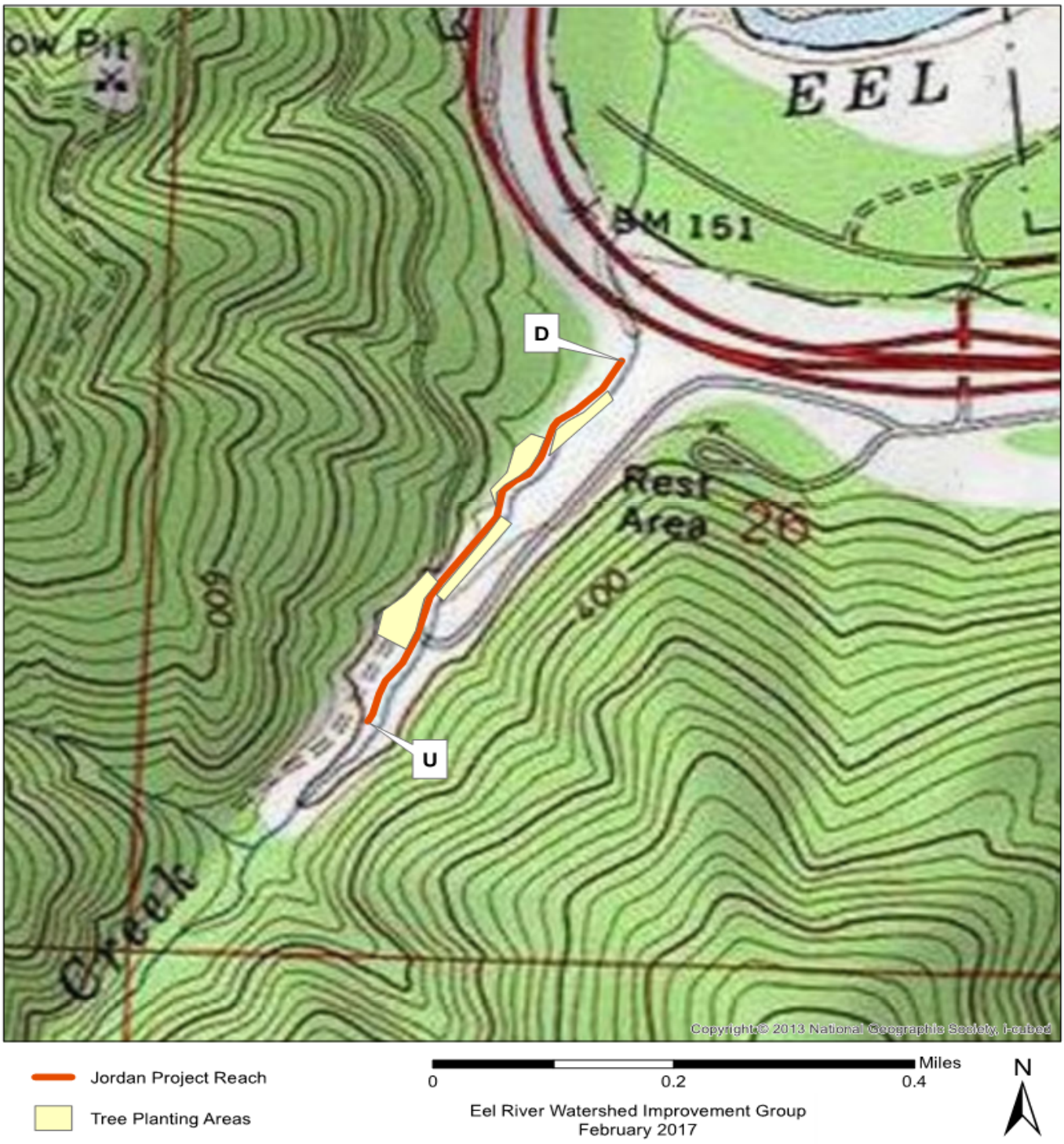
California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
summer-run steelhead trout *Oncorhynchus mykiss irideus*	AFCHA0213B	None	None	G5T4Q	S2	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western red bat *Lasiurus blossevillii*	AMACC05060	None	None	G5	S3	SSC
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
Whitney's farewell-to-spring *Clarkia amoena ssp. whitneyi*	PDONA05025	None	None	G5T1	S1	1B.1
Yuma myotis *Myotis yumanensis*	AMACC01020	None	None	G5	S4	
northern spotted owl *Strix occidentalis caurina*	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 49

Project Location Topographic Map

Project Location Topographic Map
Jordan Creek Instream Habitat Enhancement Project
Scotia Quad, Humboldt County
Jordan Creek



Introduction: The City of Fortuna Public Works will improve fish passage within the lower reach of Rohner Creek, benefiting access to upstream habitat for all life stages of salmonids.

This project is necessary as an electro-fishing survey conducted by the California Department of Fish and Wildlife (CDFW) in 2012 found steelhead downstream of the 12th Street crossing and did not find any above the crossing. The 12th Street culvert fish passage analysis conducted by Michael Love and Associates (MLA) found that the culvert exhibits a residual outlet drop at the end of the culvert of approximately 1.9 feet and the overall culvert slope is 2%. These values placed the 12th Street culvert on the line between Gray (indeterminate) and Red (inadequate). Because the culvert was retrofitted with baffles for fish passage, the culvert is considered Gray and therefore received an in-depth hydraulic assessment to determine passage conditions for each salmonid lifestage.

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Parts XII (Flosi et al 2002).

Objectives: The goal of this project is to restore habitat connectivity between Coho Salmon populations in coastal and low-gradient inland streams. The objectives of this project include:

- Improve the availability of upstream habitat for adult spawning and juvenile rearing reduced by man-made barriers, such as culverts, which prevent or hinder upstream passage on Rohner Creek.
- Provide cold-water refugia from higher water temperatures in the main stem Eel River for juvenile rearing.
- Provide fish passage at the culvert crossing barrier for all life stages of salmonids.
- Provide access to the floodplain improvements that were constructed in 2016 as a major component of the Rohner Creek Flood Control, Seismic and Habitat Improvements Project immediately upstream of the crossing.

Project Description:

Location: Rohner Creek at 12th Street crossing is located at 40.59089800: -124.15462600 at the downstream end of the 12th Street Culvert Crossing on Rohner Creek. The work site spans two undeveloped parcels owned by the City of Fortuna and the County of Humboldt. The project boundary begins upstream of the 12th Street crossing and extends downstream to the Northwestern Pacific Railroad right of way boundary and to the top of bank on either side of the channel. The culvert crossing is located approximately 1,300 feet upstream of the confluence with Strongs Creek and 2,500 feet upstream of the confluence of Strongs Creek and the Eel River.

Project Set Up: MLA will provide fish passage engineering assistance to support GHD during construction. The Contractor will ultimately be responsible for complying with the California Environmental Quality Act (CEQA)/permit. GHD will serve as the engineer of record, project manager, perform coordination with the City of Fortuna and subcontractors, provide structural and civil engineering expertise and lead the bid period services, construction management, on-site observation, biological clearance surveys, and project closeout tasks. MLA will serve as the fish passage engineers for the project. MLA will assist with preparing bid documents and selection of the Contractor, oversight of the step-pool roughened channel construction, and post implementation monitoring. The City of Fortuna personnel funded with cost-share will include the Director of Public Works/City Engineer, Deputy Director of Public Works, and the Fortuna City Clerk. The personnel team will provide management and administrative services, including attendance at applicable meetings. The Contractor will be responsible for supplying and implementing the project materials as shown in the design plans. The City of Fortuna will secure a Biologist for fish relocation activities.

Materials: Materials supplied by the Contractor include:

- Gravel and fabric for temporary construction entrance/access
- Signs and notification materials for traffic control
- Temporary shoring
- Gravel, bags, piping and pump for dewatering, diversion and control of water to conduct in-stream work
- Clearing and grubbing equipment and hand tools for vegetation removal
- Concrete saw cut, demolition and disposal of existing culvert and baffles
- Excavation and disposal (streambed material/rock) for step-pool roughened channel
- Native backfill for step-pool roughened channel and channel bank
- 30 foot concrete pipe culvert (18” diameter) with flared end and trash rack to maintain existing drainage
- Structural backfill for structural support of new culvert apron sections
- New structural concrete and reinforcement for new culvert apron, outlet weirs, and lamprey ramps
- 1/2 ton rock slope protection (RSP) and geotextile fabric for culvert outlet scour protection
- 1/4 ton RSP and geotextile fabric for bank protection
- Engineered streambed material for step-pool roughened channel
- Facing class RCP and 3” minus for rock sills
- Biodegradable COIR mat for erosion control
- Seed/mulch for revegetation
- Container plants for revegetation, and
- Willow staking for bank revegetation.

Tasks: Construct the Fish Passage Improvement Project at 12th Street consistent with 100% Design Plans February 2017 including removal of baffles, adjustment of apron and installation of roughened channel by completing the following tasks:

Task 1 - Pre-Bid and Bid Period Assistance. GHD will provide the following services:

- Compile bid package including CEQA/permit conditions and front-end subcontract provided by the City of Fortuna
- Print and distribute plans to potential subcontractors (copies to Builder's exchange and the City of Fortuna)
- Issue Addenda during bidding to answer potential subcontractor questions
- Organize and conduct a pre-bid site meeting
- Organize and participate in bid opening
- Review subcontractor bids, summarize bid results and provide recommendation to City for award
- Work with the selected Contractor on obtaining and verifying bonds and insurance
- Work with the City of Fortuna on preparing the subcontract documents for Fortuna City Council approval including the Notice of Award, Subcontract, and Notice to Proceed. The City of Fortuna will provide the Advertisement of Bid and pay any associated fees for the placement of the bid in any newspapers or other publications.

Task 2 - Construction Management. GHD will provide construction management assistance throughout the construction of the project. GHD will coordinate communication between the Contractor, the City of Fortuna and other parties throughout the course of the project. GHD will assist the City of Fortuna to respond to landowner questions/comments. Many of the items listed below under construction management will involve the input and feedback of the City of Fortuna and others.

Sub-Task 2.1 - Pre-Construction Review of Contractor Documents

- Review Contractor's initial construction schedule for completeness, adherence to project requirements, and ease of monitoring progress
- Review Contractor's submittals
- Review cost breakdowns requested for lump sum items to establish the basis for payment calculation for those items.

Sub-Task 2.2 - Pre-Construction Meeting

- Conduct pre-construction meeting.
- As a part of this effort, GHD will prepare and distribute the agenda, meeting minutes and a task list to project staff.
- Summarize work and expectations of City of Fortuna including subcontract requirements and coordination required for the

completion of the work including, roles and responsibilities, schedule of work, submittals, work hours, notifications, safety, coordination with utilities, materials testing, etc.
- Attend additional meetings and coordinate as necessary with the City of Fortuna and the Contractor prior to the start of construction.

Sub-Task 2.3 - Environmental Compliance Coordination
- Compile permit and regulatory documents and distribute to Contractor
- Respond to environmental compliance and permitting related questions during the construction period
- Oversee permit compliance requirements and assist Contractor to interpret permit conditions and construction windows
- Conduct environmental awareness training to Contractor
- Schedule and coordinate biological clearance surveys
- Secure, schedule and coordinate a qualified Biologist to relocate fish from the crossing before construction.

Sub-Task 2.4 - Construction Period Tasks
- Record working days, non- working days and weather related days and issue weekly statement of working days
- Review Contractor monthly payment requests, resolve differences in payment quantities, and prepare and submit monthly payment recommendations to City of Fortuna
- Maintain project records and files
- Attend project meetings and prepare agenda, attend, and document meeting minutes
- Coordinate and manage Submittal and Shop Drawings reviews – include maintaining submittal log
- Review and respond to Contractor submittals, based upon the plans and specifications
- Monitor the Contractor's construction schedule and progress for adherence to project schedule, coordinate with the Contractor on maintaining activities, notify Contractor and City of Fortuna of any schedule concerns, review any schedule revisions and negotiate time extensions, if necessary.
- Coordinate with the Contractor so Contractor can provide City of Fortuna staff with sufficient advance notice for any construction activities, which may affect or require City of Fortuna resources or coordination.
- Request For Information (RFI) & Contract Change Orders (CCO)
    - Manage Contractor correspondence including RFIs, Potential Change Orders (PCOs) and CCOs – include technical / engineering assistance and review, maintain logs, prepare and transmit responses and coordinate with other parties to develop responses.

    - Submit copy of CCO memorandum and CCOs to City of Fortuna.
- Attend on-site meetings to address construction issues, prepare agenda and meeting minutes
- Coordinate and schedule Biologist, Construction Observer, and supporting City of Fortuna staff.

Task 3 - On-site Observation. In this Task GHD will provide the following onsite construction observation services as described below:

- Provide on-site construction observation to document Contractor general conformance with the project plans and specifications.
- Prepare observation reports including digital photo logs of progress.
- Maintain routine communication with Construction Manager and City of Fortuna staff.
- Maintain a set of red line plans depicting changes noted by the construction observer.
- Conduct regulatory permitting monitoring and reporting
- Collect and maintain material tags and testing tags/reports as required for subcontract compliance.
- Review traffic control, water management and monitor Contractor activities.
- Reject or recommend deductions for materials not meeting the project requirements.
- Conduct spot elevation checks of grading and rock installation for conformance with plans and specifications.
- Complete QA/QC checklist and submit to CDFW Engineering staff weekly.
- Observe seed/mulch application, and
- Observe plant installation.

Task 4 - Biological Clearance Surveys. GHD will conduct biological clearance surveys for presence/absence of nesting birds prior to construction disturbance and provide as-needed avian surveys and biological monitoring during construction activities.

Task 5 - Project Closeout and Post-Construction Fish Passage Monitoring. In this Task GHD will assist the City of Fortuna with the project closeout including final documentation, notice of completion and record drawings.

Sub-Task 5.1 - Final Documentation. Prepare final project closeout documents including the following:

- Complete project photo log in CD format
- Approved submittals
- Inspection/observation logs
- Notice of Termination

- Meeting notes
- Prepare Notice of Completion and other documents for approval by City of Fortuna and submit to County for Recording.
- Prepare and transmit Record Drawings (As-builts) to City of Fortuna, incorporating any noted changes, change orders or other changes deemed necessary and provide hard copies as requested and electronic Computer Aided Design (CAD) files in AutoCAD format.

Sub-Task 5.2 - Final FRGP Progress Report. A Final Report containing the following information will be included:

- Number of restoration projects proposed as a result of this project;
- Name(s) of restoration project(s) proposed as a result of this project;
- Description(s) of restoration project(s) proposed as a result of this project;
- Type(s) of treatments applied, indicate the FRGP Proposal Project Type(s);
- Acres of salmonid habitat protected/restored;
- Number of watersheds protected/restored; and
- Dollar value of habitat treatments applied.

Sub-Task 5.3 - Post-Construction Fish Passage Monitoring. GHD and MLA will conduct post-construction monitoring at two different flows during the fall/winter following construction to evaluate fish passage in the rock chute and modified culvert. The monitoring will occur within the design flow ranges for two life stages of Coho Salmon. Thalweg elevation, water depths, velocities, and flow will be surveyed within the step-pool roughened channel and middle bay of the culvert using standard United States Geological Survey field methods. Measured flow depth and velocity values within the rock chute and baffled culvert will be compared with design values, and with CDFW and National Marine Fisheries Service fish passage criteria for the appropriate life stage of salmonid. GHD will prepare a brief memorandum summarizing the methods and results of the post construction fish passage monitoring.

Deliverables: Deliver the following items:

Task 1 – Bid package including CEQA/permit conditions, Addenda during bidding, bid results, Notice of Award, Agreements/Subcontracts, Notice to Proceed. Final Landowner Access Agreement that specifies CDFW access to the property. A copy of the City of Fortuna's Rohner Creek Flood Control, Seismic and Habitat Improvements Project long-term maintenance including plans for debris clearance of the concrete weirs.

Task 2 – Retrofit of the Rohner Creek at 12th Street crossing culvert. Subtask 2.2- agenda, meeting minutes and a task list; Subtask 2.3- compiled permit and regulatory documents, biological surveys; Subtask 2.4- weekly statement of working days, monthly payment recommendations, project

and site meeting agendas and meeting minutes, contract change order memorandums, QA/QC checklists.

Task 3 – Observation reports including digital photo logs, regulatory reporting, material tags and testing tags/reports

Task 4 – Biological clearance survey logs

Task 5 – Complete project photo log in CD format, approved submittals, inspection/observation logs, notice of termination, meeting notes, notice of completion, record drawings (as-builts) to City of Fortuna, incorporating any noted changes, change orders or other changes deemed necessary and provide hard copies as requested and electronic CAD files in AutoCAD format, Final FRGP Progress Report, post-construction fish passage monitoring memorandum.

Timelines:

Task 1 - Pre-Bid and Bid Period Assistance (January-March 2018)

Task 2 - Construction Management (May-October 2018)

Task 3 - On-site Observation (June-October 2018)

Task 4 - Biological Clearance Surveys (May and June 2018)

Task 5 - Project Closeout and Post-Construction Fish Passage Monitoring (October 2018 through January 2019)

Additional Requirements: The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a "notice to proceed" letter has been received from the Grantor Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW.

Supply a Final Landowner Access Agreement that specifies CDFW access to the property. The City of Fortuna will supply a copy of the City of Fortuna's Rohner Creek Flood Control, Seismic and Habitat Improvements Project long-term maintenance plan to ensure that debris clearance of the concrete weirs has been included. The Grantor Project Manager will supply a copy of the QA/QC checklist from CDFW Engineering Staff. The Oversight Engineer will submit the checklist to CDFW Engineering Staff (or designee) weekly for review. As cost-share, secure a biologist to relocate fish and other wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When

transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the CDFW Grant Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for CDFW personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other native aquatic species from the project area. If the project requires dewatering of the site and the relocation of listed aquatic species, the Grantee will implement the following measures to minimize harm and mortality to listed species as well as other native aquatic species:

- Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year.

- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit, NMFS Biological Opinion, and project's Lake and Streambed Alteration Agreement (1600 permit).

- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

- Only qualified fisheries biologist that are approved by USFWS and permitted by CDFW under a California Endangered Species Act (CESA) Memorandum of Understanding (MOU) shall handle and relocate CESA listed species.

- All electrofishing shall be performed by a qualified fisheries biologist under the supervision of CDFW and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

- USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW. .

The bridge (culvert) design and installation will meet flow carrying capacity

required for a 100-year flood event as identified by specifications determined by National Oceanic and Atmospheric Administration (NOAA) Fisheries and the California Department of Fish and Wildlife (CDFW), for adult and juvenile salmonid fish passage. The project will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and criteria for fish passage as described in Volume II, Part IX, of the *California Salmonid Stream Habitat Restoration Manual*. The engineered plans for the bridge (culvert) installation shall be visually reviewed and authorized by NOAA Fisheries or California Department of Fish and Wildlife engineers prior to commencement of work.

All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*, Volume I, and Volume II Part XI and Part XII. The Grantee/landowner will maintain the new crossing, inspect the crossing in a timely manner and remove debris as necessary during the storm season.

Final structure design and placement will be determined by field consultation between the Grantee and the CDFW Grant Manager. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Fortuna (4012452) OR Cannibal Island (4012463) OR Fields Landing (4012462) OR McWhinney Creek (4012461) OR Ferndale (4012453) OR Hydesville (4012451) OR Capetown (4012443) OR Taylor Peak (4012442) OR Scotia (4012441))

Possible species within the Fortuna quadrangle and surrounding quads for 725553 Fish Passage Improvement Project at 12th Street, T02N R01W S2, Humboldt County

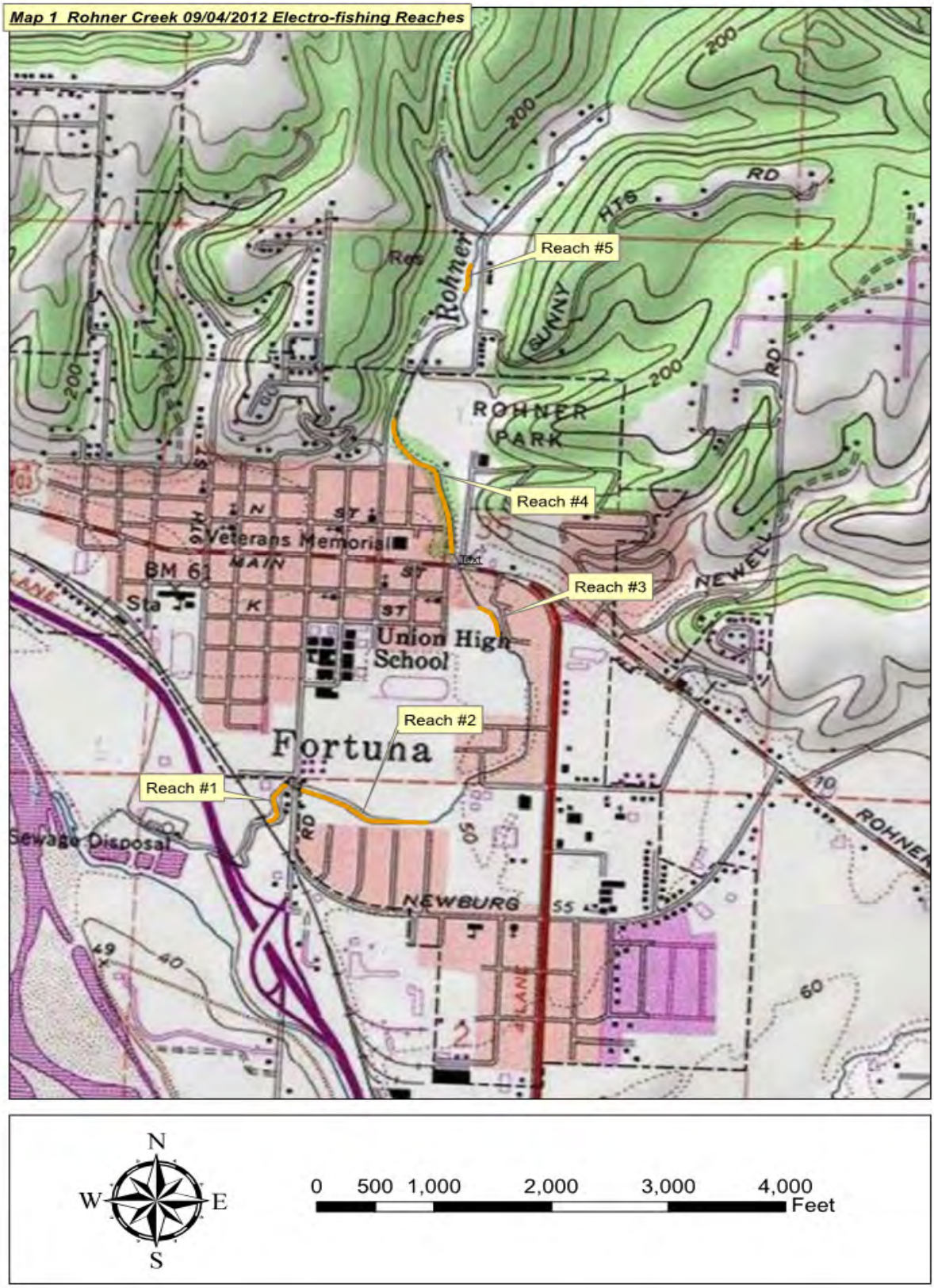
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
bald eagle *Haliaeetus leucocephalus*	ABNKC10010	Delisted	Endangered	G5	S3	FP
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S2	
beach layia *Layia carnosa*	PDAST5N010	Endangered	Endangered	G2	S2	1B.1
black-crowned night heron *Nycticorax nycticorax*	ABNGA11010	None	None	G5	S4	
bristle-stalked sedge *Carex leptalea*	PMCYP037E0	None	None	G5	S1	2B.2
coast checkerbloom *Sidalcea oregana ssp. eximia*	PDMAL110K9	None	None	G5T1	S1	1B.2
coast cutthroat trout *Oncorhynchus clarkii clarkii*	AFCHA0208A	None	None	G4T4	S3	SSC
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
coastal marsh milk-vetch *Astragalus pycnostachyus var. pycnostachyus*	PDFAB0F7B2	None	None	G2T2	S2	1B.2
Coastal Terrace Prairie *Coastal Terrace Prairie*	CTT41100CA	None	None	G2	S2.1	
Cooper's hawk *Accipiter cooperii*	ABNKC12040	None	None	G5	S4	WL
dark-eyed gilia *Gilia millefoliata*	PDPLM04130	None	None	G2	S2	1B.2
dwarf alkali grass *Puccinellia pumila*	PMPOA531L0	None	None	G4?	SH	2B.2
eulachon *Thaleichthys pacificus*	AFCHB04010	Threatened	None	G5	S3	
fisher - West Coast DPS *Pekania pennanti*	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
giant fawn lily *Erythronium oregonum*	PMLIL0U0C0	None	None	G4G5	S2	2B.2
golden eagle *Aquila chrysaetos*	ABNKC22010	None	None	G5	S3	FP

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
great egret *Ardea alba*	ABNGA04040	None	None	G5	S4	
green sturgeon *Acipenser medirostris*	AFCAA01030	Threatened	None	G3	S1S2	SSC
Hitchcock's blue-eyed grass *Sisyrinchium hitchcockii*	PMIRI0D0S0	None	None	G2	S1	1B.1
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
Howell's montia *Montia howellii*	PDPOR05070	None	None	G3G4	S2	2B.2
Humboldt Bay owl's-clover *Castilleja ambigua var. humboldtiensis*	PDSCR0D402	None	None	G4T2	S2	1B.2
Humboldt marten *Martes caurina humboldtensis*	AMAJF01012	None	Candidate Endangered	G5T1	S1	SSC
Humboldt mountain beaver *Aplodontia rufa humboldtiana*	AMAFA01017	None	None	G5TNR	SNR	
longfin smelt *Spirinchus thaleichthys*	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Lyngbye's sedge *Carex lyngbyei*	PMCYP037Y0	None	None	G5	S3	2B.2
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
marbled murrelet *Brachyramphus marmoratus*	ABNNN06010	Threatened	Endangered	G3G4	S1	
Menzies' wallflower *Erysimum menziesii*	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
minute pocket moss *Fissidens pauperculus*	NBMUS2W0U0	None	None	G3?	S2	1B.2
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
Northern Coastal Salt Marsh *Northern Coastal Salt Marsh*	CTT52110CA	None	None	G3	S3.2	
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon coast paintbrush *Castilleja litoralis*	PDSCR0D012	None	None	G3	S3	2B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Oregon polemonium *Polemonium carneum*	PDPLM0E050	None	None	G3G4	S2	2B.2
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
pink sand-verbena *Abronia umbellata var. breviflora*	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Point Reyes salty bird's-beak *Chloropyron maritimum ssp. palustre*	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
running-pine *Lycopodium clavatum*	PPLYC01080	None	None	G5	S3	4.1
seacoast ragwort *Packera bolanderi var. bolanderi*	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
seaside bittercress *Cardamine angulata*	PDBRA0K010	None	None	G5	S1	2B.1
sharp-shinned hawk *Accipiter striatus*	ABNKC12020	None	None	G5	S4	WL
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	PDASTE5011	None	None	G4T3	S2	1B.2
Siskiyou checkerbloom *Sidalcea malviflora ssp. patula*	PDMAL110F9	None	None	G5T2	S2	1B.2
Sitka Spruce Forest *Sitka Spruce Forest*	CTT82110CA	None	None	G1	S1.1	
slender silver moss *Anomobryum julaceum*	NBMUS80010	None	None	G5?	S2	4.2
snowy egret *Egretta thula*	ABNGA06030	None	None	G5	S4	
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western lily *Lilium occidentale*	PMLIL1A0G0	Endangered	Endangered	G1	S1	1B.1
western pearlshell *Margaritifera falcata*	IMBIV27020	None	None	G4G5	S1S2	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western sand-spurrey *Spergularia canadensis var. occidentalis*	PDCAR0W032	None	None	G5T4	S1	2B.1
western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
Whitney's farewell-to-spring *Clarkia amoena ssp. whitneyi*	PDONA05025	None	None	G5T1	S1	1B.1
Wolf's evening-primrose *Oenothera wolfii*	PDONA0C1K0	None	None	G2	S1	1B.1
Yuma myotis *Myotis yumanensis*	AMACC01020	None	None	G5	S4	

Record Count: 71


Map 1 Rohner Creek 09/04/2012 Electro-fishing Reaches
Reach #5
Reach #4
Reach #3
Reach #2
Reach #1
Rohner
ROHNER PARK
Veterans Memorial
BM 61
Union High School
Fortuna
Sewage Disposal
NEWBURG
ROHNER
N
S
E
W
0 500 1,000 2,000 3,000 4,000
Feet

Instream Habitat Enhancement of Salmon Creek, Humboldt Bay Tributary 2017

Introduction: The Eel River Watershed Improvement Group will increase pool cover and shelter complexity in Salmon Creek through placement of 11 LWD structures containing 46 logs along 0.63 miles of stream channel.

Stream inventories and assessments of Salmon Creek have found shelter and LWD to be lacking. These reports recommend the installation of LWD structures to provide habitat for the salmonids inhabiting Salmon Creek.

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Parts VII, IX, XI, and XII (Flosi et al 1998 and 2002).

Objectives: The goal of this project is to create 0.23 acres of off-channel winter rearing habitat for juvenile salmonids. This will be accomplished through re-connecting two backwater ponds to Freshwater Creek.

Project Description:

Location: This project is located on Salmon Creek, approximately 3.3 miles upstream of the mouth of Salmon Creek at Hookton Slough, and approximately 0.4 miles upstream of the confluence with Little Salmon Creek. The middle of the reach is at 40.66081000 N, 24.18563000 W.

Project Set Up:

Contract oversight will be conducted by ERWIG Project Manager with assistance from the ERWIG Project Associate. The ERWIG Project Associate will assist with contract oversight, purchasing and invoicing and reporting.

Subcontractors:
The Bookkeeper: will work with the Project Manager to pay out ERWIG employees, vendors and subcontractors.

The CCC Fish Habitat Assistant will participate in project prep, implementation, tree planting and collecting metrics. They will provide logistical support to CCC Corpsmember crews ensuring tool and material needs are met without delay throughout the project duration. Additionally, the Fish Habitat Assistant will provide onsite training and direction to CCC crews to ensure features meet the criteria set by the CDFW, California Salmonid Stream Habitat Restoration Manual, Section VII (Flosi et al. 2010).

The Licensed Excavator Operator will be responsible for placing LWD at the features where access is available.

The California Conservation Corps (CCC) Corpsmembers will anchor the structures according to design and anchoring specifications under supervision of the Conservationist 1. CCC Corpsmembers will also move LWD into position using a grip hoist come along. After logs are placed they will plant trees.

The Equipment Transporter will bring heavy equipment to and from worksite.

The Log Delivery will deliver LWD to project site.

The Green Diamond RPF & Roads Supervisor will be consulted during site preparation and during implementation of the project.

Materials: Materials necessary for this project include:

1. 10’ by 1” threaded rod (rebar): will be used to anchor LWD to rock, live trees, and LWD. The purpose of using this material is to increase longevity of structure and increase resistance to transposition from high flow events.
2. Steel nuts: are required to secure threaded rebar to LWD, live trees, and rock, increasing longevity of intended structural position.
3. Steel washers will be used to lock the steel nut into place once fastened to the threaded rebar.
4. Conifer Tree Seedlings: will be used as riparian cover to reduce erosion, increase riparian complexity, and increase future instream wood recruitment.
5. Drill bits & extensions: Used to drill the holes through the logs and anchor trees so we can anchor the structures according to the California Salmonid Stream Habitat Restoration Manual
6. Tools & Materials (drills, band saws, chain, bar oil, band saw blades, extension cords, shear pins, GFIs, Allen wrenches misc. gear.): These miscellaneous materials are required to drill and anchor all materials to appropriate anchor points.
7. Tool Rental and Repair: Working outdoors in a remote environment can be a less than ideal place for power tools. Repairing instead of replacing tools keeps the project cost down. Tools may be rented if necessary.
8. Logs: This is the LWD that will make up our features to improve the instream conditions for anadromous salmonids. All logs will be >1' diameter and equal to or greater than 20' long.

Tasks:

Task 1. Contract Oversight: Contract oversight will be conducted by ERWIG. The Project Manager and Project Associate will communicate and coordinate with Green Diamond Resource Company representative to obtain entry permits, coordinate implementation schedules, obtain wood donation, and go over project implementation details. Upon receipt of notice to proceed, project manager will obtain 1600 permit, hire subcontractors and provide management and direction to subcontractors throughout the duration of the project. All reporting, billing and

invoicing will be pursuant to contract and regulatory guidelines. Project manager will work with a bookkeeper to provide fiscal management to project.

Task 2. Subcontractor Prep and Training: ERWIG will ensure that all subcontractors are trained on landowner concerns and protocols before they enter the property to begin project work. The training would include security issues, permit requirements, grant requirements and road protocols. ERWIG will ensure that all subcontractors understand that ONLY those designated to work on the project are allowed on the property. ERWIG will work closely with subcontractors to ensure that no actions result in the delivery of sediment to the stream channel when delivering, staging, and placing large wood in the stream. ERWIG and its subcontractors will be aware of the status of various roads within the project area, and will not enter any decommissioned roads with heavy equipment, or do anything that might cause significant impacts on the hydrology of decommissioned road segments.

Task 3. Final Feature Design & Site Preparation: ERWIG Project Manager and CCC Fish Habitat Assistant will prepare site specific designs based on channel morphology, access, and LWD availability. They will submit designs for landowner and CDFW Project Manager approval. Landowner's representatives will provide consultation on this phase of the project. ERWIG Project Manager along with CCC Fish Habitat Assistant will flag sites for wood selection, staging, and installation, clear brush as needed, and designate staging areas for wood along project reaches.

Task 4. Purchasing, including billing and invoicing. Tools and materials will be purchased prior to the start of implementation and on an as needed basis throughout the project. Billing and invoicing will take place in a prompt manner.

Task 5. Project Implementation: Under the direction of the ERWIG Project Manager and CCC Fish Habitat Assistant, with oversight from Green Diamond staff, site construction on 11 LWD features will begin. Logs will be delivered via logging truck from a nearby logging operation. The licensed equipment operator will place downed logs into the stream in accordance with design plans. When necessary, CCC Corpsmembers will move LWD into position using a grip hoist come along. Site construction, wood placement, and anchoring will be in accordance with the CDFW, California Salmonid Stream Habitat Restoration Manual, Section VII (Flosi et al. 2010). The project will utilize living riparian trees for anchor points for the LWD. California Conservation Corps(CCC) Corpsmembers will anchor the sites according to design and anchoring specifications. Corpsmembers will use one-inch threaded rebar to anchor logs to mature riparian trees, and each other. Holes will be drilled through the logs and their anchor trees, using a hole hawg drill, timber bit, and drill bit extensions when necessary. One-inch rebar will be strung through the log and secured with nuts

and washers. Corpsmembers will be supervised by a Conservationist 1 (C1), Fish Habitat Assistant, and the ERWIG Project Manager. Structures will be complex consisting of logs fastened together. Every log will have at least two anchor points. Erosion control methods will be employed as required, at each structure to eliminate the possibility of sediment transport to the stream. To address concerns over invasive species, this project will follow ERWIG's decontamination protocol which is in line with the California Department of Fish and Wildlife Aquatic Invasive Species Decontamination Protocols and U.S. Department of the Interior- Bureau of Reclamation 2012 Inspection and Cleaning Manual for Equipment and Vehicles to Prevent the Spread of Invasive Species. Implementation will be phased to allow for wood development and to accommodate decontamination protocols. Tools and materials will be purchased, repaired and rented on an as needed basis.

Task 6. Riparian Planting: To promote riparian vegetation, increase canopy cover above the creek, and to establish wood for future instream recruitment, CCC crews will return to the project site in the winter following project implementation to plant 100 conifer seedlings along 0.6 miles of riparian zone, with a primary focus in areas lacking sufficient conifer cover.

Task 7. Progress reports, Post-Project Data and Photo Collection: Following implementation, photos will be taken of the project and metrics will be collected which satisfy the Grant Agreement Annual Progress Report(s) and Final Report. Progress reports will be written and delivered for invoicing.

Task 8. Reporting: ERWIG Project Manager and ERWIG Project Associate will write and deliver Annual Report(s), and a Final Report to CDFW Project Manager.

Deliverables:

Eleven LWD features will be constructed and anchored in place and will contain a total of 46 logs. These structures will enhance existing pools, increase gravel sorting, increase habitat complexity, and provide velocity refugia for salmonids. An additional 100 conifers will be planted for future LWD recruitment. ERWIG Project Manager will write and deliver progress reports for invoicing, and Annual Progress Report(s) for the duration of the project.

A Final Report will be written and submitted to CDFW Project Manager after the project has been completed. The report will include: (1) the grant agreement number, (2) location of work – project location will be shown using a USGS 7.5 minute topographical map, (3) specific project access using public and private roads and trails, with appropriate landowner contact information, (4) a description and 10 analysis of the restoration and planning techniques used, (5) a description of project results (6) dates of work and the number of person hours expended, (7) Labeled photographs of all restoration activities and techniques pre and post project implementation, (8) As-built drawings that include structure placement and

alignment, cross-sections and longitudinal profiles, and sizes and quantity of material added and (9) a financial overview of grant dollars spent and/or in kind services used to complete the project..

Timelines:

Task 1- Upon approval through March 31, 2022, Coordinate with landowners for project entry, apply for 1600 permit, hire sub-contractors and procure LWD. Oversee and coordinate project.

Task 2- Upon approval through October 31, 2021, oversee and coordinate project and ensure that subcontractors are trained and operate under landowner protocols.

Task 3 & 4- Upon approval through March 1, 2022, finalize design, label features, and purchase tools and materials.

Task 5- June 15, 2018 through October 31, 2018, June 15, 2019 through October 31, 2019, June 15, 2020 through October 31, 2020, and June 15, 2021 through October 31, 2021. Project implementation, installation of approved LWD structures. Erosion control will be installed as project features are completed.

Task 6- November 1, 2018 through March 1, 2019, November 1, 2019 through March 1, 2020, November 1, 2020 through March 1, 2021, November 1, 2021 through March 1, 2022 riparian plantings will occur after completion of LWD features.

Task 7-June 15, 2018 through March 1, 2022. post-project description, photos and quantitative metrics will be collected. Progress reports will be written and delivered for invoicing.

Task 8- November 15, 2018, November 15, 2019, November 15, 2020, November 15, 2021 & March 31, 2022, post project photos and metrics will be delivered in an Annual Report, and a Final Report.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a “notice to proceed” letter has been received from the California Department of Fish and Wildlife (CDFW) Grant Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each

stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the CDFW Grant Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for CDFW personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other native aquatic species from the project area. If the project requires dewatering of the site and the relocation of listed aquatic species, the Grantee will implement the following measures to minimize harm and mortality to listed species as well as other native aquatic species:

- Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year.

- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit, NMFS Biological Opinion, and project's Lake and Streambed Alteration Agreement (1600 permit).

- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

- Only a qualified fisheries biologist that are approved by USFWS and permitted by CDFW under a California Endangered Species Act (CESA) Memorandum of Understanding (MOU) shall handle and relocate CESA listed species.

- All electrofishing shall be performed by the qualified fisheries biologist under the supervision of CDFW and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

- USFWS-Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW.

Final structure design and placement will be determined by field consultation between the Grantee and the CDFW Grant Manager. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Seeding and mulching of all exposed soils shall be done for all slopes which may deliver sediment to a stream. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years. Mulching and seeding will take place as sites are completed to avoid unforeseen erosion. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Fields Landing (4012462) OR Eureka (4012472) OR Cannibal Island (4012463) OR McWhinney Creek (4012461) OR Ferndale (4012453) OR Fortuna (4012452) OR Hydesville (4012451) OR Arcata South (4012471))

Possible species within the Fields Landing quadrangle and surrounding quads for 725564 Instream Habitat Enhancement of Salmon Creek, Humboldt Bay Tributary, T03N R01W S9, Humboldt County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
alpine marsh violet *Viola palustris*	PDVIO041G0	None	None	G5	S1S2	2B.2
bald eagle *Haliaeetus leucocephalus*	ABNKC10010	Delisted	Endangered	G5	S3	FP
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S2	
beach layia *Layia carnosa*	PDAST5N010	Endangered	Endangered	G2	S2	1B.1
black-crowned night heron *Nycticorax nycticorax*	ABNGA11010	None	None	G5	S4	
bristle-stalked sedge *Carex leptalea*	PMCYP037E0	None	None	G5	S1	2B.2
California Ridgway's rail *Rallus obsoletus obsoletus*	ABNME05016	Endangered	Endangered	G5T1	S1	FP
coast checkerbloom *Sidalcea oregana ssp. eximia*	PDMAL110K9	None	None	G5T1	S1	1B.2
coast cutthroat trout *Oncorhynchus clarkii clarkii*	AFCHA0208A	None	None	G4T4	S3	SSC
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
coastal marsh milk-vetch *Astragalus pycnostachyus var. pycnostachyus*	PDFAB0F7B2	None	None	G2T2	S2	1B.2
Coastal Terrace Prairie *Coastal Terrace Prairie*	CTT41100CA	None	None	G2	S2.1	
Cooper's hawk *Accipiter cooperii*	ABNKC12040	None	None	G5	S4	WL
dark-eyed gilia *Gilia millefoliata*	PDPLM04130	None	None	G2	S2	1B.2
double-crested cormorant *Phalacrocorax auritus*	ABNFD01020	None	None	G5	S4	WL
dwarf alkali grass *Puccinellia pumila*	PMPOA531L0	None	None	G4?	SH	2B.2
eulachon *Thaleichthys pacificus*	AFCHB04010	Threatened	None	G5	S3	
fisher - West Coast DPS *Pekania pennanti*	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
ghost-pipe *Monotropa uniflora*	PDMON03030	None	None	G5	S2	2B.2
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
great egret *Ardea alba*	ABNGA04040	None	None	G5	S4	
green sturgeon *Acipenser medirostris*	AFCAA01030	Threatened	None	G3	S1S2	SSC
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
Howell's montia *Montia howellii*	PDPOR05070	None	None	G3G4	S2	2B.2
Humboldt Bay owl's-clover *Castilleja ambigua var. humboldtiensis*	PDSCR0D402	None	None	G4T2	S2	1B.2
Humboldt marten *Martes caurina humboldtensis*	AMAJF01012	None	Candidate Endangered	G5T1	S1	SSC
Humboldt mountain beaver *Aplodontia rufa humboldtiana*	AMAFA01017	None	None	G5TNR	SNR	
leafy-stemmed mitrewort *Mitellastra caulescens*	PDSAX0N020	None	None	G5	S4	4.2
long-eared myotis *Myotis evotis*	AMACC01070	None	None	G5	S3	
longfin smelt *Spirinchus thaleichthys*	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Lyngbye's sedge *Carex lyngbyei*	PMCYP037Y0	None	None	G5	S3	2B.2
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
marbled murrelet *Brachyramphus marmoratus*	ABNNN06010	Threatened	Endangered	G3G4	S1	
marsh pea *Lathyrus palustris*	PDFAB250P0	None	None	G5	S2	2B.2
Menzies' wallflower *Erysimum menziesii*	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
minute pocket moss *Fissidens pauperculus*	NBMUS2W0U0	None	None	G3?	S2	1B.2
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
northern clustered sedge *Carex arcta*	PMCYP030X0	None	None	G5	S1	2B.2
Northern Coastal Salt Marsh *Northern Coastal Salt Marsh*	CTT52110CA	None	None	G3	S3.2	
northern harrier *Circus cyaneus*	ABNKC11010	None	None	G5	S3	SSC
northern meadow sedge *Carex praticola*	PMCYP03B20	None	None	G5	S2	2B.2
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon coast paintbrush *Castilleja litoralis*	PDSCR0D012	None	None	G3	S3	2B.2
Oregon polemonium *Polemonium carneum*	PDPLM0E050	None	None	G3G4	S2	2B.2
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
perennial goldfields *Lasthenia californica ssp. macrantha*	PDAST5L0C5	None	None	G3T2	S2	1B.2
pink sand-verbena *Abronia umbellata var. breviflora*	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Point Reyes salty bird's-beak *Chloropyron maritimum ssp. palustre*	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
round-headed Chinese-houses *Collinsia corymbosa*	PDSCR0H060	None	None	G1	S1	1B.2
running-pine *Lycopodium clavatum*	PPLYC01080	None	None	G5	S3	4.1
sandy beach tiger beetle *Cicindela hirticollis gravida*	IICOL02101	None	None	G5T2	S2	
seacoast ragwort *Packera bolanderi var. bolanderi*	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
seaside bittercress *Cardamine angulata*	PDBRA0K010	None	None	G5	S1	2B.1
seaside pea *Lathyrus japonicus*	PDFAB250C0	None	None	G5	S2	2B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
sharp-shinned hawk *Accipiter striatus*	ABNKC12020	None	None	G5	S4	WL
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	PDASTE5011	None	None	G4T3	S2	1B.2
Siskiyou checkerbloom *Sidalcea malviflora ssp. patula*	PDMAL110F9	None	None	G5T2	S2	1B.2
Sitka Spruce Forest *Sitka Spruce Forest*	CTT82110CA	None	None	G1	S1.1	
slender silver moss *Anomobryum julaceum*	NBMUS80010	None	None	G5?	S2	4.2
snowy egret *Egretta thula*	ABNGA06030	None	None	G5	S4	
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
twisted horsehair lichen *Bryoria spiralifera*	NLTEST5460	None	None	G3	S1S2	1B.1
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western lily *Lilium occidentale*	PMLIL1A0G0	Endangered	Endangered	G1	S1	1B.1
western pearlshell *Margaritifera falcata*	IMBIV27020	None	None	G4G5	S1S2	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western sand-spurrey *Spergularia canadensis var. occidentalis*	PDCAR0W032	None	None	G5T4	S1	2B.1
western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
white-tailed kite *Elanus leucurus*	ABNKC06010	None	None	G5	S3S4	FP
Whitney's farewell-to-spring *Clarkia amoena ssp. whitneyi*	PDONA05025	None	None	G5T1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Wolf's evening-primrose *Oenothera wolfii*	PDONA0C1K0	None	None	G2	S1	1B.1
northern spotted owl *Strix occidentalis caurina*	*A*BNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 83

Project Location Topographic Map

Project Location Topographic Map
Instream Habitat Enhancement of Salmon Creek Project
Fields Landing Quad, Humboldt County

Introduction: The Mattole Restoration Council will increase riparian forest habitat on stable floodplain terraces by installing 7,000ft of trenched willow baffles from large willow cuttings with 4,000 native plants (black cottonwood, red alder, Oregon ash, big leaf maple, and Douglas fir).

This project is necessary because the Mattole River Estuary is currently poor habitat for all salmon and steelhead species: the water is too warm, habitat cover is poor, and the channel lacks riparian vegetation.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. Work in flowing streams is restricted to June 15 through October 31. Actual project start and end dates, within this timeframe, are at the discretion of the Grantor.All habitat improvement will follow techniques in the California Salmonid Stream Habitat Restoration Manual Parts VI and XI (Flosi et al 1998 and 2002).

Objectives: The proposed project has two major objectives:

1. Objective 1. Increase riparian forest habitat on stable floodplain terraces along the lower Mattole River through the planting of 1,000 long-lived riparian tree species and installing 2,000ft of willow baffles; and
2. Objective 2. Increase riparian edge habitat on intermediate elevation islands by planting 3,000 long-lived riparian tree species and installing 5,000 feet of trenched willow baffles on intermediate elevation islands and bar apices.

Project Description:

Location: This project is located along the main stem Mattole River downstream of Petrolia in Humboldt County. The project area encompasses approximately 7,000 linear feet along 2 river miles. Project features are located at BLM02 - 40.29628800 : -124.32381800 - Middle of island; BLM16 - 40.29018700 : -124.34023500 - Middle of island.

Project Set Up: The following tasks will be conducted by associated personnel as shown below:

Task 1. Collect pre-project photographs and baseline monitoring data. All will be conducted by Project Manager and Laborers.
Task 2. Install trenched willow baffles from 7,000 large willow cuttings, installation will be done by Laborers, as directed by Project Manager. Excavator will be used to dig trenches, will be done by sub-contractor Patrick Queen Construction. Willow cuttings will be cut with chainsaws, hauled to site by vehicles, and installed, all done by Laborers, as directed by Project Manager.

Task 3. Plant 4,000 riparian containerized plants within baffle areas. Plants will be purchased by applicant, from the MRC Native Plant Nursery. Plants will be installed by laborers using hoedads, shovels, and rock bars, as directed by Project Manager.
Task 4. Irrigate. Pump water from a trench, using a pump. Irrigate by flood irrigation and/or overhead irrigation, as needed to maintain survivorship of willow cuttings and container plants. Plants will be irrigated by Laborers, as directed by Project Manager. Trench will be excavated by sub-contractor Patrick Queen Construction.
Task 5. Perform monitoring, maintenance, and collect post-project photos at project sites,. Container plants and willow cuttings will be assessed for survivorship, replanted as needed (up to additional 2,000 plants replanted, included a in-kind match by applicant), irrigated as needed, and post-project photos will be collected for reporting. All work under this task will be done by laborers and project managers.
Task 6. Prepare final report (Project Manager and Executive Director) and quarterly invoices (Contract Manager).
All tasks: All staff oversight will be conducted by Executive Director. Main point of communication regarding grant will be overseen by Executive Director, with support from Office Manager. Timecards, payroll, and bookkeeping will be managed by Bookkeeper, with oversight from Executive Director and support from Office Manager. Executive Director will be responsible for ensuring that all purchases and staff time billed to project is relevant to project and within budget. All invoicing will be prepared by Contract Manager, with support from Project Manager.

Materials: Materials will include:
Plants: Directly installed into project site, purchased by the applicant.
Pump: Will be rented for 2 months to irrigate planting sites, as needed. Provided as match by applicant.
Tools: Required for installing container plants, includes hoedad, shovel, rock bars. Provided as match by applicant.
Chainsaws: Used to harvest willows cuttings for baffles. Purchased by applicant.
Vehicle rental: Trucks required for access to the site, hauling willow cuttings from harvest area to baffle areas. Rented by applicant.
Fuel: Used to run the pump and vehicles. Purchased by applicant.
Straw bales and seed: Required to treat areas impacted by slough excavation (activity funded under separate funder (SCC proposed 2017), but in the same project area). Purchased by applicant, listed as match.

6.03.01 **Tasks:** The Grantee will complete the following tasks:

Task 1. Grant Oversight: Grant oversight will be conducted by Grantee. All reporting and billing will be pursuant to grant and regulatory guidelines. Upon final execution of the Grant and prior to receiving a Final Notice to Proceed, Grantee

shall deliver the following items to the Grantor Project Manager identified in Section 6.04 – Contacts:

- Final Landowner Access Agreements as per the requirements of the 2017 Proposal Solicitation Notice, Appendix K, Funding Approval Submissions. Written permission must be obtained from landowners for access to perform grant work.

A Preliminary Notice to Proceed can be requested from the Grantor Project Manager, if necessary, to prepare for project implementation (e.g., obtain permits, secure subcontracts, purchase supplies, apply for a Streambed Alteration Agreement).

A Final Notice to Proceed will be delivered to the Grantee when Final Landowner Access Agreements are delivered to Grantor Project Manager, and when all required permits have been finalized (e.g., 401 State Water Quality Control Board Permit, Streambed Alteration Agreement).

The Grantee shall notify the Grantor Project Manager a minimum of 10 business days prior to the beginning of project implementation.

Task 2. Collect pre-project photographs and baseline monitoring. Project Manager with assistance from Laborers will visit the site and collect site photographs, assess site conditions for existing vegetation, site access requirements, and prepare site for following tasks.

Task 3. Project Implementation:
Element 1: Install trenched willow baffles from 7,000 large willow cuttings.

Excavator will be used to dig trenches. Willow cuttings will be cut with chainsaws, hauled to site by vehicles, and installed by laborers. Trenched willow baffle installation will take place on a intermediate elevation island and floodplain terrace area in the lower Mattole River and estuary from June to October 2018. The island is partially vegetated with non-native annual grasses and forbs with some native shrubs and lacks longer-lived shrub and tree species such as willow and California black cottonwood. Willow baffle installation will take place on approximately 7.6 acres, measuring a total of 7,000 linear feet, of intermediate elevation island and floodplain terrace, and not in the wetted channel. Project activities will not result in erosion or sediment delivery to adjacent waterways. Willow baffle installation projects at BLM16 will be implemented in conjunction with proposed historic slough excavation (proposed 2017 to SCC) and excavated soils will be used to backfill trenches to increase survivorship. All willow baffle installation projects will take place on BLM property and all access to sites will be through BLM property.

Large willow cuttings ranging in size from 15 ft. to 25 ft. long and 1 in. to 4 in. diameter will be harvested by Project Laborers, as directed by Project Manager, with a chainsaw from local populations of Pacific willow (Salix lucida), arroyo willow (Salix lasiolepis), and red willow (Salix laevigata) and transported by Project Laborers to project sites and directly planted into excavated trenches on 1-2 ft. centers. When materials are available, large cuttings and whole trees of California black cottonwood will be placed in trenches with willow. Trenches will be dug by an excavator (sub-contractor) to a depth of 8 ft. to 10 ft. or until 2 ft. of standing water is present in the trench. Trenches will vary in length from 50 ft. to 100 ft. If funding and materials are available, conifer poles measuring 15 ft. to 20 ft. and at least 12 in. in diameter, will be placed vertically in the trench every 10 ft. to provide structure for catching materials at high flows and to aid in maintaining soil moisture in planting trenches. Trenched willow baffles will be installed by Project Laborers, as directed by Project Manager, starting at the head of islands and bar apices and staggered every 100 ft. working downstream of the island, avoiding disturbance of natural vegetation. Cuttings and excavated materials will be watered by Project Laborers while the trench is being backfilled by the excavator (sub-contractor). Water will be pumped from an excavated hole with standing water in the gravel floodplain adjacent to planting sites. The pump will be placed in a leak-proof container lined with absorbent pads to mitigate for leaks and spills. All excavator work will be sub-contracted to a local licensed contractor, Patrick Queen Construction. For more detailed project specifications, refer to the Lower Mattole River and Estuary Riparian Habitat Restoration Plan.

Element 2: Plant 4,000 riparian containerized plants within baffle areas. Plants will be purchased by applicant, from the MRC Native Plant Nursery. Plants will be installed by laborers using hoedads, shovels, and rock bars. All container plants will be grown from seed collected in the lower Mattole River at sites with similar characteristics to planting sites. Seed for each species will be collected from multiple individuals to ensure genetic diversity. Seed will be collected by hand and processed and stored at the MRC native plant nursery (Petrolia, CA) until needed for plant propagation. Species that are being grown and planted are representative of species composition at reference sites along the Mattole River. Propagation of Douglas-fir (Pseudotsuga menziesii) starts grown from seed collected in the Mattole will be grown by Cal Forest Nurseries in Etna, CA. All other plants will be grown at the MRC nursery. Mature plants will be selected by Project Manager and purchased from MRC Native Plant Nursery by applicant.

Containerized plants will be planted in the fall of 2019 by Project Laborers, as directed by Project Manager, after significant rainfall provides adequate soil moisture for planting. Planting will be conducted in the fine sediments accumulated within the willow baffle areas from high flow events. Tree species that will be installed include California black cottonwood, big-leaf maple, Oregon ash, red alder, and Douglas-fir. A total of 4,000 riparian trees will be installed at willow baffle

sites (BLM02 and BLM16). Plants will be installed by hand using a planting shovel or hoedad, depending on plant size. All vegetation will be cleared to bare ground within 2 ft. of the planting hole prior to planting. After plant installation, a shallow basin measuring 2 ft. in diameter will be installed to aid in water collection from irrigation. Each planting basin will be mulched with 2 inches of conifer wood chips, or other on-site materials, to assist in maintaining soil moisture. Trees will be spaced at 2ft - 5ft. When possible, on-site materials will be used to construct shade structures that will be placed on the southwest side of plants.

Small patches of Scotch broom (Cytisus scoparius) will be removed by Project Laborers, as directed by Project Manager, from the planting area prior to plant installation. Plants will be piled and left to compost. The MRC has been treating Scotch broom on these sites for 10 years and very small patches remain. Planting areas will be treated annually during the length of the contract.

Element 3: Irrigate. Pump water from a trench, using a pump. Irrigate by flood irrigation and/or overhead irrigation, as needed to maintain survivorship of willow cuttings and container plants. If needed, an above-ground temporary irrigation system will be installed by Project Laborers, as directed by Project Manager. Water source will come from a surface well that will be installed prior to plant installation. The well will be dug with an excavator or back hoe by a licensed contractor (project sub-contractor). A pump will be placed by Project Laborer at the well and will supply water to a 1.5-inch main line that will run through the entire length of the planting site. Plants will be hand watered using a standard garden hose 50-100 ft. long, or by flood irrigation. No trenching of the irrigation line is required.

Task 4. Post-Project Data and Photo Collection: Perform monitoring, maintenance, and collect post-project photos at project sites. Container plants and willow cuttings will be assessed for survivorship, replanted as needed (up to additional 2,000 plants replanted, included an in-kind match by applicant), irrigated as needed, and post-project photos will be collected for reporting. All work will be done by laborers and project managers. Following implementation, post-project photos will be taken and metrics shall be collected which satisfy the Grant Agreement Annual Progress Report(s) and Final Report.

Task 5 Reporting: Prepare final report and quarterly invoices, completed by Contract Manager and Project Manager. All tasks: All tasks: All staff oversight will be conducted by Executive Director. Main point of communication regarding grant will be overseen by Executive Director, with support from Office Manager. Timecards, payroll, and bookkeeping will be managed by Bookkeeper, with oversight from Executive Director and support from Office Manager. Executive Director will be responsible for ensuring that all purchases and staff time billed to project is relevant to project and within budget. All invoicing will be prepared by

Contract Manager, with support from Project Manager. Additional direct costs allocated to this project include insurances, facility rental fees, copies, postage, communication costs (phones and internet), and computer software necessary to complete deliverables. All direct costs listed are allocated for only the tasks described in this proposal, as outlined by the MRC Direct Cost Allocation Policy, tracked using Abila accounting software, and are in accordance with current OMB Uniform Guidance policy.

Write and deliver progress reports for invoicing, Annual Progress Report(s), and a Final Report to Grantor Project Manager.

Deliverables:

Final Landowner Access Agreements

Grantor Notification of Lake or Streambed Alteration Application with a check for the cost of the 1600 permit

Copy of Subcontracts

Progress Report submitted with each invoice

Annual Report, November 15

Final Report including a clear description of methods used, monitoring data, clear descriptions of success (using success criteria established in plan), and site maps detailing project implementation

Task 2. Pre-project photographs and monitoring: Deliverables include photographs taken, written description of site conditions.
Task 3. Trenched willow baffle installation: June 2018-October 2019. Deliverables include 7,000 ft of willow baffles (approximately 4,000 large willow cuttings). Sites will be digitized and stored as a shapefile, which will be used to prepare maps submitted with reports.
Task 3. Containerized plant installation. Deliverables include 4,000 container plants installed. Sites will be digitized and stored as a shapefile, which will be used to prepare maps submitted with reports.
Task 3. Irrigation. Deliverables include plants and willow cuttings being watered as needed to increase survivorship. Details of watering will be included in reports.
Task 4. Maintenance, monitoring, and post-project photos. Deliverables include data on plant and baffle survivorship, details of watering as needed, details of weeding as needed, and replanting of up to 2,000 container plants to achieve survivorship targets of 70% by end of project. Post-project photos will be collected from the same location as pre-project photos, and will demonstrate project

success. These and additional photos will be included, as well as above-listed details, in reports.

Task 5. Final report preparation and quarterly invoices. Deliverables include quarterly invoices, periodic status reports, as well as final report which will include a comprehensive description of task implementation methods used, budgetary reporting, and project results, including monitoring data and detailed site maps. A shapefile will also be available detailing location of implemented tasks (willow baffles, container plants, monitoring locations, and photo locations). Proponent will also include an agreement stating that the riparian fencing that exists to keep livestock from the project site will be maintained for 10 years.

Timelines:

Task 2. Pre-project photographs and monitoring: June 2018, October 2018
Task 3. Trenched willow baffle installation: June 2018-October 2019
Task 3. Containerized plant installation: November 2018-March 2019*
Task 3. Irrigation: June 2018 - October 2019
Task 4. Maintenance, monitoring, and post-project photos: June 2018 - March 2021
Task 5. Final report preparation and quarterly invoices: January 2019-March 2021 and September 2018-March 2021 (invoices)

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a “notice to proceed” letter has been received from the California Department of Fish and Wildlife (CDFW) Grant Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*, Volume I, and Volume II Part XI and Part XII. The Grantee/landowner will maintain the new crossing, inspect the crossing in a timely manner and remove debris as necessary during the storm season.

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to ensure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Petrolia (4012433) OR Cape Mendocino (4012444) OR Capetown (4012443) OR Taylor Peak (4012442) OR Buckeye Mtn. (4012432) OR Cooskie Creek (4012423) OR Shubrick Peak (4012422))

Possible species within the Petrolia quadrangle and surrounding quads for 725567 Lower Mattole River and Estuary Riparian Enhancement Project, Phase 2, T02S R02W S17, Humboldt County

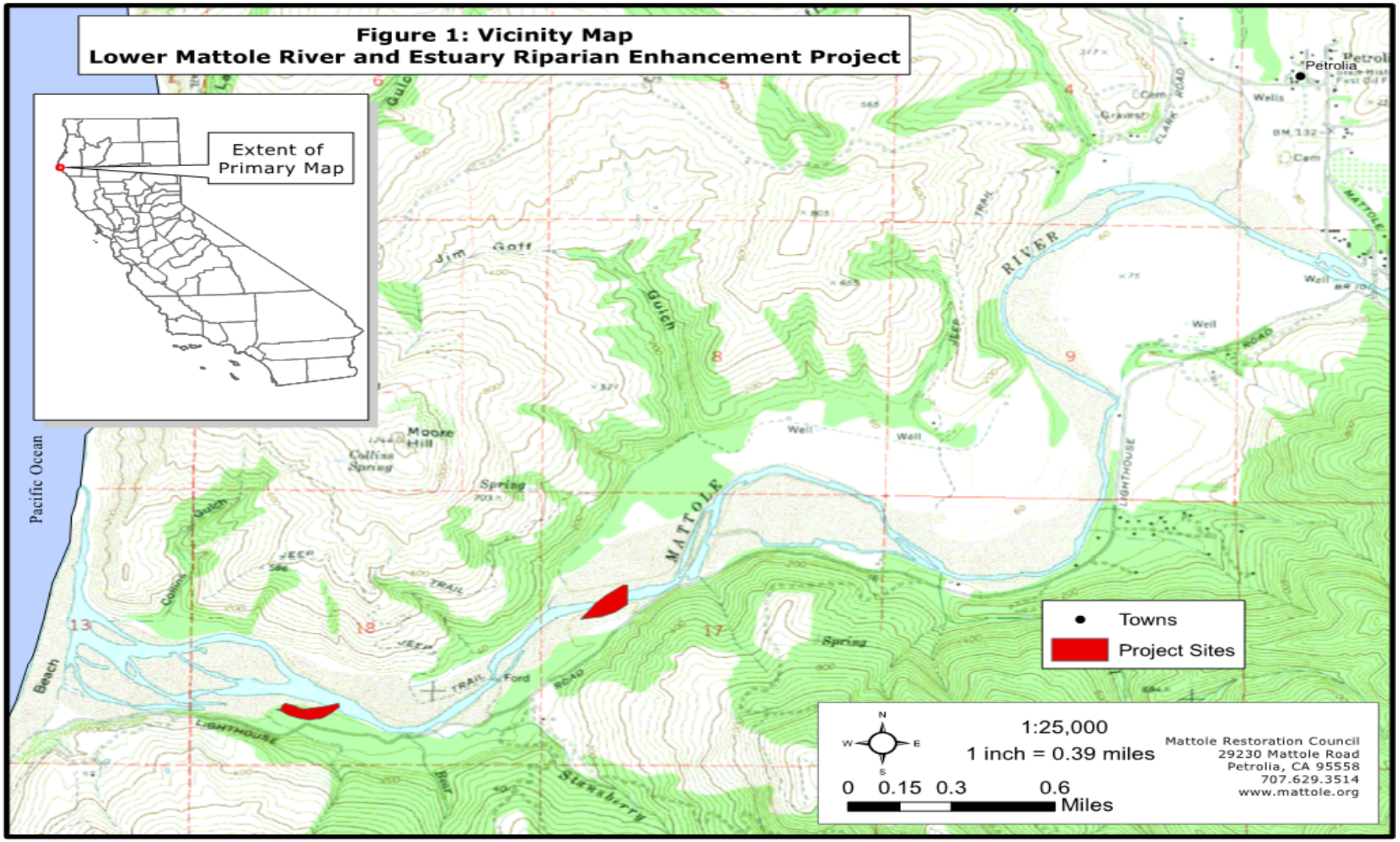
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
beach layia *Layia carnosa*	PDAST5N010	Endangered	Endangered	G2	S2	1B.1
bluff wallflower *Erysimum concinnum*	PDBRA160E3	None	None	G3	S2	1B.2
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Coastal and Valley Freshwater Marsh *Coastal and Valley Freshwater Marsh*	CTT52410CA	None	None	G3	S2.1	
Coastal Douglas Fir Western Hemlock Forest *Coastal Douglas Fir Western Hemlock Forest*	CTT82410CA	None	None	G4	S2.1	
coastal marsh milk-vetch *Astragalus pycnostachyus var. pycnostachyus*	PDFAB0F7B2	None	None	G2T2	S2	1B.2
coho salmon - southern Oregon / northern California ESU *Oncorhynchus kisutch*	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Cooper's hawk *Accipiter cooperii*	ABNKC12040	None	None	G5	S4	WL
dark-eyed gilia *Gilia millefoliata*	PDPLM04130	None	None	G2	S2	1B.2
double-crested cormorant *Phalacrocorax auritus*	ABNFD01020	None	None	G5	S4	WL
fisher - West Coast DPS *Pekania pennanti*	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
giant fawn lily *Erythronium oregonum*	PMLIL0U0C0	None	None	G4G5	S2	2B.2
golden eagle *Aquila chrysaetos*	ABNKC22010	None	None	G5	S3	FP
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
great egret *Ardea alba*	ABNGA04040	None	None	G5	S4	
Hitchcock's blue-eyed grass *Sisyrinchium hitchcockii*	PMIRI0D0S0	None	None	G2	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Howell's montia *Montia howellii*	PDPOR05070	None	None	G3G4	S2	2B.2
leafy reed grass *Calamagrostis foliosa*	PMPOA170C0	None	Rare	G3	S3	4.2
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC
Oregon coast paintbrush *Castilleja litoralis*	PDSCR0D012	None	None	G3	S3	2B.2
Oregon polemonium *Polemonium carneum*	PDPLM0E050	None	None	G3G4	S2	2B.2
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
seacoast ragwort *Packera bolanderi var. bolanderi*	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	PDASTE5011	None	None	G4T3	S2	1B.2
Siskiyou checkerbloom *Sidalcea malviflora ssp. patula*	PDMAL110F9	None	None	G5T2	S2	1B.2
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
summer-run steelhead trout *Oncorhynchus mykiss irideus*	AFCHA0213B	None	None	G5T4Q	S2	SSC
Tracy's romanzoffia *Romanzoffia tracyi*	PDHYD0E030	None	None	G4	S2	2B.3
tufted puffin *Fratercula cirrhata*	ABNNN12010	None	None	G5	S1S2	SSC
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Piperia candida						
Wolf's evening-primrose	PDONA0C1K0	None	None	G2	S1	1B.1
Oenothera wolfii						

Record Count: 41

Project Location Topographic Map



Introduction: The Redwood Community Action Agency will create high flow refugia and rearing habitat in Freshwater Creek through reconnecting and enhancing two remnant floodplain ponds to Freshwater Creek.

As development has occurred, off-channel-high-flow refugia habitat has been filled or graded to create farmland or for other development (landscaping, buildings, etc.). Areas where high-flow refugia can be re-established or created are limited. This project site provides the perfect opportunity to re-establish a connection to that habitat and to monitor it to gauge its effectiveness in meeting project objectives.

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Parts VII, IX, XI, and XII (Flosi et al 1998 and 2002).

Objectives: The goal of this project is to create 0.23 acres of off-channel winter rearing habitat for juvenile salmonids. This will be accomplished through re-connecting two backwater ponds to Freshwater Creek.

Project Description:

Location: This project is located the middle reach of Freshwater Creek watershed, east of Humboldt Bay, and 4 miles east of Eureka, California. The site is located approximately 7.3 miles upstream from the confluence with Humboldt Bay, 2.2 miles upstream from Myrtle Avenue at Freshwater Corners (a.k.a. Three Corners), and 0.35 miles downstream from Howard Heights Bridge. The coordinates are 40.76607000 N and 124.07087000 W.

Project Set Up: Redwood Community Action Agency (RCAA) will implement the following tasks: project management, installation of woody debris structures, installation of soil lifts and brush layering (bio-engineering), revegetation, and photo and water quality monitoring. The Project Manager will oversee construction and monitoring activities, and will handle administrative duties. The Project Manager will also be conducting field work for the photo and water quality monitoring. The Office Supervisor will be assisting the Project Manager in administrative duties including, but not restricted to: invoicing, preparing subcontracts, tracking expenses and processing payments. The Project Ecologist will oversee the installation of the bio-engineered encapsulated soil lifts and lead the revegetation of the pond sites. The Project Coordinator will lead the installation of the seven woody debris structures. The Senior Field Supervisor and Natural Resources Specialists will assist in the in the installation of the soil lifts and brush layering, installation of the woody debris structures, and revegetation. The Senior Field Supervisor will also operate the excavator for these project elements.

Michael Love & Associates, Inc. (MLA) will serve as the project engineers. The MLA principal engineer (Michael Love) is the responsible engineer for the project and will oversee project activities to ensure the project is built as intended, participate in project meetings, and assist with writing of the Monitoring Report. Since the 90% designs were developed, the landowner requested that the Alcove channel connection to Freshwater Creek include a culvert for pasture management. MLA will modify the 90% designs to include the culvert and will prepare 100% site plans. The MLA Project Engineer will participate in all activities of the project including construction contracting and construction oversight. The MLA project engineer and staff engineer will conduct the construction staking, grade checks and as-built and monitoring surveys. The MLA engineering geomorphologist will assist with preparation of construction documents including County floodplain review, and construction oversight.

Ross Taylor & Associates (RTA) will serve as the fish biologist for the project. RTA will conduct fish relocation prior to be commencement of construction. RTA will also be conduct post project biological monitoring through fish sampling in the ponds for a period of two years. All activities will be carried out by the Principal Fish Biologist and a Staff Fish Biologist.

A licensed contractor will be selected for the erosion and sediment control, water management, clearing and grubbing, removal of trees, excavation, installation of culverts, grading of the ponds and alcove, on-site spoils disposal, bank stabilization on Freshwater Creek, and placement of ballast rocks for woody debris structure. Construction for the project will be conducted using standard heavy equipment, including but not limited to excavators, loaders, bulldozers, dump trucks, and water trucks.

Materials: Materials necessary for this project include:

The Lower Pond will be connected to Freshwater Creek via a new 6-foot diameter corrugated metal pipe (CMP) that will be 160 feet long. The Alcove will be connected to Freshwater Creek via a new 6-foot diameter CMP that will be 50 feet in length and angled in a downstream direction to reduce sedimentation from high flows in Freshwater Creek. The culverts will be bedded on sand and backfilled with compacted aggregate. Material excavated from the culvert trenches may be used if the composition is suitable, i.e., no sharp angular rock and not too silty - sand/ gravel/ small cobble will be suitable. Where the culvert crosses the existing gravel driveway, the road will be rebuilt using aggregate base and gravel. The culvert length is the minimum required to maintain the existing road crossing and adjacent pasture at the site. Steel guides will be welded to the culvert inlet to hold wooden boards (stoplogs) to provide control of backwater elevation in the ponds.

Bank Stabilization To stabilize the reconstructed bank at the culvert outlets, vegetated riprap (joint planting of riprap using live willow stakes) will be installed at the toe of the bank. Above the vegetated riprap to the edge of the road on the steep bank will be stabilized using geogrid encapsulated soil lifts with brush layering. At the top of the bank potted trees will be planted to replace those removed as part of the project.

Construction of the Alcove will require excavation of the pond and connecting channel, culvert installation, and regrading of the bank. Erosion control fabric will be placed along the bank and planted with live stakes near the confluence with Freshwater Creek and planted to provide short-term and long-term stabilization.

Wood Structures Both sites will have multi-log large wood structures placed along the banks. They will consist of multi-log structures that incorporate brush for added complexity. The individual logs in the structures will be bolted together and anchored using ballast (2-ton) rock to resist buoyancy.

Replanting Revegetation will consist of planting 1,960 wetland plants and 380 riparian plants in the Lower Pond and Alcove areas. Other materials used in the planting include plant protection cages, mulch, fertilizer, and pin flags. Native seed and mulch will also be applied to areas made bare from construction and spoils disposal areas.

Fencing The lower pond will have 130 feet of post and rail safety fencing installed along the bank near the culvert inlet and 250 feet of temporary cattle exclusion fencing around the Lower Pond adjacent to the pasture. The Alcove will have will have 85 feet of post and rail safety fencing installed along the bank near the alcove inlet and 425 feet of cattle exclusion fencing around the alcove adjacent to the pasture.

Tasks:

Task 1: Project Management RCAA will perform all project management and contract administration functions. MLA, RTA, and the construction contractor will prepare invoices and progress reports to be submitted to RCAA during the course of the project. RCAA will prepare a final report and, if needed, annual progress reports to be submitted to CDFW.

Task 2: Pre-construction Assistance RCAA will coordinate with local agencies to determine what, if any, project reviews and approvals are required prior to construction. MLA will assist RCAA with local agency coordination and provide necessary documents for local agencies to review. RCAA received a planning grant through Proposition 1 for the preparation of a CEQA document and all permits, including permit fees. RCAA will select qualified contractors based upon its procurement of services policy. MLA will assist RCAA with preparing bid

documents and selection of a contractor. This task includes attending an on-site pre-bid meeting to describe the project to perspective contractors, preparation of necessary addenda, review of bids, and checking of references.

Task 3: Construction, Oversight, and Support RCAA will contract with a qualified contractor and coordinate construction of the project. RCAA will provide daily construction management and oversight, and resolution of contractual issues. RCAA will photodocument all aspects of the project.

Construction Support MLA will provide construction layout and staking in two phases. The first phase will be used to define and flag the project footprint in order to place limits on clearing and grubbing and water isolation measures. The second stakeout phase will include establishment of elevation control, placement of stakes to denote the location and stationing of the proposed centerline, wood structure locations and crossing location for the Pond. Once staking is complete, it will be the obligation of the contractor to maintain the stake locations and to determine locations of non-staked items.

As necessary, MLA will coordinate with RCAA via telephone and followed up with a written document regarding updates, findings, or recommendations resulting from its oversight. MLA, the project designers, will provide assistance with oversight of the project construction. MLA will perform part-time oversight during the implementation phase, including clarifying the intent of the design plans when necessary, checking grades, overseeing the channel grading and structure placement, installation of new crossing and water control devices and support with development of a final punch-list for the contractor.

MLA will attend one construction kickoff meeting and up to six (5) weekly construction progress meetings. MLA will be available to make recommendations for addressing unforeseen conditions that arise and for making field changes, if necessary.

Task 4: Construction Sequence and Description The selected contractor will perform maintenance of erosion and sediment control, water management and dewatering, all construction work, and will provide all material certifications. To complete the project we propose that implementation will generally follow the following sequence, subdivided into sub-tasks A-O:

A. Mobilization – Procurement and delivery of all materials and equipment to the site; finalize contracts, insurance requirements, and property access.
B. Establish staging and stockpile areas and bypass road. – Areas for equipment storage, re-fueling and equipment maintenance will be flagged and established for use by the contractor. Areas for material storage will be established and prepared

with pre-construction erosion control measures. A by-pass road will be constructed to maintain residential and emergency vehicle access to the adjacent property.

C. Installation of sediment control as needed within work area – Ground preparation for construction activities including preparation for dust control and other best management practices for protection of water quality.

D. Clearing and grubbing of work area – Contractor will prepare the work area by removing brush and trees marked for clearing to provide ingress and egress to the channel and pond areas and dewatering of ponded areas as needed.

E. Channel and pond excavation– The Lower Pond and Alcove area will be excavated to the depths and side slopes indicated in the plans. An earthen plug will remain at the confluence with Freshwater Creek to maintain separation and dewatered areas. Spoil material will be delivered and spread to the pasture soil reuse areas as shown on the plans. Material suitable for backfill at the culvert will be separated and stockpiled.

F. Construction of log structures – log structures composed of minimum 20 foot long logs and boulders for ballast will be placed and anchored according to the construction details and specifications.

G. Installation of Temporary Isolation Measures in Freshwater Creek – Water isolation measures may be necessary to contain turbid waters during removal of the earthen berm separating the alcove or the culvert from Freshwater Creek. Dikes, cofferdams or other suitable measures shall be employed.

H. Removal of fish within Isolated Work Area - Work areas in Freshwater Creek will have fish removal by a qualified biologist provided by RCAA.

I. Excavation, installation and backfill for culverts - The area required to install the 167-foot culvert and the 50-foot culvert will be cleared and grubbed. Trenching for the installation of the culvert will be completed. Sand bedding will underlay the new culverts. Installation of the culverts will occur in segments that are coupled together during assembly. Backfill and compaction will bring the ground surface to final grade.

J. Completion of culvert excavation at Freshwater creek and construction of bank stabilization measures – The bank along Freshwater Creek will be removed to allow for completion of the culvert installations. Following installation, the bank will be rebuilt and stabilized with a series of rock armoring and bioengineering methods of encapsulated soils lifts and riparian planting.

K. Completion of alcove excavation and connection with Freshwater Creek – The channel connecting the alcove to Freshwater Creek will be excavated according to specifications and the bank will be stabilized using coir matting and riparian planting.

L. Removal of Temporary Isolation Measures - When each site has been reconnected to the channel, the isolation measures will be removed, allowing free flow of creek water into the work site.

M. Stabilization of the work area – Erosion control BMPs for disturbed areas including ripping of access roads, spreading of straw or mulch, and seeding.

N. Revegetation of wetland and pasture areas following planting plan as described in final design.
O. Demobilization – Removal of equipment and all excess materials and site restoration/ erosion control. As-Built Plans and Memorandum As-built plans will be prepared after construction using red-line markups of the construction documents with any changes that occurred during construction. Elevations will be surveyed at critical locations to verify the project was built as designed. As-Built elevations will be included on the red-line markup. A brief technical memorandum will accompany the As-built plans.

Task 5: Post- Implementation Monitoring and Maintenance Recommendations Post-implementation monitoring will be conducted in accordance with requirements presented in the 2017 FRGP Proposal Solicitation Notice (PSN) and as described in the project's Draft Monitoring and Maintenance Plan prepared by RCAA. Post-construction monitoring requirements include physical, biological and water quality monitoring for two years after implementation.

Physical Monitoring Pre and post-implementation physical monitoring will be conducted by staff from RCAA and MLA and will include the following:

Pre-and Post-Project Photo Monitoring will be performed by RCAA. Photo monitoring will be conducted to document physical and vegetative response to the project and identify any issues of concern that may require maintenance. Photo monitoring will have two components: (1) photo-points with photos taken twice annually and (2) time-lapse photo monitoring during implementation.

Photo-points will be established as part of pre-construction activities from established locations that are benchmarked or located with GPS coordinates to ensure consistent and comparable views. Photo locations will include the mouth of the Alcove, connecting channel, log structures, the Lower Pond and Alcove, and areas that receive vegetation treatments. During the first two years after construction the photo-point monitoring will be conducted twice a year: once during focus period for fish usage (late fall through midspring) and once during the dry season.

The time-lapse monitoring will involve installing a minimum of two time-lapse "wildlife" cameras at each project site. Their fields-of-view will be established to focus on the alcove, connecting channel and pond water level. They will be set to take a photo at a regular interval (i.e. every 4 hours) during daylight hours. They will be operational from November 1 – May 31 (focus period for fish usage) of each year for the first three years following construction.

Observations based on the photo documentation will be summarized in the annual post-construction reports. Observed changes at each site will be noted in the reporting, with particular focus on:

- Functionality of culvert inlet sill,
- Functionality and stability of log structures,
- Sedimentation patterns within the culvert and channel confluences,
- Overall bank stability along the channel,
- Sedimentation within the pond and alcove,
- Overall re-vegetation plant success, and,
- Encroachment into the project area by invasive wetland vegetation.

Additionally, the time-lapse photos will be used to note the frequency and timing that the off channel areas provide suitable ingress and egress hydraulic conditions for juvenile salmonids, and if and when the alcoves become disconnected from Freshwater Creek due to low streamflows and sedimentation at the mouth.

Longitudinal Profiles and Cross Sections, and Water Depth Surveys will be conducted once per year for two years after implementation. MLA will survey, cross sections along the pond and alcove, longitudinal profiles of the connecting channel/alcove thalweg and water surface. The profiles will be presented in context with the as-built and design drawings to evaluate changes to channel and assess potential sedimentation. The survey will also be used to evaluate water depths during the time of survey to ensure passage criteria are satisfied. Conditions permitting, a flow measurement in the connecting channel may also be taken during the time of survey.

A Physical Monitoring Report will be prepared each year for the two years following construction and will be provided to CDFW by December 30th of that monitoring year. The report will be prepared jointly by RCAA and MLA and will summarize monitoring activities, findings, and recommendations.

The annual report will also identify any issues identified by the annual inspection that may warrant maintenance or other types of treatment. In the event that items of concern arise, the report will recommend actions to be initiated to further characterize its impact on project objectives and/or consultation with the appropriate resource agencies, including CDFW, to determine if a maintenance action is warranted.

Water Quality Monitoring will be conducted in the Lower Pond and Alcove once a month for 24 months by RCAA. Parameters to measured include: temperature, dissolved oxygen, pH, and conductivity. Measurements will be conducted using a handheld water quality meter. Results will be included in the annual report.

Biological Monitoring Vegetation monitoring will be conducted by RCAA will consist of photo monitoring to document the growth of re-vegetated areas over the monitoring period. Photo points will be established and monitoring will be conducted twice annually for two years. Native plants installed in the mixed riparian zone will be monitored in the Spring/Summer each year to determine overall numeric survival and qualitative health and vigor. This will include a by-species and overall count of individual plants. The health and vigor of each plant will be visually assessed to evaluate its chance of survival and to determine the species with highest percent survival. Monitoring of the plants installed in the freshwater wetland and pasture/wet meadow areas will consist of occular determination of percent cover of the planted species. Encroachment of non-native species will be noted and recorded.

Biological (fish) monitoring will be conducted for two years by RTA and will include sampling for juvenile salmonids. Although the period when utilization by juvenile coho salmon is most anticipated runs from November through May; biological sampling will occur monthly throughout the year to best assess when fish use occurs. Minnow traps baited with frozen salmon roe will be deployed in the Lower Pond and Alcove and periodically fished throughout an 8-hour field day. Captured fish will be identified, counted, weighed, measured, and scanned for PIT tags. Scale samples will also be collected. All healthy-looking salmonids will have PIT tags implanted. Tag insertions will use surgical methods taught to other researchers by CDFW (such as Thompson et al. 2005).

RCAA, RTA, and CDFW will work collaboratively, sharing resources and information in determining fish population, use, and migration patterns of juveniles using the project site. CDFW has a PIT antenna station ~ 50 feet upstream from the proposed lower pond culvert outlet and has indicated that they wish to install PIT antennas at the culvert outlet on the Lower Pond and channel outlet at the Alcove. Data collected by RTA will be made directly available to CDFW fish biologists monitoring salmonid movements in Freshwater Creek (Seth Ricker) and pre- and post-monitoring of restoration projects in the area (Mike Wallace).

Deliverables:

As-Built Survey and Memo MLA will prepare As-built plans after construction using red-line markups of the construction documents with any changes that occurred during construction. Elevations will be surveyed at critical locations to verify the project was built as designed. As-Built elevations will be included on the red-line markup. A brief technical memorandum will accompany the As-built plans.

Monitoring Memoranda 17 RCAA, with assistance from MLA and RTA, will prepare two brief Memoranda after each cycle of annual monitoring. The Memoranda will present methods and a discussion of findings for the year's monitoring. The

Memoranda will also include recommendations for any maintenance. It assumed that maintenance will be performed by the landowner with the necessary permits.

After the two years of post-implementation monitoring, the landowner will continue to monitor the project area. The Draft Monitoring and maintenance plan (RCAA, 2014) provides a list of items for which the landowner should inspect.

Final Report Upon completion of the project, RCAA will photograph the constructed project and develop a written final completion report for submission to CDFW. The final report will contain: 1) general grant information, 2) location of work, 3) project access, 4) participating landowners names and addresses, 5) a description and analysis of the restoration and planning techniques used, 6) a description of the results of the project, 7) dates of work and the number of person hours expended, 8) labeled before and after photos of selected restoration activities and techniques, and 9) grant dollars spent and contributed and/or in kind services used to complete the project.

Timelines:

Assumed Notice to Proceed: June 1, 2018

- Project Management : June 1, 2018 – March 31, 2020
- Pre-construction assistance: June 1 – July 31, 2018
- Construction – mobilization, excavation, grading, culvert installation, Freshwater Creek bank stabilization, demobilization August 1 – September 15, 2018
- Construction – Installation of log cover structure, tributary stabilization, revegetation: September 15 – October 15, 2018
- As-Built Memorandum by November 30, 2018
- Physical and Biological Monitoring: November 1, 2018 – May 30, 2020
- Physical and Biological Monitoring Reports Annually from December 31, 2018 to December 31, 2020
- Monitoring Memorandum by March 31, 2021
- Final Report by March 31, 2021

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a “notice to proceed” letter has been received from the California Department of Fish and Wildlife (CDFW) Grant Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all

equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the CDFW Grant Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for CDFW personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other native aquatic species from the project area. If the project requires dewatering of the site and the relocation of listed aquatic species, the Grantee will implement the following measures to minimize harm and mortality to listed species as well as other native aquatic species:

- Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year.

- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit, NMFS Biological Opinion, and project's Lake and Streambed Alteration Agreement (1600 permit).

- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

- Only qualified fisheries biologist that are approved by USFWS and permitted by CDFW under a California Endangered Species Act (CESA) Memorandum of Understanding (MOU) shall handle and relocate CESA listed species.

- All electrofishing shall be performed by a qualified fisheries biologist under the supervision of CDFW and conducted according to the National Marine

Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

- USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW. .

The bridge (culvert) design and installation will meet flow carrying capacity required for a 100-year flood event as identified by specifications determined by National Oceanic and Atmospheric Administration (NOAA) Fisheries and the California Department of Fish and Wildlife (CDFW), for adult and juvenile salmonid fish passage. The project will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and criteria for fish passage as described in Volume II, Part IX, of the *California Salmonid Stream Habitat Restoration Manual*. The engineered plans for the bridge (culvert) installation shall be visually reviewed and authorized by NOAA Fisheries or California Department of Fish and Wildlife engineers prior to commencement of work.

All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*, Volume I, and Volume II Part XI and Part XII. The Grantee/landowner will maintain the new crossing, inspect the crossing in a timely manner and remove debris as necessary during the storm season.

Seeding and mulching of all exposed soils shall be done for all slopes which may deliver sediment to a stream. Woody debris will be concentrated on finished slopes adjacent to stream crossings. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years. Mulching and seeding will take place as sites are completed to avoid unforeseen erosion. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Arcata South (4012471) OR Arcata North (4012481) OR Tyee City (4012482) OR Blue Lake (4012388) OR Eureka (4012472) OR Korbel (4012378) OR Fields Landing (4012462) OR McWhinney Creek (4012461) OR Iaqua Buttes (4012368))

Possible species within the Arcata South quadrangle and surrounding quads for 725580 Freshwater Creek Off-Channel Habitat Enhancement Project, T04N R01E S4, Humboldt County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
alpine marsh violet *Viola palustris*	PDVIO041G0	None	None	G5	S1S2	2B.2
bald eagle *Haliaeetus leucocephalus*	ABNKC10010	Delisted	Endangered	G5	S3	FP
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S2	
beach layia *Layia carnosa*	PDAST5N010	Endangered	Endangered	G2	S2	1B.1
black-crowned night heron *Nycticorax nycticorax*	ABNGA11010	None	None	G5	S4	
bristle-stalked sedge *Carex leptalea*	PMCYP037E0	None	None	G5	S1	2B.2
California globe mallow *Iliamna latibracteata*	PDMAL0K040	None	None	G2G3	S2	1B.2
California Ridgway's rail *Rallus obsoletus obsoletus*	ABNME05016	Endangered	Endangered	G5T1	S1	FP
coast checkerbloom *Sidalcea oregana ssp. eximia*	PDMAL110K9	None	None	G5T1	S1	1B.2
coast cutthroat trout *Oncorhynchus clarkii clarkii*	AFCHA0208A	None	None	G4T4	S3	SSC
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
coastal marsh milk-vetch *Astragalus pycnostachyus var. pycnostachyus*	PDFAB0F7B2	None	None	G2T2	S2	1B.2
coho salmon - southern Oregon / northern California ESU *Oncorhynchus kisutch*	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Cooper's hawk *Accipiter cooperii*	ABNKC12040	None	None	G5	S4	WL
cylindrical trichodon *Trichodon cylindricus*	NBMUS7N020	None	None	G4	S2	2B.2
dark-eyed gilia *Gilia millefoliata*	PDPLM04130	None	None	G2	S2	1B.2
Del Norte salamander *Plethodon elongatus*	AAAAD12050	None	None	G4	S3	WL
double-crested cormorant *Phalacrocorax auritus*	ABNFD01020	None	None	G5	S4	WL

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
eulachon *Thaleichthys pacificus*	AFCHB04010	Threatened	None	G5	S3	
fisher - West Coast DPS *Pekania pennanti*	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
ghost-pipe *Monotropa uniflora*	PDMON03030	None	None	G5	S2	2B.2
giant fawn lily *Erythronium oregonum*	PMLIL0U0C0	None	None	G4G5	S2	2B.2
golden eagle *Aquila chrysaetos*	ABNKC22010	None	None	G5	S3	FP
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
great egret *Ardea alba*	ABNGA04040	None	None	G5	S4	
green sturgeon *Acipenser medirostris*	AFCAA01030	Threatened	None	G3	S1S2	SSC
Howell's montia *Montia howellii*	PDPOR05070	None	None	G3G4	S2	2B.2
Humboldt Bay owl's-clover *Castilleja ambigua var. humboldtiensis*	PDSCR0D402	None	None	G4T2	S2	1B.2
Humboldt marten *Martes caurina humboldtensis*	AMAJF01012	None	Candidate Endangered	G5T1	S1	SSC
Humboldt mountain beaver *Aplodontia rufa humboldtiana*	AMAFA01017	None	None	G5TNR	SNR	
Kneeland Prairie pennycress *Noccaea fendleri ssp. californica*	PDBRA2P041	Endangered	None	G5?T1	S1	1B.1
leafy-stemmed mitrewort *Mitellastra caulescens*	PDSAX0N020	None	None	G5	S4	4.2
long-eared myotis *Myotis evotis*	AMACC01070	None	None	G5	S3	
longfin smelt *Spirinchus thaleichthys*	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Lyngbye's sedge *Carex lyngbyei*	PMCYP037Y0	None	None	G5	S3	2B.2
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
marbled murrelet *Brachyramphus marmoratus*	ABNNN06010	Threatened	Endangered	G3G4	S1	
marsh pea *Lathyrus palustris*	PDFAB250P0	None	None	G5	S2	2B.2

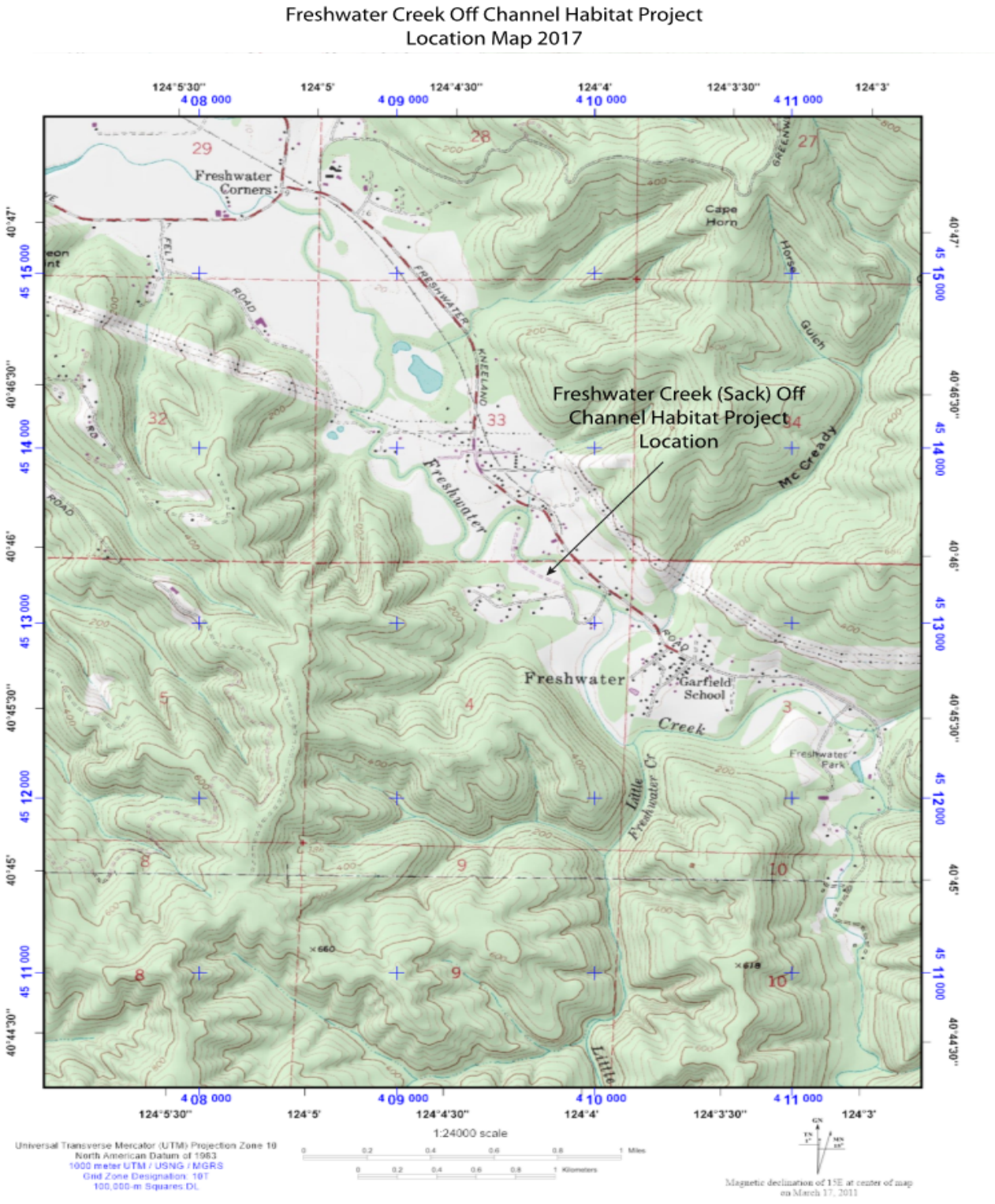
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Menzies' wallflower *Erysimum menziesii*	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
minute pocket moss *Fissidens pauperculus*	NBMUS2W0U0	None	None	G3?	S2	1B.2
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
northern clustered sedge *Carex arcta*	PMCYP030X0	None	None	G5	S1	2B.2
Northern Coastal Salt Marsh *Northern Coastal Salt Marsh*	CTT52110CA	None	None	G3	S3.2	
Northern Foredune Grassland *Northern Foredune Grassland*	CTT21211CA	None	None	G1	S1.1	
northern harrier *Circus cyaneus*	ABNKC11010	None	None	G5	S3	SSC
northern meadow sedge *Carex praticola*	PMCYP03B20	None	None	G5	S2	2B.2
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon coast paintbrush *Castilleja litoralis*	PDSCR0D012	None	None	G3	S3	2B.2
Oregon goldthread *Coptis laciniata*	PDRAN0A020	None	None	G4	S3	4.2
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
perennial goldfields *Lasthenia californica ssp. macrantha*	PDAST5L0C5	None	None	G3T2	S2	1B.2
pink sand-verbena *Abronia umbellata var. breviflora*	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Point Reyes salty bird's-beak *Chloropyron maritimum ssp. palustre*	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
round-headed Chinese-houses *Collinsia corymbosa*	PDSCR0H060	None	None	G1	S1	1B.2
running-pine *Lycopodium clavatum*	PPLYC01080	None	None	G5	S3	4.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
sandy beach tiger beetle *Cicindela hirticollis gravida*	IICOL02101	None	None	G5T2	S2	
seacoast ragwort *Packera bolanderi var. bolanderi*	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
seaside bittercress *Cardamine angulata*	PDBRA0K010	None	None	G5	S1	2B.1
seaside pea *Lathyrus japonicus*	PDFAB250C0	None	None	G5	S2	2B.1
sharp-shinned hawk *Accipiter striatus*	ABNKC12020	None	None	G5	S4	WL
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	PDASTE5011	None	None	G4T3	S2	1B.2
Siskiyou checkerbloom *Sidalcea malviflora ssp. patula*	PDMAL110F9	None	None	G5T2	S2	1B.2
snowy egret *Egretta thula*	ABNGA06030	None	None	G5	S4	
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
summer-run steelhead trout *Oncorhynchus mykiss irideus*	AFCHA0213B	None	None	G5T4Q	S2	SSC
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
twisted horsehair lichen *Bryoria spiralifera*	NLTEST5460	None	None	G3	S1S2	1B.1
Upland Douglas Fir Forest *Upland Douglas Fir Forest*	CTT82420CA	None	None	G4	S3.1	
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western lily *Lilium occidentale*	PMLIL1A0G0	Endangered	Endangered	G1	S1	1B.1
western pearlshell *Margaritifera falcata*	IMBIV27020	None	None	G4G5	S1S2	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western sand-spurrey *Spergularia canadensis var. occidentalis*	PDCAR0W032	None	None	G5T4	S1	2B.1
western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened	None	G3T3	S2S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
white-footed vole *Arborimus albipes*	AMAFF23010	None	None	G3G4	S2	SSC
white-tailed kite *Elanus leucurus*	ABNKC06010	None	None	G5	S3S4	FP
Wolf's evening-primrose *Oenothera wolfii*	PDONA0C1K0	None	None	G2	S1	1B.1
northern spotted owl *Strix occidentalis caurina*	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 86

Project Location Topographic Map



Introduction:

The Salmon Protection and Watershed Network (SPAWN) will implement Fish Passage and Off-Channel Habitat Restoration at Roy's Pools to remove one of the highest priority fish barriers for removal in central California (NOAA CCC ESU Recovery Plan Final 2012). The structure known as Roy's Pools comprises a complex of several metal weirs, a broken concrete fish ladder, and a failing bridge bulkheads that together make up the barrier. Along with the removal of the man-made structures, the creek channel will be reconstructed using natural materials in the form of a new channel with pools, riffles, and large woody debris (LWD), that provides year-round unimpeded fish passage for anadromous salmonids of all life stages to 3.5 miles of high quality habitat above the project site, with a new 250 ft. side channel that provides rearing habitat for endangered juvenile salmonids, which is the most limiting factor for survival in the watershed.

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured.

All habitat improvement will follow techniques in the California Stream Habitat Restoration Manual (list appropriate section of manual)

Objective(s):

The objectives of this is project include:

1. Restore fish passage at Roy's Pools to facilitate unimpeded passage for all life stages into San Geronimo Creek.
2. Create 250 feet of critical off-channel winter rearing habitat that is identified as the most limiting factor for coho survival in the watershed.

Project Description:

Location:

The project is located at Roy's Pools on San Geronimo Creek in San Geronimo, Marin County and is 2.8 miles upstream of the confluence with Lagunitas Creek. Project downstream extent is located at:

38.0125 N Lat. : 122.6628 W Long.

Project Set Up:

The project will be implemented by SPAWN and its subcontractors. The personnel required to complete the work and a description of their responsibilities are included in this section by task. SPAWN will work closely with the respected environmental engineering and consulting firm Environmental Science Associates (ESA) during the project. SPAWN will contract directly with qualified construction contractors to perform the construction work.

Materials: Describe materials that will be utilized.

Heavy Machinery

1. The machinery being used will include a portable toilet rental, excavators, end loaders, bulldozers, drills, water trucks, pneumatic hammers, metal saws, concrete saws, augers, skid-steers, backhoes, hauling trucks, water truck, dump trucks, semi-trucks, crane, drill rig, chainsaws, cement truck, concrete pump, tremie, utility pole, and water pump.
2. The machinery will be used to for demolition, hauling, earthwork, rock structure placement, LWD installation, revegetation, biotechnical feature installation, dewatering, and pedestrian bridge installation.

Rock Materials:

1. Various sizes of gravels, rocks and boulders ranging in size from 1-inch gravels to 2-ton boulders will be salvaged during demolition, sourced from within the watershed, or imported quarry rock.
2. The boulders will be installed within the cobble and gravel streambed material to create a stable channel geometry that provides fish passage year round for all life stages of target species. The boulders will be incorporated into bank stabilization measures and will be used as ballast for large wood structures.

Large Wood Structures and Biotechnical Features:

1. Numerous pieces of LWD (imported and salvaged logs, and rootwads) ranging in diameter from 12 to 36 inches, toppled living salvaged trees, and 12-inch all thread, washers, nuts, epoxy, and cables, and biotechnical features (living plant materials with rope and wooden stakes). This LWD will be of various kinds of tree species either imported or salvaged on site.
2. These materials will be placed throughout the project reach in numerous locations and incorporated into new the channel features and side channels/floodplain.

Pedestrian Bridge and Cart Path

1. A prefabricated channel spanning golf cart bridge with salmon-viewing areas, roughly 100 feet long, with new reinforced concrete CIDH piles and abutments, and replacement asphalt golf cart path will be used.
2. This bridge will replace the existing golf cart bridge to take golfers across the creek and offer the public the opportunity to watch wild coho. The abutments will support the bridge and the golf cart path will replace the path removed with removal of the fish barrier.

Biodegradable Erosion Control Materials

1. Biodegradable coir mesh fabric rolls, wattles, and straw secured with wooden stakes, pins, and staples.
2. The mattings, rolls, wattles, and straw will be secured over graded banks is combination with revegetation 17 techniques.

Revegetation Materials

1. Native seeds and plants collected from the watershed and raised at a local native plant nursery and split rail fencing. Also included are mature trees to replace lost habitat trees to excavation.

Irrigation materials

1. Irrigation equipment for drip and sprinklers will be used. These include poly-tubing, PVC piping, drip emitters, sprinklers, hoses, timers.
2. This equipment will deliver water through the Golf Course's irrigation system to the plants and newly planted native vegetation.

Hand Tools

1. A variety of hand tools including shovels, trowels, digging bars, pruners, hammers, machetes, buckets, wheelbarrows, sledge hammers, rakes, and hand saws.
2. These tools will be used to prepare seeds beds, plant native vegetation, plant nursery container plants, maintain and care for nursery plants before planting, collect and clean native seeds, install irrigation equipment, lay and secure erosion control materials, construct willow mattresses and bio-engineering measures, and remove invasive vegetation.

Education and Outreach Materials

1. Education interpretive signage, event flyers, posters, on-line marketing IP address, and postage.
2. These signs and materials will be placed on the replacement pedestrian bridge, and the media and fliers throughout the community, and on-line. They will be easily visible and easy to understand by the public.

Biological Field Equipment:

1. Biological Field Truck rental, waders, fish nets, buckets, coffer dam materials, wading rod, water hoses, invasive species disinfectants, camera
2. These equipment will be used to assist CDFW biologists with fish relocation, conduct channel de-watering, perform pre-and-post construction monitoring, and provide protections against transfer of invasive aquatic species

Tasks:

1. Task 1 Permitting:
   Permits that will be submitted and obtained by the applicant are CA Dept. of Fish and Wildlife Lake and Streambed Alteration Agreement (1600), Marin County Creek Permit, Marin County Creek Permit and Grading Permit Royalties, Marin County Grading Permit, Marin County Encroachment

Permit, and Marin County Building Permit (for pedestrian bridge). Under FRGP, the Project will have US Army Corps of Engineers 401, Regional Water Quality Control Board 404, CEQA Review already obtained. This project is designed to integrate into a separate fish passage improvement project by Marin County Dept. of Public Works immediately downstream of the project area, so Permitting Coordination with Marin County Engineering Staff will be necessary. SPAWN will lead the permit application process with assistance from ESA Personnel including Director, Managing Associate II, Senior Associate III and Project Technician. SPAWN personnel leading this task include the Project Supervisor, Project Manager, Project Foreman, and Project Associate. San Geronimo Golf Course staff including the Executive Director and Superintendent will assist with permit compliance.

2. Pre-Construction Services and Monitoring:
   SPAWN and ESA will coordinate efforts to perform the tasks using Biological Field Equipment as required by resource agency permits for the project. The construction contractor(s), referenced below as "Construction Contractors" are not currently known but will be vetted through a competitive bidding and evaluation process. SPAWN will lead the Contractor bidding and selection process, ESA and SGGC representatives will support with bidding the project. During the construction contractor bidding process, ESA will provide services including 1) attendance of up to two (2) construction contractor pre-bid meetings; 2) support preparation of bid addenda and/or response to bidders' questions, and; 3) assistance with review and evaluation of bids for selection of the qualified construction contractor. ESA will support the construction contractor with design of the channel dewatering, diversion system, and SWPP permit compliance. As part of this effort, SPAWN will consult with CDFW and other appropriate regulatory agencies to review proposed measures and incorporate feedback to the dewatering system. SPAWN will work with CDFW fisheries staff to assist in the relocation of fish species downstream using Biological Field Equipment. SPAWN will conduct an environmental training to educate construction workers on: 1) sensitive species that may occur in the project area, 2) procedures to follow in the event a species is observed, and 3) other environmental BMPs, and permit response protocols. SPAWN will oversee surveys for sensitive species. If sensitive species are found, CDFW will be contacted to provide guidance on avoidance or relocation. Development and implementation of a California red-legged frog relocation plan is not included in this task (Note: this species is unlikely to occur in the project area). All species survey results will be documented in a memo and submitted to CDFW. SPAWN and ESA will perform pre-project monitoring using Biological Field Equipment, see details in the monitoring plan. Mileage will be billed for SPAWN personnel and ESA travel expenses to-

and-from the site. This task will be supported by SPAWN staff including SPAWN Project Supervisor, Project Manager, Project Foreman, Project Associate, Volunteer Interns I, II, and Volunteers, and supported by subcontractor, ESA, using the Director, Managing Associate II, Senior Associate III and Project Technician. Golf Course Superintendent and Executive Director will also support the selection process. The contractor will be responsible for implementing de-watering, diversion, and SWPP permit compliance.

3. Project Construction:
   The project will be constructed by qualified and fully licensed construction contractors using Heavy Machinery, Rock Materials, Large Woody Debris Structures, Biotechnical Features, and the Prefabricated Bridge and Cart Path. The contractor that will be vetted and selected by the project applicant. The construction contractor(s), referenced below as "Construction Contractors" are not currently known but will be vetted through a competitive bidding and evaluation process. Construction Contractors must meet and demonstrate minimum qualifications in order for their bid to be acceptable for the project. These qualifications necessary to bid and be selected by the applicant for the project are described in the Qualifications and Experience section below. There will be three contractors selected. One contractor is responsible for implementation of Pre-Contruction Services, Demolition, Earthwork, Large Woody Debris Structure and, and assistance with Biotechnical Features. Another contractor is responsible for installing the Pedestrian Bridge and Cart Path, and a third contractor is responsible for hauling and transport of materials using Heavy Equipment. It is possible one contractor can perform all responsibilities but likely additional contractor will be needed. SPAWN will work with construction contractors to implement Pre-Construction Services and Biotechnical Habitat Features (brush mattresses, pole plantings, and vegetated rock toe). SPAWN personnel supporting this task include Project Supervisor, Project Manager, Project Foreman, Project Associate, Volunteer Interns I, II and Volunteers.

   a. Diversion and Dewatering:
      The flow in San Geronimo Creek will need to be bypassed around the construction site throughout the duration of construction. The flow bypass will be accomplished using a temporary coffer dam installed across the creek upstream of the work area. Flow will be diverted around the work area in a temporary pipe and discharged downstream of the project site at the location of the San Geronimo Valley Drive Bridge. It is anticipated that a gravity flow system will be installed and that the channel will be dewatered within the work and throughout the construction period. The flow diversion/bypass

system will be installed using standard construction equipment such as heavy machinery and hand tools. The isolated area will be cleared of aquatic species by qualified CDFW biologists and relocated to pool areas downstream and out of the project area. Dewatering activities will abide by all NPDES and state regulations and will not result in a significant increase in turbidity downstream. The contractor will provide measures to contain and clean all turbid water prior to discharging into the stream.

b. Demolition:
The project proposes to demolish the existing Roy's Pools structure, which consists of steel sheet piles, concrete bulkheads, riprap, a broken concrete fish ladder, and a damaging and failing golf cart bridge and golf cart path. The golf cart bridge consists of two wooden logs, a wooden deck and handrails, and is founded at the concrete bulkheads that greatly narrow the channel creating incision downstream. A portion of the asphalt cart path on either side of the bridge will be removed. The removal of the Roy's Pools structure and the bridge will require the use of excavators with a pneumatic hammer attachment to demolish the concrete and a typical bucket and thumb on an excavator. Boulders will be salvaged and reused in the new channel construction. The steel sheet piles will be extracted using the excavator and may be cut using torches to facilitate removal. The golf cart bridge will be removed using an excavator, chainsaws and other standard construction equipment such as a backhoe, dump truck, water truck, and hand tools. All removed debris material will be disposed of in a legal manner offsite at an approved location. A utility power pole that carries an electric service line to the golf course maintenance buildings will be relocated to move it away from the top of an actively eroding bank. This effort will be coordinated by the golf course and will require consultation with PG&E. The relocation will require a drill rig to bore the new hole for the power pole, a truck mounted lift and personnel qualified to connect the with power lines.

c. Earthwork:
Clearing and grubbing is required to remove existing vegetation to allow access to the land surfaces. Earthwork and Grading will be done in the project area in order to achieve the design grades, onsite placement of earthen materials, offsite disposal of earthen materials, and offisite disposal of misc. debris. Excavation is also required for the installation of the, rock structures, large wood, and biotechnical restoration elements. The primary focus of the excavation and grading work will be to construct the new primary constructed

channel 1 and 2, large wood structures, rock structures, and riffle/pools. It is anticipated that materials to be excavated will consist of soil, streambed material, and rock (>1/4 ton). It is not anticipated that bedrock excavation will be required. Native soil, streambed material and boulders removed will be salvaged to the extent that they can be and are suitable for use in other project elements. Extra soil will be hauled from the site using dump trucks and will be disposed of in a legal manner offsite at an approved location. Excavation and grading will be accomplished using standard construction equipment such an excavators, backhoe, dump truck, end loader, bulldozer, skid steer, water truck. Heavy construction equipment will be operated by qualified operators.

d. Rock Structures:
A new primary channel (boulder structure featuring a complex of step pools and riffles) will be constructed in San Geronimo Creek over the length of the project limits, creating an anabranch with the existing channel that will serve as critical backwater rearing habitat. The new channel is rock and cobble with a gradient of 2-3% composed of a network of small riffle/pools, boulder crests, and boulder grade control weirs. This work will require precise placement of the rock to ensure that channel design is achieved for the channel to provide year-round fish passage. The channel will be constructed using native streambed material, salvaged and imported rock, cobble, and boulders (200-lb to 2-ton). The new channel bed will be excavated and prepared prior to rock installation. A vegetated rock toe will be constructed along the constructed channel 1 and 2. The rock will be installed using an excavator, end loader, dump truck, and skid steer,. Heavy construction equipment will be operated by qualified operators. Some rock placement will require hand installation using hand tools.

e. Large Wood Structures:
Large wood structures will be constructed to provide habitat and cover, bank stabilization, and to direct flows within the new channel. Three structure types proposed include a small habitat wood structure which consists of a single log and rootwad, a large wood structure which consists of three to four logs with rootwads, and live wood structures. The small habitat wood structure and large wood structure will be installed by excavating into the channel bed and banks to create a trench for log placement. Vertical members will be installed by a combination of excavation and driving using an excavator. Rock and boulder ballast will be placed on top of the logs to anchor them in place. Steel all-thread rods may be used to anchor

multiple logs together in the large wood structure. The live wood, toppled tree structures will be installed based on the condition of existing trees at the time of construction. This structure is installed by knocking over a living tree that would need to be removed (willow or ash). The tree is then buried and secured to the channel bank using rock ballast and anchoring. The large wood structures will be constructed using an excavator, backhoe, end loader, skid steer, and hand tools. Heavy machinery will be operated by qualified operators. Laborers will be used during the installation of the large wood structures to cut logs, place smaller rock, anchor wood to ballasts, and install live stakes and branch bundles.

f. Biotechnical Features:
Biotechnical bank stabilization measures proposed include vegetated rock toe, brush mat and live pole planting. These features will be constructed using boulders, cobble, bedding gravel, native soil and rock, select fill soil, biodegradable erosion control fabric, wooden stakes, seed mixes, and live cuttings (willow, ash, and alder). Installation will require grading of the channel bank, including removal of existing vegetation. This creates a stable slope and suitable base condition for the placement of rock, vegetation (seed and live stakes) and erosion control fabric. The bank grading and placement of rock will be conducted using an excavator, end loader and skid steer. The placement of live stakes, erosion control fabric, and to some degree, rock placement will be conducted using laborers and small hand tools. Heavy construction equipment will be operated by qualified operators.

g. Erosion Control, Revegetation, and Irrigation:
The project includes revegetation and erosion control measures on all disturbed and graded slopes. Revegetation measures will include salvaging and replanting native vegetation from the site, seeding, planting of nursery grown plants and trees of varying sizes from SPAWN's native plant nursery, and select mature trees from commercial nurseries vetted for sterilization. Revegetation actions will include small hand equipment needed for seeding and excavating planting holes as well as biological field vehicles. A temporary irrigation system will be installed and connected to the Golf Course's existing irrigation infrastructure. This will consist of sprinklers, drip line, emitters, and poly-tubing.

h. Pedestrian Bridge Replacement:
A clear span truss style pedestrian bridge will be installed across San Geronimo Creek to replace the old bridge that is greatly harming the

morphology of the channel. The new bridge will provide access across the creek for pedestrians, golfers, golf carts, and golf course maintenance equipment. The bridge will incorporate spaces for salmon viewing and educational interpretive signage. A prefabricated bridge manufacturer will provide the bridge. The bridge will be constructed offsite and brought to the site for installation in sections using semi-trucks. The new bridge will be installed on Cast-In-Drilled-Hole (CIDH) piles, which will support the bridge foundation and landings. Shallow excavation (between 2 and 4 feet below grade) will be required for the bridge foundation and can be accomplished with a mini excavator or backhoe. Temporary false-work would be constructed to form the at-grade concrete foundation. Concrete will be poured into the steel reinforced CIDH piles and foundation false work using appropriate methods (concrete pump, tremie, etc.). Once the concrete piles and foundation come to strength a prefabricated truss bridge will be installed with a crane. The new steel truss bridge would be bolted to each abutment and opened for pedestrian traffic. The bridge deck, hand railings, and replacement golf cart path will be installed. This work will be accomplished using a cement truck, excavators, and a crane.

4. Construction Management and Oversight:
   SPAWN and its subcontractor will perform Construction Management and Oversight. SPAWN will coordinate weekly construction meetings with engineers and construction contractors, perform on-site biological monitoring duties, work with contractors to keep the project in compliance with permit requirements, and oversee general construction activities so project implementation is coordinated, on schedule, and conforms to landowner requirements of golf course operations. ESA will support construction oversight regarding technical components of the design, field design adaptations and revisions, plan drafting updates, contractor inquiries, and review of constructed restoration elements. This task includes frequent site visits, construction coordination, response to construction contractor's requests for information, observations during construction, and inspection of constructed elements. Mileage will be billed for SPAWN personnel and ESA travel expenses to-and-from the site. This task will be carried out using Biological Field Equipment. SPAWN staff performing this task include SPAWN Project Supervisor, Project Manager, Project Foreman, Project Associate, and Volunteer Interns I, II. This task will be supported by subcontractor ESA, using the Director, Managing Associate II and Senior Associate III. The San Geronimo Golf Course Superintendent will offer support for construction oversight and coordination.

5. Erosion Control, Revegetation, and Irrigation:
   SPAWN will lead the erosion control and revegetation of the project site using Erosion Control, Revegetation, and Irrigation Materials. This will include preparing all sites, seeding, mulching, erosion control installation, and planting of all vegetation following grading and construction activities. SPAWN will install all erosion control features (fabric rolls, wattles, straw mulch) and procure all seeds and container plants needed for the project. Live cuttings will be harvested during project implementation when needed from the Lagunitas Creek Watershed. Container plants will be sourced from SPAWN's Native Plant Nursery and other native nurseries vetted for sterilization. Mature trees for replacement will be provided by SPAWN and other nurseries and planted at the site. SPAWN will also install the split-rail fence surrounding the project restoration area. SPAWN will coordinate directly with the golf course Superintendent to develop and layout the irrigation system using Irrigation Materials including the appropriate connection to the SGGC irrigation system. This task will be completed using Biological Field Equipment, Biodegradable Erosion Control Materials, Revegetation Materials, and Irrigation Materials. This task will be completed by the Construction Contractor and SPAWN Project Supervisor, Project Manager, Project Foreman, Project Associate, Volunteer Coordinator, Volunteer Interns I, II, Volunteers, and Golf Course Superintendent.

6. Post-Construction Monitoring:
   SPAWN and ESA will perform post-construction monitoring detailing protocols to measure and assess the function, evolution and form of project elements following construction. The stream/habitat features to be monitored are outlined in the monitoring plan included in this proposal. SPAWN will prepare a construction monitoring report suitable for submittal to regulatory agencies, including CDFW. The report will document compliance procedures and describe geomorphic and biological monitoring efforts conducted by SPAWN and ESA. Supplies used in this task include Biological Field Equipment. Mileage will be billed for SPAWN personnel and ESA travel expenses to-and-from the site. This task will be led by SPAWN Project Manager, Project Foreman, Project Associate, Volunteer Coordinator, Volunteer Interns I, II, and Volunteers. This will be supported by ESA, using Managing Associate II and Senior Associate III.

7. Project Education and Outreach:
   This task will be led by SPAWN using Education and Outreach Materials and will include the preparation of public information pertaining to the restoration actions being done at the site. SPAWN will host three (3) community workshops to teach about biotechnological engineering and habitat restoration. This involves development of flyers, posters,

informational pamphlets that will be available to neighbors, community members, and the general public. This task also includes media outreach, development of press releases, and recruitment of volunteers to participate in the project. Supplies used to carry out this task include Education and Outreach Materials. This task will be led by SPAWN Project Supervisor, Project Manager, Project Associate, Volunteer Coordinator, Volunteer Interns I, II, and Volunteers.

8. Project Administration:
   SPAWN will be in charge of project administration, reporting, budget management, and general project organization. SPAWN will retain a bookkeeper to assist with budget management, invoicing, and reporting. SPAWN will also support observation and review of contractor's daily operations, status of work and management of the project schedule. SPAWN staff performing this task include SPAWN Project Supervisor, Project Manager, Project Associate, and bookkeeper.

Deliverables: Project specific reporting metrics.
Task 1-Permitting
Project Permits (USACE, NOAA-NMFS, RWQCB, CDFW, Marin County)

Task 2-Pre-Construction Services
Pre-Construction Species Survey Documentation (memos)
Contractor Selection Report

Task 3-Project Construction
Project Restoration Elements constructed as per-Final Engineer Designs

Task 4_Construction Management and Oversight
Weekly Project Reports

Task 5_Erosion Control and Revegetation
Project site is stabilized and vegetated as per-Final Engineer Designs and Planting Plan

Task 6_Post-Construction Monitoring
Post-Construction Monitoring Reports
Monitoring Reports (annual)

Task 7_Project Education and Outreach
Community Bio-engineering Workshops (three)

Task 8_Project Administration
Draft Final Report

Final Budget
Final Report

Timelines:
Task 1_Permitting (July 2018 to August 2019)
December 2018 - submit permit applications to CDFW and Marin County

Task 2_Pre-Construction Services (March 2019 to June 2019)
March 2019 - Contractor bidding and selection
May 2019 - Pre-Consturction Monitoring
July 2019 - Perform sensitive species surveys

Task 3_Project Construction (July 2019 to October 2019, and if necessary July 2020 to October 2020)
October 2019 or October 2020 - Construct project per Final Engineering Design Plans

Task 4_Construction Management and Oversight (July 2019 to October 2019, and if necessary July 2020 to October 2020)
October 2019 or October 2020 - Conduct Construction Inspection, Management, and Oversight

Task 5_Erosion Control and Revegetation (October 2019 to March 2022)
October 2019 to October 2020 - Install Erosion Control Materials
October 2019 to March 2022 - Install Native Vegetation, Fencing, and Irrigation

Task 6_Post-Construction Monitoring (October 2019 to March 2022)
October 2019 to October 2021 - Conduct Post-Construction Monitoring and Reporting
December 2021 - Draft Final Post-Construction Monitoring Report
March 2022 - Final Post-Construction Monitoring Report

Task 7_Project Education and Outreach (July 2018 to March 2022)
July 2018 to March 2022 - Perform project outreach, volunteer recruitment/ training, media communications, and develop interpretive education information

Task 8_Project Administration (July 2018 to March 2022)
July 2018 to March 2022 - Quarterly invoices and reports
December 2021 - Draft Final Report
March 2022 - Final Report

8. *CDFW Protocols to Be Used in P* Additional Requirements:

1. The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams

is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

2. No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

3. All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

4. During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

5. The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

   a. Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.

   b. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

   c. The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.

d. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

e. USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW.

6. Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Managers. All habitat improvements will follow techniques described in the California Salmonid Stream Habitat Restoration Manual.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (San Geronimo (3812216) OR Point Reyes NE (3812227) OR Petaluma (3812226) OR Petaluma River (3812225) OR Inverness (3812217) OR Novato (3812215) OR Double Point (3712287) OR Bolinas (3712286) OR San Rafael (3712285))

Possible species within San Geronimo Quad and surrounding quads for 725512 Fish Passage and Off-Channel Habitat Restoration at Roy's Pools, T02N R07W S17, Marin County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
alkali milk-vetch *Astragalus tener var. tener*	PDFAB0F8R1	None	None	G2T2	S2	1B.2
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
Baker's larkspur *Delphinium bakeri*	PDRAN0B050	Endangered	Endangered	G1	S1	1B.1
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	PDPLM0C0E1	None	None	G4T2	S2	1B.1
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S2	
bent-flowered fiddleneck *Amsinckia lunaris*	PDBOR01070	None	None	G2G3	S2S3	1B.2
black swift *Cypseloides niger*	ABNUA01010	None	None	G4	S2	SSC
Blasdale's bent grass *Agrostis blasdalei*	PMPOA04060	None	None	G2	S2	1B.2
blue coast gilia *Gilia capitata ssp. chamissonis*	PDPLM040B3	None	None	G5T2	S2	1B.1
bluff wallflower *Erysimum concinnum*	PDBRA160E3	None	None	G3	S2	1B.2
Bolander's water-hemlock *Cicuta maculata var. bolanderi*	PDAPI0M051	None	None	G5T4	S2	2B.1
bumblebee scarab beetle *Lichnanthe ursina*	IICOL67020	None	None	G2	S2	
burrowing owl *Athene cunicularia*	ABNSB10010	None	None	G4	S3	SSC
California black rail *Laterallus jamaicensis coturniculus*	ABNME03041	None	Threatened	G3G4T1	S1	FP
California freshwater shrimp *Syncaris pacifica*	ICMAL27010	Endangered	Endangered	G2	S2	
California giant salamander *Dicamptodon ensatus*	AAAAH01020	None	None	G3	S2S3	SSC
California red-legged frog *Rana draytonii*	AAABH01022	Threatened	None	G2G3	S2S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
California Ridgway's rail *Rallus obsoletus obsoletus*	ABNME05016	Endangered	Endangered	G5T1	S1	FP
California tiger salamander *Ambystoma californiense*	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
coast lily *Lilium maritimum*	PMLIL1A0C0	None	None	G2	S2	1B.1
Coastal Brackish Marsh *Coastal Brackish Marsh*	CTT52200CA	None	None	G2	S2.1	
coastal marsh milk-vetch *Astragalus pycnostachyus var. pycnostachyus*	PDFAB0F7B2	None	None	G2T2	S2	1B.2
Coastal Terrace Prairie *Coastal Terrace Prairie*	CTT41100CA	None	None	G2	S2.1	
coastal triquetrella *Triquetrella californica*	NBMUS7S010	None	None	G2	S2	1B.2
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	PDAST4R065	None	None	G5T1T2	S1S2	1B.2
Contra Costa goldfields *Lasthenia conjugens*	PDAST5L040	Endangered	None	G1	S1	1B.1
dark-eyed gilia *Gilia millefoliata*	PDPLM04130	None	None	G2	S2	1B.2
Diablo helianthella *Helianthella castanea*	PDAST4M020	None	None	G2	S2	1B.2
elongate copper moss *Mielichhoferia elongata*	NBMUS4Q022	None	None	G5	S4	4.3
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
fragrant fritillary *Fritillaria liliacea*	PMLIL0V0C0	None	None	G2	S2	1B.2
Franciscan onion *Allium peninsulare var. franciscanum*	PMLIL021R1	None	None	G5T1	S1	1B.2
Franciscan thistle *Cirsium andrewsii*	PDAST2E050	None	None	G3	S3	1B.2
golden larkspur *Delphinium luteum*	PDRAN0B0Z0	Endangered	Rare	G1	S1	1B.1
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
great egret *Ardea alba*	ABNGA04040	None	None	G5	S4	
hairless popcornflower *Plagiobothrys glaber*	PDBOR0V0B0	None	None	GH	SH	1A

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
Humboldt Bay owl's-clover *Castilleja ambigua var. humboldtiensis*	PDSCR0D402	None	None	G4T2	S2	1B.2
Koch's cord moss *Entosthodon kochii*	NBMUS2P050	None	None	G1	S1	1B.3
longfin smelt *Spirinchus thaleichthys*	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Lyngbye's sedge *Carex lyngbyei*	PMCYP037Y0	None	None	G5	S3	2B.2
Marin blind harvestman *Calicina diminua*	ILARAU8040	None	None	G1	S1	
Marin checker lily *Fritillaria lanceolata var. tristulis*	PMLIL0V0P1	None	None	G5T2	S2	1B.1
Marin checkerbloom *Sidalcea hickmanii ssp. viridis*	PDMAL110A4	None	None	G3TH	SH	1B.1
Marin County navarretia *Navarretia rosulata*	PDPLM0C0Z0	None	None	G2	S2	1B.2
Marin elfin butterfly *Callophrys mossii marinensis*	IILEPE2207	None	None	G4T1	S1	
Marin hesperian *Vespericola marinensis*	IMGASA4140	None	None	G2	S2	
Marin knotweed *Polygonum marinense*	PDPGN0L1C0	None	None	G2Q	S2	3.1
Marin manzanita *Arctostaphylos virgata*	PDERI041K0	None	None	G2	S2	1B.2
Marin western flax *Hesperolinon congestum*	PDLIN01060	Threatened	Threatened	G1	S1	1B.1
marsh microseris *Microseris paludosa*	PDAST6E0D0	None	None	G2	S2	1B.2
Mason's ceanothus *Ceanothus masonii*	PDRHA04200	None	Rare	G1	S1	1B.2
Mason's lilaeopsis *Lilaeopsis masonii*	PDAPI19030	None	Rare	G2	S2	1B.1
mimic tryonia (=California brackishwater snail) *Tryonia imitator*	IMGASJ7040	None	None	G2	S2	
minute pocket moss *Fissidens pauperculus*	NBMUS2W0U0	None	None	G3?	S2	1B.2
monarch - California overwintering population *Danaus plexippus pop. 1*	IILEPP2012	None	None	G4T2T3	S2S3	
Mt. Tamalpais bristly jewelflower *Streptanthus glandulosus ssp. pulchellus*	PDBRA2G0J2	None	None	G4T2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Mt. Tamalpais manzanita *Arctostaphylos montana ssp. montana*	PDERI040J5	None	None	G3T3	S3	1B.3
Mt. Tamalpais thistle *Cirsium hydrophilum var. vaseyi*	PDAST2E1G2	None	None	G2T1	S1	1B.2
Mt. Vision ceanothus *Ceanothus gloriosus var. porrectus*	PDRHA040F7	None	None	G4T2	S2	1B.3
Napa false indigo *Amorpha californica var. napensis*	PDFAB08012	None	None	G4T2	S2	1B.2
Nicasio ceanothus *Ceanothus decornutus*	PDRHA04440	None	None	G1	S1	1B.2
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
North Coast phacelia *Phacelia insularis var. continentis*	PDHYD0C2B1	None	None	G2T2	S2	1B.2
North Coast semaphore grass *Pleuropogon hooverianus*	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Northern Coastal Salt Marsh *Northern Coastal Salt Marsh*	CTT52110CA	None	None	G3	S3.2	
Northern Maritime Chaparral *Northern Maritime Chaparral*	CTT37C10CA	None	None	G1	S1.2	
Northern Vernal Pool *Northern Vernal Pool*	CTT44100CA	None	None	G2	S2.1	
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Opler's longhorn moth *Adela oplerella*	IILEE0G040	None	None	G2	S2	
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
perennial goldfields *Lasthenia californica ssp. macrantha*	PDAST5L0C5	None	None	G3T2	S2	1B.2
Petaluma popcornflower *Plagiobothrys mollis var. vestitus*	PDBOR0V0Q2	None	None	G4?TX	SX	1A
pink sand-verbena *Abronia umbellata var. breviflora*	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Pitkin Marsh lily *Lilium pardalinum ssp. pitkinense*	PMLIL1A0H3	Endangered	Endangered	G5T1	S1	1B.1
Point Reyes checkerbloom *Sidalcea calycosa ssp. rhizomata*	PDMAL11012	None	None	G5T2	S2	1B.2
Point Reyes horkelia *Horkelia marinensis*	PDROS0W0B0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Point Reyes mountain beaver *Aplodontia rufa phaea*	AMAFA01012	None	None	G5T2	S2	SSC
Point Reyes salty bird's-beak *Chloropyron maritimum ssp. palustre*	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
Ricksecker's water scavenger beetle *Hydrochara rickseckeri*	IICOL5V010	None	None	G2?	S2?	
robust walker *Pomatiopsis binneyi*	IMGASJ9010	None	None	G1	S1	
round-headed Chinese-houses *Collinsia corymbosa*	PDSCR0H060	None	None	G1	S1	1B.2
round-leaved filaree *California macrophylla*	PDGER01070	None	None	G4	S4	1B.2
Sacramento splittail *Pogonichthys macrolepidotus*	AFCJB34020	None	None	GNR	S3	SSC
saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	ABPBX1201A	None	None	G5T3	S3	SSC
salt-marsh harvest mouse *Reithrodontomys raviventris*	AMAFF02040	Endangered	Endangered	G1G2	S1S2	FP
San Bruno elfin butterfly *Callophrys mossii bayensis*	IILEPE2202	Endangered	None	G4T1	S1	
San Francisco Bay Area leaf-cutter bee *Trachusa gummifera*	IIHYM80010	None	None	G1	S1	
San Francisco Bay spineflower *Chorizanthe cuspidata var. cuspidata*	PDPGN04081	None	None	G2T1	S1	1B.2
San Francisco forktail damselfly *Ischnura gemina*	IIODO72010	None	None	G2	S2	
San Francisco owl's-clover *Triphysaria floribunda*	PDSCR2T010	None	None	G2?	S2?	1B.2
San Pablo song sparrow *Melospiza melodia samuelis*	ABPBXA301W	None	None	G5T2	S2	SSC
sandy beach tiger beetle *Cicindela hirticollis gravida*	IICOL02101	None	None	G5T2	S2	
Sanford's arrowhead *Sagittaria sanfordii*	PMALI040Q0	None	None	G3	S3	1B.2
Santa Cruz microseris *Stebbinsoseris decipiens*	PDAST6E050	None	None	G2	S2	1B.2
Santa Cruz tarplant *Holocarpha macradenia*	PDAST4X020	Threatened	Endangered	G1	S1	1B.1
seaside bittercress *Cardamine angulata*	PDBRA0K010	None	None	G5	S1	2B.1

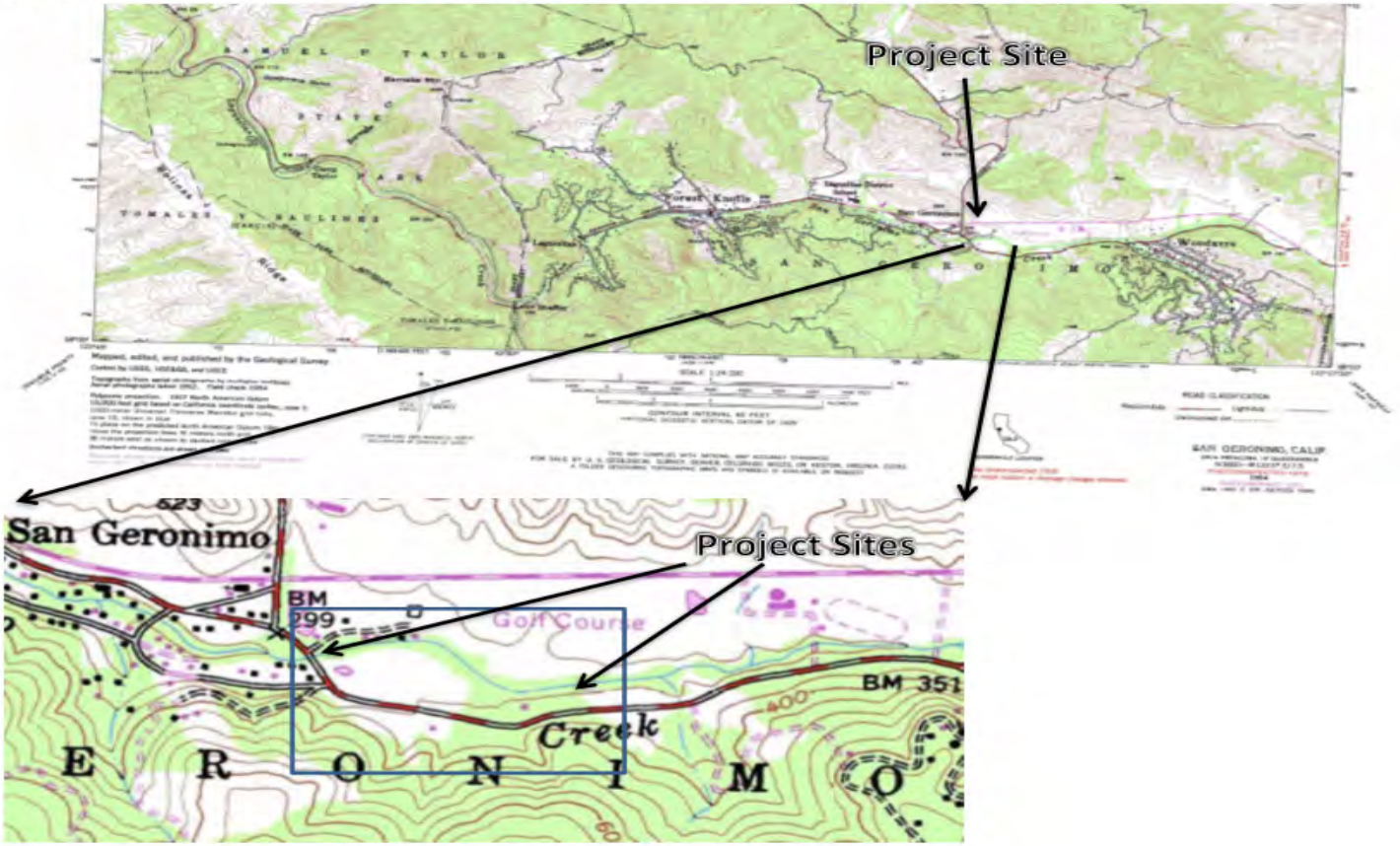
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Serpentine Bunchgrass *Serpentine Bunchgrass*	CTT42130CA	None	None	G2	S2.2	
silver-haired bat *Lasionycteris noctivagans*	AMACC02010	None	None	G5	S3S4	
small groundcone *Kopsiopsis hookeri*	PDORO01010	None	None	G4?	S1S2	2B.3
snowy egret *Egretta thula*	ABNGA06030	None	None	G5	S4	
soft salty bird's-beak *Chloropyron molle ssp. molle*	PDSCR0J0D2	Endangered	Rare	G2T1	S1	1B.2
Sonoma alopecurus *Alopecurus aequalis var. sonomensis*	PMPOA07012	Endangered	None	G5T1	S1	1B.1
Sonoma spineflower *Chorizanthe valida*	PDPGN040V0	Endangered	Endangered	G1	S1	1B.1
steelhead - central California coast DPS *Oncorhynchus mykiss irideus*	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
Swainson's hawk *Buteo swainsoni*	ABNKC19070	None	Threatened	G5	S3	
swamp harebell *Campanula californica*	PDCAM02060	None	None	G3	S3	1B.2
Tamalpais jewelflower *Streptanthus batrachopus*	PDBRA2G050	None	None	G2	S2	1B.3
Tamalpais lessingia *Lessingia micradenia var. micradenia*	PDAST5S063	None	None	G2T2	S2	1B.2
Tamalpais oak *Quercus parvula var. tamalpaisensis*	PDFAG051Q3	None	None	G4T2	S2	1B.3
thin-lobed horkelia *Horkelia tenuiloba*	PDROS0W0E0	None	None	G2	S2	1B.2
Thurber's reed grass *Calamagrostis crassiglumis*	PMPOA17070	None	None	G3Q	S2	2B.1
Tiburon buckwheat *Eriogonum luteolum var. caninum*	PDPGN083S1	None	None	G5T2	S2	1B.2
Tiburon paintbrush *Castilleja affinis var. neglecta*	PDSCR0D013	Endangered	Threatened	G4G5T1T2	S1S2	1B.2
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Tomales isopod *Caecidotea tomalensis*	ICMAL01220	None	None	G2	S2S3	
Tomales roach *Lavinia symmetricus ssp. 2*	AFCJB19022	None	None	G4T2T3	S2	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
two-fork clover *Trifolium amoenum*	PDFAB40040	Endangered	None	G1	S1	1B.1
Ubick's gnaphosid spider *Talanites ubicki*	ILARA98030	None	None	G1	S1	
water star-grass *Heteranthera dubia*	PMPON03010	None	None	G5	S2	2B.2
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western leatherwood *Dirca occidentalis*	PDTHY03010	None	None	G2	S2	1B.2
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western red bat *Lasiurus blossevillii*	AMACC05060	None	None	G5	S3	SSC
western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
white-rayed pentachaeta *Pentachaeta bellidiflora*	PDAST6X030	Endangered	Endangered	G1	S1	1B.1
white-tailed kite *Elanus leucurus*	ABNKC06010	None	None	G5	S3S4	FP
woolly-headed gilia *Gilia capitata ssp. tomentosa*	PDPLM040B9	None	None	G5T1	S1	1B.1
yellow warbler *Setophaga petechia*	ABPBX03010	None	None	G5	S3S4	SSC

Record Count: 134

Project Location Topographic Map

Fish Passage and Off-Channel Habitat Restoration at Roy's Pools:
USGS 7.5 minute Topographic Map. San Geronimo Quadrangle



Introduction:

The Salmon Protection and Watershed Network (SPAWN) will implement the Floodplain and Instream Habitat Restoration on San Geronimo Creek. This project will create numerous alcove habitats, backwaters, floodplain terraces, side-channels, widen the riparian corridor, increase the volume and complexity of large woody debris, and perform sweeping riparian restoration and revegetation. This will improve rearing habitats for juvenile salmonids and improve spawning habitat for adults salmonids across a 5-acre, 1,200 ft long corridor.

The project implementation will include the following restoration elements: dewatering and diversion, earthwork, rock structures, large wood structures, biotechnical structures, and erosion control, revegetation, and irrigation.

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured.

All habitat improvement will follow techniques in the California Stream Habitat Restoration Manual (list appropriate section of manual)

Objective(s):

The project will implement a design funded by a previous FRGP project to to create numerous alcoves, backwaters, side channels, floodplain terraces, and increased complexity of large woody debris structures throughout in an incised creek channel critical to the survival of endangered coho and steelhead. This project helps achieve the solutions to the most limiting factor for endangered salmonid survival in one of most important watersheds for the recovery of CCC coho (NOAA Recovery Final 2012).

Project Description:

Location:

The project is located on San Geronimo Creek approximately 0.25 miles upstream of San Geronimo Valley Drive, San Geronimo, Marin County, CA. San Geronimo Creek is a tributary to Lagunitas Creek which drains into Tomales Bay.

The project site is located at:
38.7433 N Lat. -: 122.6589 W Long.

Project Set Up:

The project will be implemented by SPAWN and its subcontractors. The personnel required to complete the work and a description of their responsibilities are included in this section by task. SPAWN will work closely with the respected environmental engineering and consulting firm Environmental Science Associates

(ESA) during the project. SPAWN will contract directly with qualified construction contractor(s) to perform the construction work.

Materials:

Heavy Machinery

1. The machinery being used will include, portable toilet rental, excavators, front leaders, bulldozers, water trucks, augers, skid steers, backhoes, hauling trucks, dump trucks, semi-trucks, chainsaws, and water pump.
2. The machinery will be used to for earthwork and grading, dewatering, hauling, rock structure placement, LWD installation, revegetation, and biotechnical feature installation.

Rock Materials:

1. Various sizes of gravels, rocks and boulders ranging in size from 1-inch gravels to 2-ton boulders will be salvaged from the site, sourced from within the watershed, or imported quarry rock.
2. The boulders will be installed within the cobble and gravel streambed material to create a stable channel geometry that provides fish habitat year round for all life stages of target species. The boulders will be incorporated into bank stabilization measures and will be used as ballast for large wood structures.

Large Wood Structures and Biotechnical Features

1. Numerous pieces of LWD (imported and salvaged logs, and rootwads) ranging in diameter from 12 to 36 inches, and 12-inch all thread, washers, nuts, epoxy, and cables., and biotechnical features (living plant materials with rope and wooden stakes). This LWD will be of various kinds of tree species either imported or salvaged on site.
2. These materials will be placed throughout the project reach in numerous locations and incorporated into new the alcove, backchannel features, and side channels/floodplain.

Biodegradable Erosion Control Materials

1. Biodegradable coir mesh rolls, mattings, wattles, and straw secured with wooden stakes, pins, and staples.
2. The mattings, rolls, wattles, and straw will be secured over graded banks is combination with revegetation techniques.

Revegetation Materials

1. Native seeds and container plants collected from the watershed and raised at a local native plant nursery and split rail fencing.
2. These revegetation materials will help re-establish native riparian vegetation at the site along graded banks and areas in need of stabilization

and habitat regeneration, and the fencing around the site to prevent golfers from entering and damaging the restoration area.

Hand Tools

1. A variety of hand tools including shovels, trowels, digging bars, pruners, hammers, machetes, buckets, wheelbarrows, sledge hammers, rakes, and hand saws.
2. These tools will be used to prepare seeds beds, plant native vegetation, plant nursery container plants, maintain and care for nursery plants before planting, collect and clean native seeds, install irrigation equipment, lay and secure erosion control materials, construct willow mattresses and bio-engineering measures, and remove invasive vegetation.

Education and Outreach Materials: 1)

1. Education interpretive signage, event flyers, posters, on-line marketing IP address, and postage.
2. These signs and materials will be used to recruit volunteers, and the media and fliers throughout the community, and on-line. They will be easily visible and easy to understand by the public.

Biological Field Equipment

1. These include a Biological Field Truck rental, waders, fish nets, buckets, coffer dam materials (sand bags, visqueen), wading rod, water hoses, invasive species disinfectants, camera.
2. These equipment will be used to assist CDFW biologists with fish relocation, conduct channel de-watering, perform pre-and-post construction monitoring, and provide protections against transfer of invasive aquatic species.

Tasks:

1. Permitting:
   Permits that will be submitted and obtained by the applicant are CA. Dept. of Fish and Wildlife Lake and Streambed Alteration Agreement (1600), Marin County Creek Permit, Creek Permit Royalties, Marin County Grading Permit, and Grading Permit Royalties. SWPP Compliance will be performed by the Construction Contractor. Under FRGP, the Project will have US Army Corps of Engineers 401, Regional Water Quality Control Board 404, CEQA Review already covered. SPAWN will lead the permit application process with assistance from ESA Personnel including Director, Managing Associate II, Senior Associate III and Project Technician. SPAWN personnel leading this task include the Project Supervisor, Project Manager, Project Foreman, and Project Associate. San Geronimo Golf Course Superintendent will assist with permit compliance.

2. Pre-Construction Services and Monitoring:
   SPAWN and ESA will coordinate efforts to perform the tasks as required by resource agency permits for the project using Biological Field Equipment and Heavy Machinery. The construction contractor(s), referenced below as "Construction Contractor" is not currently known but will be vetted through a competitive bidding and evaluation process. SPAWN will lead the Contractor bidding and selection process, ESA and SGGC representatives will support with bidding the project. During the construction contractor bidding process, ESA will provide services including 1) attendance of up to two (2) construction contractor pre-bid meetings; 2) support preparation of bid addenda and/or response to bidders' questions, and; 3) assistance with review and evaluation of bids for selection of the qualified construction contractor. ESA will support the construction contractor with design of the channel dewatering, diversion system, and SWPP permit compliance. As part of this effort SPAWN will consult with CDFW and other appropriate regulatory agencies to review proposed measures and incorporate feedback to the dewatering system. SPAWN will work with CDFW fisheries staff to assist in the relocation of fish species downstream using Biological Field Equipment.SPAWN will conduct an environmental training to educate construction workers on: 1) special status species that may occur in the project area, 2) procedures to follow in the event a species is observed, and 3) other environmental BMPs, and permit response protocols. SPAWN will oversee pre-construction sensitive species surveys. If sensitive species are found, CDFW will be contacted to provide guidance on avoidance or relocation. Development and implementation of a California red-legged frog relocation plan is not included in this task (Note: this species is unlikely to occur in the project area). All species survey results will be documented in a memo and submitted to CDFW. SPAWN and ESA will perform pre-project monitoring using Biological Field Equipment. This task will be supported by SPAWN staff including SPAWN Project Supervisor, Project Manager, Project Foreman, Project Associate, and Volunteer Interns I, II, and supported by subcontractor, ESA, using the Director, Managing Associate II, Senior Associate III and Project Technician. Golf Course Superintendant will also support the selection process. The contractor will be responsible for implementing de-watering, diversion, and SWPP permit compliance.

3. Project Construction:
   The project will be constructed by qualified and fully licensed construction contractor(s) using Heavy Machinery, Rock Materials, Large Woody Debris Structures, and Biotechnical Features. The contractor will construct the 100% design plans and will perform mobilization/demobilization, clearing and grubbing, earthwork, build rock structures, construction large woody debris structures, and assist SPAWN with biotechnical features. The contractor(s) that will be vetted and selected by the project applicant (see

task above). Construction Contractor(s) must meet and demonstrate minimum qualifications in order for their bid to be acceptable for the project. These qualifications necessary to bid and be selected by the applicant for the project are described in the Qualifications and Experience section below. SPAWN will work with construction contractors to implement Mobilization/demobilization, Clearing and Grubbing and Biotechnical Habitat Features (brush mattresses, pole plantings, and vegetated rock toe). SPAWN personnel supporting this task include Project Supervisor, Project Manager, Project Foreman, Project Associate, Volunteer Coordinator, Volutneer Interns I, II, and Volunteers.

a. Dewatering and Diversion:
   The flow in San Geronimo Creek will be bypassed around the construction site throughout the duration of construction. The flow bypass will be accomplished using a temporary coffer dam installed across the creek upstream of the work area. Flow will be diverted around the work area in a temporary pipe and discharged downstream of the project site at the location. It is anticipated that a gravity flow system will be installed and that the channel will be dewatered within the work and throughout the construction period. The flow diversion/bypass system will be installed using standard construction equipment such as heavy machinery and hand tools. Work areas will be dewatered using a pump(s) with sufficient capacity to maintain a dry work area. The isolated area will be cleared of aquatic species by qualified CDFW biologists and relocated to pool areas downstream and out of the project area. Dewatering activities will abide by all NPDES and state regulations and will not result in a significant increase in turbidity downstream. The contractor will provide measures to contain and clean all turbid water prior to discharging into the stream.

b. Earthwork:
   Excavation and grading is required to remove existing vegetation and soil within the project area in order to achieve the design grades. Excavation is also required for the installation of the rock structures, large wood debris structures, and biotechnical restoration elements. Clearing and grubbing will be done to allow access of heavy machinery to perform the earthwork. The primary focus of the excavation and grading work will be to construct the new alcove and backchannel features, floodplain features and side channels, the LWD, and biotechnical features. It is anticipated that materials to be excavated will consist of soil, streambed material, and rock (>1/4 ton). It is not anticipated that bedrock excavation will be required. Native soil, streambed material and boulders removed will be

salvaged to the extent that they can be and are suitable for use in other project elements. Offsite disposal of earthen materials, and onsite disposal of earthen materials will also be performed under this task. This will be achieved using heavy machinery and disposed of in a legal manner at an approved location. Excavation and grading will be accomplished using standard construction equipment and Heavy Machinery such an excavators, backhoe, dump truck, end loader, bulldozer, skid steer, and water truck. Heavy construction equipment will be operated by qualified operators.

c. Rock Structures:
Rock Structures within the channel include sedge-planted boulder clusters to deflect flow into backchannel features, and will be used in the anchoring of biotechnical features and large woody debris structures. This work will require precise placement of the rock to ensure that channel design is achieved to provide correct hydraulic control and rearing habitat formation. The rock will be installed using an Heavy Machinery including excavator, end loader, dump truck, and skid steer. Heavy Machinery construction equipment will be operated by qualified operators. Some rock placement will require hand installation hand tools.

d. Large Wood Structures:
Large wood structures will be constructed to provide bank stabilization, rearing habitat and cover, and to direct flows within the new alcove and backchannels. These structure types include a small habitat wood structure which consists of a single log and rootwad, and a large wood structure which consists of three to four logs with rootwads. The small habitat wood structure and large wood structure will be installed by excavating into the channel bed and banks to create a trench for log placement. Vertical members will be installed by a combination of excavation and driving using an excavator. Rock and boulder ballast will be placed on top of the logs to anchor them in place. Steel all-thread rods may be used to anchor multiple logs together in the large wood structure. The large wood structures will be constructed using Heavy Machinery including an excavator, backhoe, end loader, skid steer, and hand tools. Heavy construction equipment will be operated by qualified operators.

e. Biotechnical Features:
Biotechnical bank stabilization measures proposed include vegetated soil lift, vegetated rock toe, brush mat and live pole planting. These features will be constructed using rock materials, biodegradable erosion control fabric, biotechnical features (wooden

stakes, seed mixes, and live cuttings (willow, ash, and alder)). Installation will require grading of the channel bank, including removal of existing vegetation. This creates a stable slope and suitable base condition for the placement of rock, vegetation (seed and live stakes) and erosion control fabric. The bank grading and placement of rock will be conducted using an excavator, end loader and skid steer. The placement of live stakes, erosion control fabric, and to some degree, rock placement will be conducted using small hand tools. Heavy machinery equipment will be operated by qualified operators.

4. Construction Management and Oversight:
   SPAWN and its subcontractor will perform Construction Management and Oversight. SPAWN will coordinate weekly construction meetings with engineers and construction contractors, perform on-site biological monitoring duties, work with contractors to keep the project in compliance with permit requirements, and oversee general construction activities so project implementation is coordinated, on schedule, and conforms to landowner requirements of golf course operations. ESA will support construction oversight regarding technical components of the design, field design adaptations and plan updating, contractor inquiries, and review of constructed restoration elements. For ESA, this task includes frequent site visits, field adaptation design and plan development, construction coordination, response to contractor's requests for information, observations during construction, and inspection of constructed elements. SPAWN staff performing this task include SPAWN Project Supervisor, Project Manager, Project Foreman, Project Associate, and Volunteer Interns I, II. This task will be supported by subcontractor ESA, using the Director, Managing Associate II and Senior Associate III. The San Geronimo Golf Course Superintendent will offer support for construction oversight and coordination.

5. Erosion Control, Revegetation, and Irrigation:
   SPAWN will lead the erosion control, revegetation, and irrigation of the project site. This will include preparing all sites, seeding, mulching, erosion control installation, and planting of all container plants and vegetation following grading and construction activities. SPAWN will install all erosion control materials (fabric, rolls, wattles, straw) and produce/acquire all seeds and container plants needed for the project. Live cuttings will be harvested during project implementation when needed from the Lagunitas Creek Watershed. Container plants will be sourced from SPAWN's Native Plant Nursery. SPAWN will also install the split-rail fence surrounding the project restoration area. SPAWN will coordinate directly with the golf course Superintendent to develop and layout the irrigation system including the

appropriate connection to the SGGC irrigation system. Prior to construction, the Construction Contractor and SPAWN will salvage as many native plants as feasible from the areas that will be disturbed. This task will be completed by the Construction Contractor and SPAWN Project Supervisor, Project Manager, Project Foreman, Project Associate, Volunteer Coordinator, volunteers, Interns I, II, and Golf Course Superintendent.

6. Post-Construction Monitoring:
   SPAWN and ESA will perform post-construction monitoring detailing protocols using Biological Field Equipment and Biological Field Vehicle rental to measure and assess the function, evolution and form of project elements following construction. The stream/habitat features to be monitored are outlined in the monitoring plan included in this proposal. Mileage will be charged to support efforts to visit the site to perform monitoring. SPAWN will prepare a construction monitoring report suitable for submittal to regulatory agencies, including CDFW. The report will document compliance procedures and describe geomorphic and biological monitoring efforts conducted by SPAWN and ESA. This task will be led by SPAWN Project Manager, Project Foreman, Project Associate, Volunteer Coordinator, Volunteer Interns I, II, and Volunteers. This will be supported by ESA, using Managing Associate II and Senior Associate III.

7. Project Education and Outreach:
   This task will be led by SPAWN and will include the preparation of public information using Education and Outreach Materials pertaining to the restoration actions being done at the site. This includes development of flyers, posters, informational pamphlets that will be available to neighbors, community members, and the general public. SPAWN will hold three (3) bioengineering and restoration workshops for community volunteers. Due to the high profile of the project and the visibility of the site to the community, it is important that correct outreach be performed to provide the public with accurate and scientific information. This task also includes media outreach, development of press releases, and recruitment of volunteers to participate in the project. This task will be led by SPAWN Project Supervisor, Project Manager, Project Associate, Volunteer Coordinator, Volunteer Interns I, II, and Volunteers.

8. Project Administration:
   SPAWN will be in charge of project administration, reporting, budget management, and general project organization. SPAWN will also support observation and review of contractor's daily operations, status of work and management of the project schedule. SPAWN will retain a bookkeeper to perform invoicing and assist with budget management and reporting.

SPAWN staff performing this task include SPAWN Project Supervisor, Project Manager, Project Foreman, and a bookkeeper

Deliverables: Project specific reporting metrics.
Task 1_Permitting
Project Permits (USACE, NOAA-NMFS, RWQCB, CDFW, Marin County)

Task 2_Pre-Construction Services
Pre-Construction Monitoring Reports, Species Survey Documentation (memos)
Contractor Selection Report

Task 3_Project Construction Project
Restoration Elements constructed as per-Final Engineer Designs

Task 4_Construction Management and Oversight
Weekly Project Reports

Task 5_Erosion Control and Revegetation
Project site is stabilized and vegetated as per-Final Engineer Designs and Planting Plan

Task 6_Post-Construction Monitoring
Post-Construction Monitoring Reports
Monitoring Reports (annual)

Task 7_Project Education and Outreach
Community Bioengineering Workshops (three)

Task 8_Project Administration
Draft Final Report
Final Budget
Final Report

Timelines:
Task 1_Permitting (July 2018 to August 2019)
December 2018 - submit permit applications to CDFW and Marin County

Task 2_Pre-Construction Services (March 2019 to August 2019)
June 2019 - Contractor bidding and selection
June 2019 - Pre-Construction Monitoring
July 2019 - Perform sensitive species surveys

Task 3_Project Construction (July 2019 to October 2019, and if necessary July 2020 to October 2020)

October 2019 or October 2020 - Construct project per Final Engineering Design Plans

Task 4_Construction Management and Oversight (July 2019 to October 2019, and if necessary July 2020 to October 2020)
October 2019 or October 2020 - Conduct Construction Inspection, Management, and Oversight
Task 5_Erosion Control, Revegetation, and Irrigation (October 2019 to March 2022)
October 2019 to October 2020 - Install Erosion Control Materials
October 2019 to March 2022 - Install Native Vegetation, Fencing, and Irrigation

Task 6_Post-Construction Monitoring (October 2019 to March 2022)
October 2019 to October 2022 - Conduct Post-Construction Monitoring and Reporting
December 2021 - Draft Final Post-Construction Monitoring Report
March 2022 - Final Post-Construction Monitoring Report

Task 7_Project Education and Outreach (July 2018 to March 2022)
July 2018 to March 2022 - Perform project outreach, volunteer recruitment/ training, media communications, and develop interpretive education information.

Task 8_Project Administration (July 2018 to March 2022)
July 2018 to March 2022 - Quarterly invoices and reports
December 2021 - Draft Final Report
March 2022 - Final Report

Additional Requirements:

1. The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

2. No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

3. All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be

bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

4. During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

5. The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:
   a. Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.
   b. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.
   c. The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.
   d. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
   e. USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW.

6. Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Managers. All habitat improvements will follow techniques described in the California Salmonid Stream Habitat Restoration Manual.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Mount St. Helena (3812266) OR The Geysers (3812277) OR Whispering Pines (3812276) OR Middletown (3812275) OR Jimtown (3812267) OR Detert Reservoir (3812265) OR Healdsburg (3812257) OR Mark West Springs (3812256) OR Calistoga (3812255))

Possible species within the Mount St. Helena quadrangle and surrounding quads for 725554 Floodplain and Instream Habitat Restoration on San Geronimo Creek, T10N R07W S5, Marin County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
adobe-lily *Fritillaria pluriflora*	PMLIL0V0F0	None	None	G2G3	S2S3	1B.2
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
American peregrine falcon *Falco peregrinus anatum*	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	PDPLM0C0E1	None	None	G4T2	S2	1B.1
bald eagle *Haliaeetus leucocephalus*	ABNKC10010	Delisted	Endangered	G5	S3	FP
Barr's amphipod *Stygobromus cherylae*	ICMAL05D60	None	None	G1	S1	
bent-flowered fiddleneck *Amsinckia lunaris*	PDBOR01070	None	None	G2G3	S2S3	1B.2
Boggs Lake hedge-hyssop *Gratiola heterosepala*	PDSCR0R060	None	Endangered	G2	S2	1B.2
Bolander's horkelia *Horkelia bolanderi*	PDROS0W010	None	None	G1	S1	1B.2
Brandegee's eriastrum *Eriastrum brandegeeae*	PDPLM03020	None	None	G1Q	S1	1B.1
Burke's goldfields *Lasthenia burkei*	PDAST5L010	Endangered	Endangered	G1	S1	1B.1
burrowing owl *Athene cunicularia*	ABNSB10010	None	None	G4	S3	SSC
California alkali grass *Puccinellia simplex*	PMPOA53110	None	None	G3	S2	1B.2
California freshwater shrimp *Syncaris pacifica*	ICMAL27010	Endangered	Endangered	G2	S2	
California giant salamander *Dicamptodon ensatus*	AAAAH01020	None	None	G3	S2S3	SSC
California linderiella *Linderiella occidentalis*	ICBRA06010	None	None	G2G3	S2S3	
California satintail *Imperata brevifolia*	PMPOA3D020	None	None	G4	S3	2B.1
Calistoga ceanothus *Ceanothus divergens*	PDRHA04240	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Calistoga popcornflower *Plagiobothrys strictus*	PDBOR0V120	Endangered	Threatened	G1	S1	1B.1
Central Valley Drainage Rainbow Trout/Cyprinid Stream *Central Valley Drainage Rainbow Trout/Cyprinid Stream*	CARA2422CA	None	None	GNR	SNR	
Clara Hunt's milk-vetch *Astragalus claranus*	PDFAB0F240	Endangered	Threatened	G1	S1	1B.1
Clear Lake Drainage Resident Trout Stream *Clear Lake Drainage Resident Trout Stream*	CARA2520CA	None	None	GNR	SNR	
Coastal and Valley Freshwater Marsh *Coastal and Valley Freshwater Marsh*	CTT52410CA	None	None	G3	S2.1	
coastal bluff morning-glory *Calystegia purpurata ssp. saxicola*	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
Cobb Mountain lupine *Lupinus sericatus*	PDFAB2B3J0	None	None	G2?	S2?	1B.2
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
Colusa layia *Layia septentrionalis*	PDAST5N0F0	None	None	G2	S2	1B.2
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	PDAST4R065	None	None	G5T1T2	S1S2	1B.2
dimorphic snapdragon *Antirrhinum subcordatum*	PDSCR2S070	None	None	G3	S3	4.3
dwarf downingia *Downingia pusilla*	PDCAM060C0	None	None	GU	S2	2B.2
dwarf soaproot *Chlorogalum pomeridianum var. minus*	PMLIL0G042	None	None	G5T3	S3	1B.2
early jewelflower *Streptanthus vernalis*	PDBRA2G120	None	None	G1	S1	1B.2
elongate copper moss *Mielichhoferia elongata*	NBMUS4Q022	None	None	G5	S4	4.3
few-flowered navarretia *Navarretia leucocephala ssp. pauciflora*	PDPLM0C0E4	Endangered	Threatened	G4T1	S1	1B.1
fisher - West Coast DPS *Pekania pennanti*	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Freed's jewelflower *Streptanthus brachiatus ssp. hoffmanii*	PDBRA2G071	None	None	G2T2	S2	1B.2
fringed myotis *Myotis thysanodes*	AMACC01090	None	None	G4	S3	
Geysers panicum *Panicum acuminatum var. thermale*	PMPOA24028	None	Endangered	G5T2Q	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
glandular western flax *Hesperolinon adenophyllum*	PDLIN01010	None	None	G2G3	S2S3	1B.2
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
green jewelflower *Streptanthus hesperidis*	PDBRA2G510	None	None	G2	S2	1B.2
Greene's narrow-leaved daisy *Erigeron greenei*	PDAST3M5G0	None	None	G3	S3	1B.2
Hall's harmonia *Harmonia hallii*	PDAST650A0	None	None	G2	S2	1B.2
hardhead *Mylopharodon conocephalus*	AFCJB25010	None	None	G3	S3	SSC
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
Hoffman's bristly jewelflower *Streptanthus glandulosus ssp. hoffmanii*	PDBRA2G0J4	None	None	G4T2	S2	1B.3
holly-leaved ceanothus *Ceanothus purpureus*	PDRHA04160	None	None	G2	S2	1B.2
Jepson's leptosiphon *Leptosiphon jepsonii*	PDPLM09140	None	None	G3	S3	1B.2
Jepson's milk-vetch *Astragalus rattanii var. jepsonianus*	PDFAB0F7E1	None	None	G4T3	S3	1B.2
Kenwood Marsh checkerbloom *Sidalcea oregana ssp. valida*	PDMAL110K5	Endangered	Endangered	G5T1	S1	1B.1
Konocti manzanita *Arctostaphylos manzanita ssp. elegans*	PDERI04271	None	None	G5T3	S3	1B.3
Lake County stonecrop *Sedella leiocarpa*	PDCRA0F020	Endangered	Endangered	G1	S1	1B.1
Lake County western flax *Hesperolinon didymocarpum*	PDLIN01070	None	Endangered	G1	S1	1B.2
legenere *Legenere limosa*	PDCAM0C010	None	None	G2	S2	1B.1
Loch Lomond button-celery *Eryngium constancei*	PDAPI0Z0W0	Endangered	Endangered	G1	S1	1B.1
long-eared myotis *Myotis evotis*	AMACC01070	None	None	G5	S3	
many-flowered navarretia *Navarretia leucocephala ssp. plieantha*	PDPLM0C0E5	Endangered	Endangered	G4T1	S1	1B.2
marsh checkerbloom *Sidalcea oregana ssp. hydrophila*	PDMAL110K2	None	None	G5T2	S2	1B.2
marsh microseris *Microseris paludosa*	PDAST6E0D0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Mt. Saint Helena morning-glory *Calystegia collina ssp. oxyphylla*	PDCON04032	None	None	G4T3	S3	4.2
Napa blue grass *Poa napensis*	PMPOA4Z1R0	Endangered	Endangered	G1	S1	1B.1
Napa bluecurls *Trichostema ruygtii*	PDLAM220H0	None	None	G1G2	S1S2	1B.2
Napa checkerbloom *Sidalcea hickmanii ssp. napensis*	PDMAL110A6	None	None	G3T1	S1	1B.1
Napa false indigo *Amorpha californica var. napensis*	PDFAB08012	None	None	G4T2	S2	1B.2
narrow-anthered brodiaea *Brodiaea leptandra*	PMLIL0C022	None	None	G3?	S3?	1B.2
Navarro roach *Lavinia symmetricus navarroensis*	AFCJB19023	None	None	G4T1T2	S2S3	SSC
Northern Basalt Flow Vernal Pool *Northern Basalt Flow Vernal Pool*	CTT44131CA	None	None	G3	S2.2	
Northern Hardpan Vernal Pool *Northern Hardpan Vernal Pool*	CTT44110CA	None	None	G3	S3.1	
northern meadow sedge *Carex praticola*	PMCYP03B20	None	None	G5	S2	2B.2
Northern Vernal Pool *Northern Vernal Pool*	CTT44100CA	None	None	G2	S2.1	
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
oval-leaved viburnum *Viburnum ellipticum*	PDCPR07080	None	None	G4G5	S3?	2B.3
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
pappose tarplant *Centromadia parryi ssp. parryi*	PDAST4R0P2	None	None	G3T2	S2	1B.2
Porter's navarretia *Navarretia paradoxinota*	PDPLM0C160	None	None	G2	S2	1B.3
prairie falcon *Falco mexicanus*	ABNKD06090	None	None	G5	S4	WL
purple martin *Progne subis*	ABPAU01010	None	None	G5	S3	SSC
Raiche's manzanita *Arctostaphylos stanfordiana ssp. raichei*	PDERI041G2	None	None	G3T2	S2	1B.1
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC

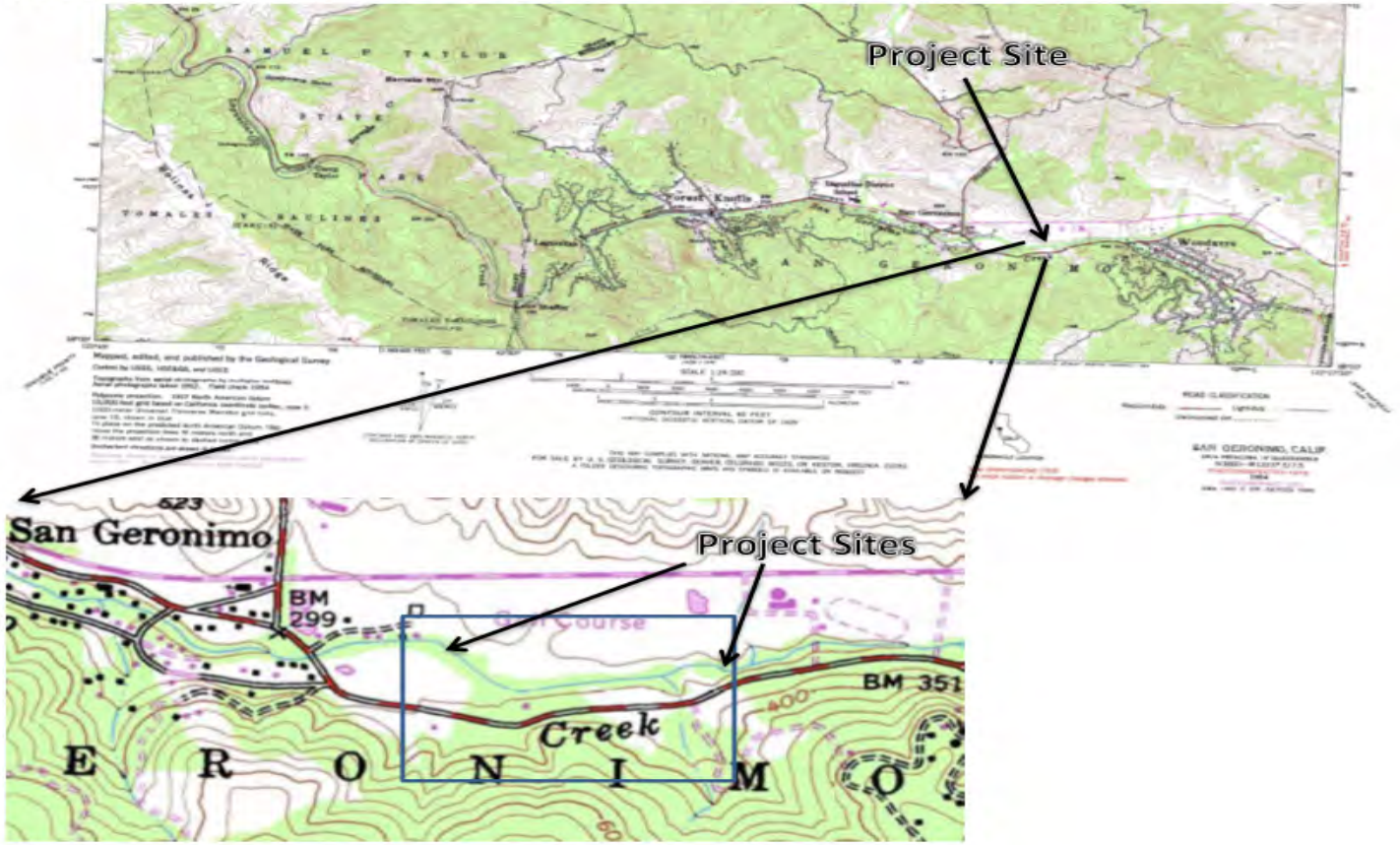
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Ricksecker's water scavenger beetle *Hydrochara ricksecker*i	IICOL5V010	None	None	G2?	S2?	
Rincon Ridge ceanothus *Ceanothus confusus*	PDRHA04220	None	None	G1	S1	1B.1
Rincon Ridge manzanita *Arctostaphylos stanfordiana ssp. decumbens*	PDERI041G4	None	None	G3T1	S1	1B.1
Russian River tule perch *Hysterocarpus traski pomo*	AFCQK02011	None	None	G5T4	S4	SSC
saline clover *Trifolium hydrophilum*	PDFAB400R5	None	None	G2	S2	1B.2
Santa Lucia dwarf rush *Juncus luciensis*	PMJUN013J0	None	None	G3	S3	1B.2
Sebastopol meadowfoam *Limnanthes vinculans*	PDLIM02090	Endangered	Endangered	G1	S1	1B.1
serpentine cryptantha *Cryptantha dissita*	PDBOR0A0H2	None	None	G2	S2	1B.2
serpentine cypress wood-boring beetle *Trachykele hartmani*	IICOLX6010	None	None	G1	S1	
sharp-shinned hawk *Accipiter striatus*	ABNKC12020	None	None	G5	S4	WL
Sharsmith's western flax *Hesperolinon sharsmithiae*	PDLIN010E0	None	None	G2Q	S2	1B.2
silver-haired bat *Lasionycteris noctivagans*	AMACC02010	None	None	G5	S3S4	
slender Orcutt grass *Orcuttia tenuis*	PMPOA4G050	Threatened	Endangered	G2	S2	1B.1
slender silver moss *Anomobryum julaceum*	NBMUS80010	None	None	G5?	S2	4.2
slender-leaved pondweed *Stuckenia filiformis ssp. alpina*	PMPOT03091	None	None	G5T5	S3	2B.2
small pincushion navarretia *Navarretia myersii ssp. deminuta*	PDPLM0C0X2	None	None	G2T1	S1	1B.1
Snow Mountain buckwheat *Eriogonum nervulosum*	PDPGN08440	None	None	G2	S2	1B.2
Socrates Mine jewelflower *Streptanthus brachiatus ssp. brachiatus*	PDBRA2G072	None	None	G2T1	S1	1B.2
Sonoma beardtongue *Penstemon newberryi var. sonomensis*	PDSCR1L483	None	None	G4T2	S2	1B.3
Sonoma ceanothus *Ceanothus sonomensis*	PDRHA04420	None	None	G2	S2	1B.2
Sonoma sunshine *Blennosperma bakeri*	PDAST1A010	Endangered	Endangered	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
steelhead - central California coast DPS *Oncorhynchus mykiss irideus*	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
Three Peaks jewelflower *Streptanthus morrisonii ssp. elatus*	PDBRA2G0S1	None	None	G2T1	S1	1B.2
Toren's grimmia *Grimmia torenii*	NBMUS32330	None	None	G2	S2	1B.3
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
two-carpellate western flax *Hesperolinon bicarpellatum*	PDLIN01020	None	None	G2	S2	1B.2
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western red bat *Lasiurus blossevillii*	AMACC05060	None	None	G5	S3	SSC
white-tailed kite *Elanus leucurus*	ABNKC06010	None	None	G5	S3S4	FP
woolly meadowfoam *Limnanthes floccosa ssp. floccosa*	PDLIM02043	None	None	G4T4	S3	4.2

Record Count: 113

Project Location Topographic Map

Floodplain and Instream Habitat Restoration at San Geronimo Creek:
USGS 7.5 minute Topographic Map. San Geronimo Quadrangle



San Geronimo Valley Landowner Assistance Program- Restoring Coho Habitat

2017

Introduction:

The Marin Resource Conservation District will implement the San Geronimo Landowner Assistance Program – Restoring Coho Habitat project. The project was selected from a list of 20 potential sites that were then narrowed down to a list of ten priority projects after three days of technical team review, which included representatives from CDFW, NMFS, Regional Water Quality Control Board, Coastal Conservancy, MMWD and County of Marin Public Works. The project includes the creation of an alcove with inset floodplains for off-channel rearing, and the installation of large wood, rootwads, biotechnical bank stabilization techniques, and riparian planting which will require materials that are listed in the 'Materials' section of the proposal.

1. The project is necessary because the San Geronimo Creek Salmon Enhancement Plan identified lower San Geronimo Creek as one of the reaches in greatest need of rehabilitation. The project takes place on private property and this particular homeowner has remained dedicated and patiently persistent to this project for over six years now and acts as a leading example, knowing the community is watching closely. Ecologically, the Lagunitas Creek Watershed has been identified by National Marine Fisheries Service as one of the most important waterways left for wild Central California coho salmon, and hosts a robust population of steelhead and a small population of Chinook salmon as well.

2. The project will transform the lower 100 ft. of Cintura Creek from a narrow, incising channel with vertical banks laden with blackberry to a wide alcove of inset floodplains off the mainstem filled with large wood, rootwads and shaded by willow, alder, and other native riparian vegetation. This installation will provide high flow refugia for adult, juvenile, and newly emergent salmonids in addition to native riparian canopy cover. This project also includes additional habitat features in the mainstem of San Geronimo Creek such as large wood pieces and rootwads anchored to boulders.

3. An Existing Conditions Report for San Geronimo Creek prepared by Stillwater Sciences in 2009 was developed which provides the scientific basis for recommendations in the San Geronimo Valley Salmon Enhancement Plan (Feb 2010). The plan focuses on protection and restoration of coho salmon habitat. Many of the recommendations in the Salmon Enhancement Plan refer to actions that private property owners can take on their land, including installing habitat restoration projects. The project includes two main objectives, to provide a demonstration restoration project to build capacity for San Geronimo Valley residents wanting to conduct salmonid habitat enhancement and to install critical coho salmon summer-winter habitat, addressing the key limiting factor for the watershed. This will be carried out by the installation of large wood, rootwads, inset floodplains, an alcove and the overall enhancement of the riparian corridor via erosion control and native plantings. The project provides highly beneficial habitat for coho salmon by addressing a KEY limiting factor that was highlighted in a limiting factors analysis for salmonids in the watershed.

4. Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured.

5. All habitat improvement will follow techniques in the California Stream Habitat Restoration Manual (list appropriate section of manual)

Objective(s):

The objectives of this project include:

1. Providing a demonstration restoration project to build capacity for San Geronimo Valley residents wanting to conduct salmonid habitat enhancement.
2. Install critical coho salmon summer-winter habitat, addressing the key limiting factor for the watershed.

Project Description:

Location:

The San Geronimo Valley is in West Marin County, in the headwaters of Lagunitas Creek, upstream of the Ink Wells at Samuel P. Taylor State Park. The project site is located along lower San Geronimo Creek, at the confluence of San Geronimo and Cintura Creeks, 0.83 miles upstream of confluence with Lagunitas Creek.
The project site is located at

38.01222800 N Lat. : -122.70084000 W Long.

Project Set Up:

The project team includes partners who have extensive experience working on restoration and working in partnership on previous projects. The Marin RCD will be the lead coordinating agency.

Marin RCD Urban Streams Program Manager:
The Urban Streams Program Manager will be responsible for pre-project planning, preparing permit applications, scheduling meetings or site visits, conducting regular site visits during and after construction, writing necessary press releases, preparing RCD Board packets and presentations, grant contracting, preparation of Requests for Cost Proposals, preparation of reports to agencies, general contract management, subcontractor contracts, landowner coordination and post-project monitoring. Urban Streams Program Manager can also be available to serve as a biological monitor, as needed during construction.

Construction Manager:
A Construction Manager, provided by Gold Ridge RCD, will work with the Urban Streams Program Manager to monitor Construction Subcontractors on a daily

basis, inform the Licensed Engineer of progress or problems and complete a post-construction report.

Licensed Engineer(s):
Licensed Engineers will work with the Construction Manager to conduct periodic engineering site inspections per construction schedules identified in bid documents, provide necessary oversight on specific construction days, submit 'As Built' designs post project-construction and is the project engineer/designer from Stillwater Sciences.

Subcontractors:
'Subcontractors' includes heavy equipment operator and laborers. The subcontractors will be hired to construct the project. Additionally, the riparian planting and erosion control actions are anticipated to be completed by the California Conservation Corps and/or the North Bay Conservation Corps.

Certified Biologist:
A Certified Biologist will be subcontracted to conduct surveys for listed species in the project area according to permitting requirements, and complete a Post-Project Biological Survey Report.

Executive Director:
Oversees hiring of subcontractors, reviews and negotiates all contracts, reviews all reports to agencies and all permit applications. Supervises the Urban Streams Program Manager and Bookkeeper.

Bookkeeper:
Bookkeeping will be completed by RCD accountant, responsible for tracking all grant expenses, preparation of financials to the RCD Board, preparing invoices and managing all matters related to audits and budgeting.

RCD Board of Directors:
RCD Board of Directors will conduct public meetings, award contracts, authorize payments to subcontractors upon successful completion of projects, and continue to support landowners in the Lagunitas Watershed to restore salmonid habitat on their properties.

Landowner:
Landowner volunteers to replace plants as needed and conduct routine maintenance during the contract period as in-kind services. Native riparian plants used for replacement will be donated by the Point Reyes Seashore native plant nursery where the genetics of all plants are from within the Lagunitas Creek watershed.

Materials:
Materials include:

- Total Station Rental (day)
- Silt Fence (foot)- to capture sediment from impairing water quality
- Exclusion Fence (foot)- to protect newly planted and seeded erosion control and riparian enhancement areas
- Large wood (piece) – instream habitat enhancement feature
- Large wood anchoring supplies (per site) – to hold logs in place
- Anchoring Equipment rental (per site) – to hold logs in place
- Boulders/ Riprap (cubic yard) – bank stability and log anchoring
- Coir Log (foot) – erosion control
- Erosion Fabric (square foot) – erosion control
- Native Erosion Control Seed Mix (pound) – erosion control
- Native Riparian Plants/Shrubs/Trees – erosion control
- Rice Straw (per bale) – erosion control
- Irrigation (per site) – irrigate seeds and new plants/trees planted
- CDFW 1602 Permit – to conduct project with regulatory compliance
- Marin Creek Permit – to conduct project with regulatory compliance

Tasks: List all tasks to be accomplished to complete the goals and describe how tasks will be achieved.

Task 1: Project Management and Administration
RCD staff will work with its Board of Directors, funder, subcontractors, and landowners to complete the following deliverables:

- Subtask 1.1 Resolution from RCD Board
  Marin RCD Executive Director will work with RCD BOD to sign a resolution agreeing to enter a grant agreement

- Subtask 1.2 Contract with CDFW
  Marin RCD will work with CDFW to execute agreement to construct one project on San Geronimo Creek (not billable)

- Subtask 1.3 One (1) Landowner Authorization Agreement – Maintenance and Monitoring Agreement.
  Sign and submit landowner agreement to the Grant Manager for approval before construction begins. Preapproved landowner agreement templates will be used.

- Subtask 1.4 Request for Cost Proposals
  Subcontractor Selection and Scope of Work/Contracts: Executive Director and Urban Streams Program Manager will work together to prepare

Requests for Cost Proposal packets, organize bid tours and award contracts according to Marin RCD's Procurement Procedures.

- Subtask 1.5 Construction Subcontractor and Subcontractor Contracts
  Executive Director and Urban Streams Program Manager will work together to prepare contracts for each subcontractor.

- Subtask 1.6 Payment of Subcontractor Invoices
  Marin RCD Bookkeeper will submit timely payments to each subcontractor.

- Subtask 1.7 Invoices to CDFW
  Marin RCD Bookkeeper will submit monthly invoices which will accompany progress reports. The invoice will reflect charges for the work completed during the reporting period covered by progress reports. Bookkeeper will prepare all invoices for annual audit.

Task 2: Reports RCD staff will be preparing reports and bringing results to the RCD BOD meetings. Reports will be provided to the CDFW grant manager on a monthly basis.

- Subtask 2.1 Monthly Progress Reports
  The progress reports shall provide a brief description of the work performed, accomplishments during the month, milestones achieved, monitoring results, problems encountered in the performance of the work, subcontractor activities and expenditures.

- Subtask 2.2 Annual Report
  Urban Streams Program Manager will write an annual report for each of the three years of the contracted period with the third year serving as the Final Report.

- Subtask 2.3 Draft Final Report
  Urban Streams Program Manager will write a draft final report for review and comment that will include and address a summary of the Project, describing Project's purpose, scope and goals, activities completed, and partners involved, a report of all monitoring and management practices, Project's performance, including benefits, successes and shortcomings, lessons learned in carrying out the Project, project funding and applicable follow-up activities.

- Subtask 2.4 Final Report with Final Budget
  Urban Streams Program Manager will write the Final Report and Final Budget, incorporating comments made by project partners and the Grant

Manager on the Draft Final Report. Submit two (2) hardcopies and an electronic copy of the final report and budget.

- Task 3: Permits
  RCD staff will work directly with CDFW, Marin County's Dept. of Public Works and Community Development Agency in order to acquire the necessary permits to construct the project.

- Subtask 3.1 Submit 1602 Streambed Alteration Permit
  Urban Streams Program Manager will submit the application and secure signed Fish & Game Code Section 1600 et seq. Streambed Alteration Agreement from the California Department of Fish & Wildlife (CDFW) to the Grant Manager before construction begins. Urban Streams Program Manager will work with regulators to incorporate revisions and resubmit to appropriate agencies.

- Subtask 3.2 Marin County Creek Permit
  Urban Streams Program Manager will submit necessary paperwork to Marin County's Department of Public Works, Land Development Division in order to obtain the Creek Permit required for the project then will submit the County signed environmental permit to the Grant Manager before construction begins. Urban Streams Program Manager will work with regulators to incorporate revisions and resubmit to appropriate agencies.

- Subtask 3.3 Receive and distribute completed permits
  Once permits have been secured, the Urban Streams Program Manager will submit them to the Grant Manager, landowners and Construction Subcontractors.

- Task 4: Construction
  The Urban Streams Program Manager, the Construction Manager, the Engineer, Certified Biologist and Subcontractors will work together to carry out the following deliverables:

- Subtask 4.1 Certified Biologist(s) will conduct the following; conduct a training for construction personnel about sensitive resources and perform biological resources protection during construction, conduct preconstruction CRLF surveys (one daytime; one nighttime) for the project site.

- Subtask 4.2 Installation of Salmonid Habitat Enhancement Project
  Construction Subcontractor will install 18 logs, 9 rootwads (2 individual rootwads and 7 that are attached to the logs) anchored by a series of boulders throughout the project site. The project shall enhance and create salmonid habitat; and reduce sediment and shall be based on pre-accepted

design plans by CDFW Engineer. Construction Manager will submit a Post-Construction Report for the project.

- Subtask 4.3 Soil Bio-engineering structures at project site
  Construction Subcontractor will conduct willow staking with coir roll and erosion control blanket at project site.

- Subtask 4.4 Revegetation with at least 74 native plants/shrubs/trees that includes at least eleven (11) native riparian species among the project site: Construction Subcontractor(s) will plant the appropriate species and apply the erosion control native seed mix of nine (9) species selected by Project Engineer, and install irrigation systems.

- Subtask 4.5 Site Clean-Up
  Construction Subcontractor(s) will be held responsible to clean the project site, leaving it better than they found it and the Urban Streams Program Manager will review and confirm.

- Task 5: Post-Project Monitoring
  Post-project maintenance and monitoring provisions will be included in the landowner authorization agreement, identified as a deliverable in Task 1. This landowner maintenance and authorization agreement with the Marin RCD spans a ten (10) year period, ensuring a successful project for at least a decade. However, during the contract period, the following deliverables will be provided:

- Subtask 5.1 One (1) As-Built Design by project engineer
  Project Engineer will complete an As-Built Design for the project, post-construction.

- Subtask 5.2 Post-Project Biological Survey Reports
  Certified Biologist will report on pre-construction sweeps, construction crew training, and CRLF surveys.

- Subtask 5.3 Photos: before, during and after for the project site
  Urban Streams Program Manager and Construction Manager will establish photograph points at the project site and take pre-construction, during construction and post-construction photos of the site then will submit photos to Grant Manager.

- Subtask 5.4 Long Term Maintenance at the project site for grant period will be included in Landowner Maintenance and Monitoring Agreement listed in Task 1 which specifically includes a ten (10) year maintenance agreement with the Marin RCD. The Urban Streams Program Manager will check in

with the landowner to ensure that they are fulfilling their agreements on a biennial basis. Their volunteer labor and replacing plants will be counted as in-kind match.

- Subtask 5.5 CEQA-required Permit Coordination Program annual post-project monitoring report to regulatory agencies per Marin RCD's Riparian Zone Monitoring Plan. The Urban Streams Program Manager will conduct field monitoring and site assessment at the project site over the two year grant period per the approved Riparian Zone Monitoring Plan (RZMP). The RZMP includes a description of the monitoring objectives, types of constituents to be monitored, and the sampling location frequency/schedule for the monitoring activities.

Deliverables: Project specific reporting metrics.

Task 1: Project Management and Administration:
RCD staff will work with its Board of Directors, funder, subcontractors, and landowners to complete the following deliverables.

- Resolution from RCD Board • Grant Agreement with CDFW
- One (1) Landowner Authorization Agreement: Maintenance and Monitoring Agreement • Request for Cost Proposals
- Construction and Subcontractor Contracts
- Monthly Invoices to CDFW

- Task 2: Reports:
- RCD staff will be preparing reports and bringing results to the RCD BOD meetings. Reports will be provided to the CDFW grant manager.
- Monthly Progress Reports
- Annual Report
- Draft Final Report
- Final Report with Final Budget

- Task 3: Permits:
- RCD staff will work directly with CDFW and Marin County's Dept. of Public Works in order to acquire the necessary permits.
- 1602 Streambed Alteration Agreement
- Marin County Creek Permit

- Task 4: Construction:
- The Urban Streams Program Manager, the Construction Manager, the Engineer, Certified Biologist and construction subcontractors will work together to carry out the following deliverables:

- The Post Project Biological Survey Report identified in Task 5 will describe the Pre-construction CRLF surveys (one daytime; one nighttime) for the project site
- Photos showing the installation of 18 logs, 9 rootwads (2 individuals and 7 that are attached to the logs) anchored by a series of boulders
- Photos demonstrating soil bio-engineering structures at project site: willow staking with coir roll and erosion control blanket
- Photos demonstrating revegetation with at least 74 native plants/shrubs/trees and 7.405 lbs of native erosion control riparian seed mix within the project site

- Task 5: Post-Project Monitoring:
- Post-project maintenance and monitoring provisions will be included in the landowner authorization agreement, identified as a deliverable in Task 1. During the contract period, the following deliverables will be provided:
- One (1) As-Built Designs by project engineer
- Post-Project Biological Survey Reports describing pre-construction sweeps, construction crew training, and CRLF surveys
- Photos: Project photographs before, during and after by Urban Streams Program Manager and Construction Manager
- Long Term Maintenance for ten (10) years will be included in the Landowner Maintenance and Monitoring Agreement listed in Task 1 and to be supervised by Urban Streams Program Manager
- Results from CEQA-required Permit Coordination Program annual post-project monitoring report to regulatory agencies per Marin RCD's Riparian Zone Monitoring Plan

Timelines:

Task 1: Project Management and Administration
RCD staff will work with its Board of Directors, funder, subcontractors, subcontractors, and landowners to complete the following deliverables.

- Subtask 1.1 Resolution from RCD Board (June 13, 2018)
- Subtask 1.2 Contract with CDFW (July 1, 2018)
- Subtask 1.3 One (1) Landowner Authorization Agreement: Maintenance and Monitoring Agreement (August 15, 2018)
- Subtask 1.4 Request for Cost Proposals: Subcontractor Selection and Scope of Work/Contracts (September 30, 2018)
- Subtask 1.5 Construction Subcontractor and Subcontractor Contracts (November 30, 2018)
- Subtask 1.6 Payment of Subcontractor Invoices (due monthly for subcontractors)
- Subtask 1.7 Invoices to CDFW (due monthly to CDFW)

Task 2: Reports RCD staff will be preparing reports and bringing results to the BOD meetings for their approval. Reports will be provided to the CDFW grant manager.

- Subtask 2.1 Progress Reports (due monthly)
- Subtask 2.2 Annual Report (due annually)
- Subtask 2.3 Draft Final Report (due sixty (60) days prior to end of grant term)
- Subtask 2.4 Final Report with Final Budget (report due thirty (30) days prior to end of grant term)

Task 3: Permits RCD staff will work directly with CDFW, Marin County's Dept. of Public Works and Planning Agency in order to acquire the necessary permits.

- Subtask 3.1 Submit 1602 Streambed Alteration Permit (December, 2018)
- Subtask 3.2 Submit Marin County Creek Permit per Project, revise according to agency comments (January, 2019)
- Subtask 3.3 Receive and distribute completed permits (March, 2019)

Task 4: Construction (Begin August 1, 2019- End by October 15, 2019 [at the latest])
The Urban Streams Program Manager, the Construction Manager, the Engineer, Certified Biologist and Subcontractors will work together to carry out the following deliverables within ONE construction season:

- Subtask 4.1 Certified Biologist(s) will conduct the following; pre-construction CRLF surveys (one daytime; one nighttime)
- Subtask 4.2 Installation of 18 logs, 9 rootwads (2 individuals and 7 that are attached to the logs) anchored by a series of boulders
- Subtask 4.3 Soil Bio-engineering structures: willow staking with coir roll and erosion control blanket
- Subtask 4.4 Revegetation with at least 74 native riparian plants/shrubs/trees and native erosion control seed mix (7.405 lbs)
- Subtask 4.5 Site Clean-Up

Task 5: Post-Project Monitoring (Begin October 16, 2019- End June 30, 2020) Post-project maintenance and monitoring provisions will be included in the landowner authorization agreement for a ten (10) year period, identified as a deliverable in Task 1. During the contract period, the following deliverables will be provided:

- Subtask 5.1 One (1) As-Built Design by project engineer
- Subtask 5.2 Post-Project Biological Survey Report describing pre-construction sweeps, construction crew training and CRLF surveys
- Subtask 5.3 Photos: before, during and after for project site
- Subtask 5.4 Long Term Maintenance at project site for grant period to be included in Landowner Maintenance and Monitoring Agreements listed in

Task 1 and to be supervised by Urban Streams Program Manager with plants replaced as needed and invasives removed as needed

- Subtask 5.5 CEQA-required Permit Coordination Program annual post-project monitoring report to regulatory agencies per Marin RCD's Riparian Zone Monitoring Plan

Additional Requirements:

1. The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

2. No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

3. All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

4. During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

5. The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

a. Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.

b. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

c. The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.

d. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

e. USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW.

6. Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Managers. All habitat improvements will follow techniques described in the California Salmonid Stream Habitat Restoration Manual.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (San Geronimo (3812216) OR Point Reyes NE (3812227) OR Petaluma (3812226) OR Petaluma River (3812225) OR Inverness (3812217) OR Novato (3812215) OR Double Point (3712287) OR Bolinas (3712286) OR San Rafael (3712285))

Possible species within the San Geronimo quadrangle and surrounding quads for 725575 San Geronimo Valley Landowner Assistance Program- Restoring Coho Habitat, T02N R08W S14, Marin County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
alkali milk-vetch *Astragalus tener var. tener*	PDFAB0F8R1	None	None	G2T2	S2	1B.2
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
Baker's larkspur *Delphinium bakeri*	PDRAN0B050	Endangered	Endangered	G1	S1	1B.1
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	PDPLM0C0E1	None	None	G4T2	S2	1B.1
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S2	
bent-flowered fiddleneck *Amsinckia lunaris*	PDBOR01070	None	None	G2G3	S2S3	1B.2
black swift *Cypseloides niger*	ABNUA01010	None	None	G4	S2	SSC
Blasdale's bent grass *Agrostis blasdalei*	PMPOA04060	None	None	G2	S2	1B.2
blue coast gilia *Gilia capitata ssp. chamissonis*	PDPLM040B3	None	None	G5T2	S2	1B.1
bluff wallflower *Erysimum concinnum*	PDBRA160E3	None	None	G3	S2	1B.2
Bolander's water-hemlock *Cicuta maculata var. bolanderi*	PDAPI0M051	None	None	G5T4	S2	2B.1
bumblebee scarab beetle *Lichnanthe ursina*	IICOL67020	None	None	G2	S2	
burrowing owl *Athene cunicularia*	ABNSB10010	None	None	G4	S3	SSC
California black rail *Laterallus jamaicensis coturniculus*	ABNME03041	None	Threatened	G3G4T1	S1	FP
California freshwater shrimp *Syncaris pacifica*	ICMAL27010	Endangered	Endangered	G2	S2	
California giant salamander *Dicamptodon ensatus*	AAAAH01020	None	None	G3	S2S3	SSC
California red-legged frog *Rana draytonii*	AAABH01022	Threatened	None	G2G3	S2S3	SSC
California Ridgway's rail *Rallus obsoletus obsoletus*	ABNME05016	Endangered	Endangered	G5T1	S1	FP

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
California tiger salamander *Ambystoma californiense*	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
coast lily *Lilium maritimum*	PMLIL1A0C0	None	None	G2	S2	1B.1
Coastal Brackish Marsh *Coastal Brackish Marsh*	CTT52200CA	None	None	G2	S2.1	
coastal marsh milk-vetch *Astragalus pycnostachyus var. pycnostachyus*	PDFAB0F7B2	None	None	G2T2	S2	1B.2
Coastal Terrace Prairie *Coastal Terrace Prairie*	CTT41100CA	None	None	G2	S2.1	
coastal triquetrella *Triquetrella californica*	NBMUS7S010	None	None	G2	S2	1B.2
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	PDAST4R065	None	None	G5T1T2	S1S2	1B.2
Contra Costa goldfields *Lasthenia conjugens*	PDAST5L040	Endangered	None	G1	S1	1B.1
dark-eyed gilia *Gilia millefoliata*	PDPLM04130	None	None	G2	S2	1B.2
Diablo helianthella *Helianthella castanea*	PDAST4M020	None	None	G2	S2	1B.2
elongate copper moss *Mielichhoferia elongata*	NBMUS4Q022	None	None	G5	S4	4.3
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
fragrant fritillary *Fritillaria liliacea*	PMLIL0V0C0	None	None	G2	S2	1B.2
Franciscan onion *Allium peninsulare var. franciscanum*	PMLIL021R1	None	None	G5T1	S1	1B.2
Franciscan thistle *Cirsium andrewsii*	PDAST2E050	None	None	G3	S3	1B.2
golden larkspur *Delphinium luteum*	PDRAN0B0Z0	Endangered	Rare	G1	S1	1B.1
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
great egret *Ardea alba*	ABNGA04040	None	None	G5	S4	
hairless popcornflower *Plagiobothrys glaber*	PDBOR0V0B0	None	None	GH	SH	1A
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Humboldt Bay owl's-clover *Castilleja ambigua var. humboldtiensis*	PDSCR0D402	None	None	G4T2	S2	1B.2
Koch's cord moss *Entosthodon kochii*	NBMUS2P050	None	None	G1	S1	1B.3
longfin smelt *Spirinchus thaleichthys*	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Lyngbye's sedge *Carex lyngbyei*	PMCYP037Y0	None	None	G5	S3	2B.2
Marin blind harvestman *Calicina diminua*	ILARAU8040	None	None	G1	S1	
Marin checker lily *Fritillaria lanceolata var. tristulis*	PMLIL0V0P1	None	None	G5T2	S2	1B.1
Marin checkerbloom *Sidalcea hickmanii ssp. viridis*	PDMAL110A4	None	None	G3TH	SH	1B.1
Marin County navarretia *Navarretia rosulata*	PDPLM0C0Z0	None	None	G2	S2	1B.2
Marin elfin butterfly *Callophrys mossii marinensis*	IILEPE2207	None	None	G4T1	S1	
Marin hesperian *Vespericola marinensis*	IMGASA4140	None	None	G2	S2	
Marin knotweed *Polygonum marinense*	PDPGN0L1C0	None	None	G2Q	S2	3.1
Marin manzanita *Arctostaphylos virgata*	PDERI041K0	None	None	G2	S2	1B.2
Marin western flax *Hesperolinon congestum*	PDLIN01060	Threatened	Threatened	G1	S1	1B.1
marsh microseris *Microseris paludosa*	PDAST6E0D0	None	None	G2	S2	1B.2
Mason's ceanothus *Ceanothus masonii*	PDRHA04200	None	Rare	G1	S1	1B.2
Mason's lilaeopsis *Lilaeopsis masonii*	PDAPI19030	None	Rare	G2	S2	1B.1
mimic tryonia (=California brackishwater snail) *Tryonia imitator*	IMGASJ7040	None	None	G2	S2	
minute pocket moss *Fissidens pauperculus*	NBMUS2W0U0	None	None	G3?	S2	1B.2
monarch - California overwintering population *Danaus plexippus pop. 1*	IILEPP2012	None	None	G4T2T3	S2S3	
Mt. Tamalpais bristly jewelflower *Streptanthus glandulosus ssp. pulchellus*	PDBRA2G0J2	None	None	G4T2	S2	1B.2
Mt. Tamalpais manzanita *Arctostaphylos montana ssp. montana*	PDERI040J5	None	None	G3T3	S3	1B.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Mt. Tamalpais thistle *Cirsium hydrophilum var. vaseyi*	PDAST2E1G2	None	None	G2T1	S1	1B.2
Mt. Vision ceanothus *Ceanothus gloriosus var. porrectus*	PDRHA040F7	None	None	G4T2	S2	1B.3
Napa false indigo *Amorpha californica var. napensis*	PDFAB08012	None	None	G4T2	S2	1B.2
Nicasio ceanothus *Ceanothus decornutus*	PDRHA04440	None	None	G1	S1	1B.2
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
North Coast phacelia *Phacelia insularis var. continentis*	PDHYD0C2B1	None	None	G2T2	S2	1B.2
North Coast semaphore grass *Pleuropogon hooverianus*	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Northern Coastal Salt Marsh *Northern Coastal Salt Marsh*	CTT52110CA	None	None	G3	S3.2	
Northern Maritime Chaparral *Northern Maritime Chaparral*	CTT37C10CA	None	None	G1	S1.2	
Northern Vernal Pool *Northern Vernal Pool*	CTT44100CA	None	None	G2	S2.1	
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Opler's longhorn moth *Adela oplerella*	IILEE0G040	None	None	G2	S2	
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
perennial goldfields *Lasthenia californica ssp. macrantha*	PDAST5L0C5	None	None	G3T2	S2	1B.2
Petaluma popcornflower *Plagiobothrys mollis var. vestitus*	PDBOR0V0Q2	None	None	G4?TX	SX	1A
pink sand-verbena *Abronia umbellata var. breviflora*	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Pitkin Marsh lily *Lilium pardalinum ssp. pitkinense*	PMLIL1A0H3	Endangered	Endangered	G5T1	S1	1B.1
Point Reyes checkerbloom *Sidalcea calycosa ssp. rhizomata*	PDMAL11012	None	None	G5T2	S2	1B.2
Point Reyes horkelia *Horkelia marinensis*	PDROS0W0B0	None	None	G2	S2	1B.2
Point Reyes mountain beaver *Aplodontia rufa phaea*	AMAFA01012	None	None	G5T2	S2	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Point Reyes salty bird's-beak *Chloropyron maritimum ssp. palustre*	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
Ricksecker's water scavenger beetle *Hydrochara rickseckeri*	IICOL5V010	None	None	G2?	S2?	
robust walker *Pomatiopsis binneyi*	IMGASJ9010	None	None	G1	S1	
round-headed Chinese-houses *Collinsia corymbosa*	PDSCR0H060	None	None	G1	S1	1B.2
round-leaved filaree *California macrophylla*	PDGER01070	None	None	G4	S4	1B.2
Sacramento splittail *Pogonichthys macrolepidotus*	AFCJB34020	None	None	GNR	S3	SSC
saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	ABPBX1201A	None	None	G5T3	S3	SSC
salt-marsh harvest mouse *Reithrodontomys raviventris*	AMAFF02040	Endangered	Endangered	G1G2	S1S2	FP
San Bruno elfin butterfly *Callophrys mossii bayensis*	IILEPE2202	Endangered	None	G4T1	S1	
San Francisco Bay Area leaf-cutter bee *Trachusa gummifera*	IIHYM80010	None	None	G1	S1	
San Francisco Bay spineflower *Chorizanthe cuspidata var. cuspidata*	PDPGN04081	None	None	G2T1	S1	1B.2
San Francisco forktail damselfly *Ischnura gemina*	IIODO72010	None	None	G2	S2	
San Francisco owl's-clover *Triphysaria floribunda*	PDSCR2T010	None	None	G2?	S2?	1B.2
San Pablo song sparrow *Melospiza melodia samuelis*	ABPBXA301W	None	None	G5T2	S2	SSC
sandy beach tiger beetle *Cicindela hirticollis gravida*	IICOL02101	None	None	G5T2	S2	
Sanford's arrowhead *Sagittaria sanfordii*	PMALI040Q0	None	None	G3	S3	1B.2
Santa Cruz microseris *Stebbinsoseris decipiens*	PDAST6E050	None	None	G2	S2	1B.2
Santa Cruz tarplant *Holocarpha macradenia*	PDAST4X020	Threatened	Endangered	G1	S1	1B.1
seaside bittercress *Cardamine angulata*	PDBRA0K010	None	None	G5	S1	2B.1
Serpentine Bunchgrass *Serpentine Bunchgrass*	CTT42130CA	None	None	G2	S2.2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
silver-haired bat *Lasionycteris noctivagans*	AMACC02010	None	None	G5	S3S4	
small groundcone *Kopsiopsis hookeri*	PDORO01010	None	None	G4?	S1S2	2B.3
snowy egret *Egretta thula*	ABNGA06030	None	None	G5	S4	
soft salty bird's-beak *Chloropyron molle ssp. molle*	PDSCR0J0D2	Endangered	Rare	G2T1	S1	1B.2
Sonoma alopecurus *Alopecurus aequalis var. sonomensis*	PMPOA07012	Endangered	None	G5T1	S1	1B.1
Sonoma spineflower *Chorizanthe valida*	PDPGN040V0	Endangered	Endangered	G1	S1	1B.1
steelhead - central California coast DPS *Oncorhynchus mykiss irideus*	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
Swainson's hawk *Buteo swainsoni*	ABNKC19070	None	Threatened	G5	S3	
swamp harebell *Campanula californica*	PDCAM02060	None	None	G3	S3	1B.2
Tamalpais jewelflower *Streptanthus batrachopus*	PDBRA2G050	None	None	G2	S2	1B.3
Tamalpais lessingia *Lessingia micradenia var. micradenia*	PDAST5S063	None	None	G2T2	S2	1B.2
Tamalpais oak *Quercus parvula var. tamalpaisensis*	PDFAG051Q3	None	None	G4T2	S2	1B.3
thin-lobed horkelia *Horkelia tenuiloba*	PDROS0W0E0	None	None	G2	S2	1B.2
Thurber's reed grass *Calamagrostis crassiglumis*	PMPOA17070	None	None	G3Q	S2	2B.1
Tiburon buckwheat *Eriogonum luteolum var. caninum*	PDPGN083S1	None	None	G5T2	S2	1B.2
Tiburon paintbrush *Castilleja affinis var. neglecta*	PDSCR0D013	Endangered	Threatened	G4G5T1T2	S1S2	1B.2
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Tomales isopod *Caecidotea tomalensis*	ICMAL01220	None	None	G2	S2S3	
Tomales roach *Lavinia symmetricus ssp. 2*	AFCJB19022	None	None	G4T2T3	S2	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
two-fork clover *Trifolium amoenum*	PDFAB40040	Endangered	None	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Ubick's gnaphosid spider *Talanites ubicki*	ILARA98030	None	None	G1	S1	
water star-grass *Heteranthera dubia*	PMPON03010	None	None	G5	S2	2B.2
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western leatherwood *Dirca occidentalis*	PDTHY03010	None	None	G2	S2	1B.2
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western red bat *Lasiurus blossevillii*	AMACC05060	None	None	G5	S3	SSC
western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
white-rayed pentachaeta *Pentachaeta bellidiflora*	PDAST6X030	Endangered	Endangered	G1	S1	1B.1
white-tailed kite *Elanus leucurus*	ABNKC06010	None	None	G5	S3S4	FP
woolly-headed gilia *Gilia capitata ssp. tomentosa*	PDPLM040B9	None	None	G5T1	S1	1B.1
yellow warbler *Setophaga petechia*	ABPBX03010	None	None	G5	S3S4	SSC
northern spotted owl *Strix occidentalis caurina*	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 135

Project Location Topographic Map

Skunk Train Coho Sediment Reduction and Fish Passage Improvement Project

2017

Introduction:

Trout Unlimited, Inc. proposes to address one of the highest fish passage priorities associated with the California Western Railway (CWR) in the Noyo River watershed. The proposed site was identified in the CDFW funded 2013 assessment as inhibiting fish passage for both adult salmonids and all age classes of juveniles. The project intends to restore access for adult and juvenile salmonids to habitat upstream of the upper Noyo River railway crossing, and to reduce the risk of sediment delivery from fill failure while providing a safe railway. This will be accomplished by replacing the current barrier with a new structure that meets fish passage requirements defined by CDFW and NMFS; is based on current design standards; and, can convey a 100-yr flood event with associated sediment and large wood. In addition to the CDFW Coho Salmon recovery plan, two additional recovery plans include tasks focused on restoring passage at barriers associated with the CWR; they include, the Central California Coast Coho Salmon Recovery Plan (NMFS, 2012) and the Multispecies Recovery Plan for California Coastal Chinook Salmon, Northern California Steelhead, and Central California Coast Steelhead (NMFS, 2016). Therefore the proposed project will benefit three species of salmonids, CCC Coho Salmon, NC Steelhead Trout, and to a lesser extent CCC Chinook salmon.

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured.

Objective(s):

The objective of the project is to restore access for adult and juvenile salmonids to habitat upstream of the upper Noyo River railway crossing and to reduce the risk of sediment delivery from fill failure while providing a safe railway. This will be accomplished by replacing the current barrier with a new structure that meets fish passage requirements defined by CDFW and NMFS; is based on current design standards; and, can convey a 100-yr flood event with associated sediment and large wood.

Project Description:

Location:

The Skunk Train rail line extends approximately 40 miles from Fort Bragg to Willits, CA in Mendocino County. From west to east, the rail line runs through Pudding Creek for 3.5 miles, then along the Noyo River for 33 miles, and then into Lower Davis and Broaddus Creeks in the Upper Eel River on the eastern end for about 3.5 miles. The project is located on the Noyo River, tributary to the Pacific Ocean; Township 18N, Range 14 W, and Sections 17 and 8, of the Burbeck 7.5 Minute US Geological Survey (USGS) Quandrangle map.

Project Set Up:

An interdisciplinary Project Team is assembled for this project primarily consisting

of Trout Unlimited, Michael Love & Associates, Inc. (MLA), Mendocino Railway and AECOM. It is understood that while Mendocino Railway and MLA will contract directly with Trout Unlimited, AECOM will be under contract with the Mendocino Railway for completion of their work. Additionally, TU will contract with professional biologists, as necessary, to assist fish relocation.

Materials:

TU PROJECT MANAGEMENT & OUTREACH– purchased by the applicant: includes but is not limited to external printing costs for reports and permits as well as final full size designs for the field (2 copies @ $200/each); postage; office and field supplies required for the project; and mileage and other travel expenses associated with commuting from the Fort Bragg TU Office to the Willits Depot. These materials will be used during project implementation, for meetings, and for reporting purposes. ENGINEERING OVERSIGHT – purchased by the subcontractor(s): Total Station Rental; Current Meter; as well as 17 mileage and other travel expenses associated with commuting from the respective subcontractor(s) office to the project site. These materials will be used over the course of project implementation, and for the purposes of conducting post project monitoring. CONSTRUCTION – purchased by the subcontractor(s): Super Core Plate Arch (50' Span); PC Reinforced Concrete Arch Footing (3x8 module and 4 x10 module); MSE Wing Walls, Cable Railing; Embankment materials; Engineered Fill; Geosynthetic Fabric Slope Reinforcement; ½ ton Rock Slope Protection (RSP) - Method B; Channel Grade Control Rock; Bioengineering and Planting materials; Erosion Control materials (e.g. straw, seed, etc.), Heavy Equipment; mileage and other travel expenses. Additional costs include those related to preparing and managing a Storm Water Pollution Prevention Plan (SWPPP) (if required) and for Protection (RWP) Training as well as equipment mobilization. These materials and equipment will be used to complete construction activities. Additional details regarding the materials and how they will be used can be found in the Final Designs and Basis of Design Report, included in the Supplementary Documents. FISH EXCLUSION/RELOCATION - purchased by the subcontractor - electrofishing gear to conduct fish relocations; 3" centrifugal pump for drawing down larger pools; mileage and other travel expenses associated with commuting from the RTA office in McKinleyville, CA to the project site.

Tasks:

Task 1 Grant Oversight: Trout Unlimited personnel will provide all contracting oversight and administration as pursuant to grant and regulatory guidelines. This includes but is not limited to obtaining permits, securing contracts, scheduling, implementation oversight, invoicing, reporting, and agency and landowner communications. Upon Final execution of the Grant and prior to receiving a Final Notice to Proceed, TU personnel will deliver the landowner access agreements, subcontracts, and assure all permits are finalized. Additionally, the TU Conservation Grants Coordinator will be available to assist with invoicing and

vendor payment. This task will occur throughout the life of the project. Materials Required: Field/office supplies, postage, and travel expenses; as summarized in the Materials section under TU Project Management and Outreach heading.

Task 2: Contractor Selection: AECOM will assist the Skunk Train management, TU and MLA with the process of selecting a construction contractor to execute the proposed works. A qualifications based process is required to ensure that the selected company has the skills, personnel and understanding of the specific constraints of this project necessary to successfully execute the require works within the available timeframe. The first step will be to solicit interest from a select set of contractors located within the project geographic area and skilled in the crafts required for the anticipated construction activities. A list has been compiled based on past experience with the railroad and/or the manufacturer of the track support structure systems being used [SuperCor Arch and VistaWall MSE wall]. The select set of contractors listed in the draft RFQ (Supplementary Documents), included in this proposal, and others that may be identified prior to the issuance of the Request for Qualifications (RFQ), will be required to produce verifiable evidence of their qualifications and experience in order to proceed to the next step in the process. 18 Once qualifications are confirmed, the shortlisted contractors will be requested to enter into a Preconstruction Services Agreement [PSA]. Under this agreement, preparation of a Project Execution Plan [PEP] which demonstrates how they will complete the work required within both the temporal and environmental constraints that govern the project. The review and vetting of the PEP from the shortlisted contractors will result in the selection of the most qualified contractor. The selected contractor will be required to prepare a cost estimate for the works described in their PEP. The estimate will be reviewed in detail with the proposed schedule. Once an agreement is reached on the cost and schedule, an agreement will be signed and a Notice to Proceed will be issued. Materials Required: Field/office supplies, postage, and travel expenses; as summarized in the Materials section under the TU Project Management and Outreach heading.

Task 3: Construction & Engineering Oversight: After the Skunk Train (MR) contracts with a qualified construction firm a pre-construction meeting will be held to affirm the schedule and content of the approved project execution plan. The Contractor will be required to submit quality control and health and safety plans. The remote nature of the site requires special attention with regard to all aspects of the implementation of the works. Coordination with CDFW will occur, well in advance of construction, in order to establish common expectations for the implementation of the project and assure that construction goes off with a minimum of delay. It is anticipated that the first orders of work will be the procurement and fabrication of the arch and MSE wall components, along with the pre-casting of the reinforced concrete foundation elements. An inspector will visit the location of the fabrication of these critical components to ensure compliance with the project specifications and the intent of the detailed drawings. AECOM will coordinate

construction of the project; provide daily construction management, oversight and inspection, and resolution of contractual issues. Construction observation will be provided by a qualified construction inspector on a full time basis during the term of the field work. The project geotechnical engineer will visit the work at the beginning of the foundation preparation and during the placement of the engineered fill within the required limits of the arch structure. Compaction testing will be performed at reasonable intervals to confirm compliance with the specifications. MLA will perform part-time construction observations during the initial construction of the roughened channel. MLA will independently check the constructed grades of the rock steps and bank lines. It is assumed that MLA will be on-site for up to five full days during the initial rock placement to ensure construction methods and results meet the design intent, with the AECOM inspector being on-site for the remainder of the time. When present on site, MLA will provide to AECOM written logs that indicate what was accomplished, directions provided to the contractor and discussions of any deviations from the design plans and specifications with a rationale for the deviation. It is expected Construction may take approximately 16-19 weeks depending on the project start date. Due to the existing conditions of the site, site conditions will be checked prior to implementation to ensure it isn't necessary to modify the designs to fit conditions at the time of construction. Construction activities will require dewatering and fish exclusion/relocation. RTA will be available to assist with the fish relocation and will secure any necessary permits that are required. Construction activities will include, but are not limited to, clearing and grubbing; track removal and reconstruction; excavation; removing the existing headwalls and culvert; installing the new arch and MSE wall; channel and bank restoration; and site restoration (e.g. revegetation and erosion control). A detailed schedule summarizing all subcontractor selection (Task 2) and construction and oversight is included in the Supplementary Documents. Materials Required: Field supplies including total station rental and current meter, and travel expenses; as summarized in the Materials section under the Construction & Engineering Oversight heading.

Task 4: Post Construction (Closeout) MLA's Principal Engineer, Project Engineer, and Staff Engineer will conduct the post-construction fish passage monitoring and preparation of the monitoring memorandum as part of project close-out. This will include measuring water depths and velocities through the crossing at two fish passage flows and comparing conditions in the crossing to the adjacent natural channel upstream and downstream of the crossing. AECOM will prepare construction oversight documentation files and deliver them to the railway. Project drawings will be updated to reflect any material change that occurred during the implementation of the design. Materials Required: Field supplies including total station rental and current meter, and travel expenses; as summarized in the Materials section under the Construction & Engineering Oversight heading.

Task 5: Outreach The TU Director of Communications will be available to facilitate

public outreach and education related to this project. This task may be supported additionally, by the TU Redwood Empire Chapter. This task will occur throughout the life of the project. Materials Required: Field/office supplies, postage, and travel expenses; as summarized in the Materials section under TU Project Management and Outreach heading.
Task 6: Final Report Completion and Submittal The Final report will be submitted to CDFW by March 31, 2021 Materials Required: Field/office supplies and postage; as summarized in the Materials section under TU Project Management and Outreach heading.

Deliverables:
Task 1:
• Copies of subcontracts
• Final Landowner Access Agreement
• CDFW Notification of Lake or Streambed Alteration Application and fee
• CDFW Incidental Take Permit (if required)
• Progress Report submitted with each invoice
• Annual Report, November 15
Task 2:
• Consultation meeting with perspective subcontractors Meeting Notes in digital PDF format (1) • Construction Contract and Notice to Proceed in digital PDF format (1)
Task 3:
Construction & Engineering Oversight
• Kick off Meeting Notes in digital PDF Forma (1)
Task 4 :
• As-Built Survey and Memorandum in digital PDF format and hard copy (3)
• Technical memorandum summarizing the methods, results, and findings from the post project monitoring effort in digital PDF format and hard copy (3).
Task 5
• Copy of outreach materials generated for the project in digital format (1).
Task 6:
• Upon completion TU shall submit a written completion report by task which contains: (1) general grant information, (2) location of work, (3) project access, (4) participating landowner's name and address, (5) a description and analysis of the restoration and planning person hours expended, (6) a quantified description of the results of the project, including as-built road logs and the As-Built (8) labeled before and after photos of selected restoration activities and techniques, (9) grant dollars and cost share dollars spent and contributed and/or in-kind services used to complete the project, and (10) GIS generated maps of project achievements.

Timelines:

Trout Unlimited contract oversight and administration will begin upon receiving a fully executed CDFW grant agreement and continue through the life of the project. The timeline assumes a CDFW Notice to Proceed by June 1, 2018

Task 1 - Grant Oversight & Outreach: Project Management will occur throughout the lifetime of the project.

Task 2 - Contractor Selection: July 2018 through December 5, 2018

Task 3 - Construction & Engineering Oversight: June 15, 2019 through October 31, 2019

Task 4 - Post Construction (Closeout): November 1, 2019 through February 28, 2021

Task 5 – Outreach: Outreach efforts will occur throughout the lifetime of the project

Task 6 - Final Report Completion and Submittal: Final report will be submitted to CDFW by March 31, 2021

Additional Requirements: The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a "notice to proceed" letter has been received from the Grantor Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW.

Supply a Final Landowner Access Agreement that specifies CDFW access to the property. The City of Fortuna will supply a copy of the City of Fortuna's Rohner Creek Flood Control, Seismic and Habitat Improvements Project long-term maintenance plan to ensure that debris clearance of the concrete weirs has been included. The Grantor Project Manager will supply a copy of the QA/QC checklist from CDFW Engineering Staff. The Oversight Engineer will submit the checklist to CDFW Engineering Staff (or designee) weekly for review. As cost-share, secure a biologist to relocate fish and other wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the CDFW Grant Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for CDFW personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other native aquatic species from the project area. If the project requires dewatering of the site and the relocation of listed aquatic species, the Grantee will implement the following measures to minimize harm and mortality to listed species as well as other native aquatic species:

- Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year.

- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit, NMFS Biological Opinion, and project's Lake and Streambed Alteration Agreement (1600 permit).

- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

- Only qualified fisheries biologist that are approved by USFWS and permitted by CDFW under a California Endangered Species Act (CESA) Memorandum of Understanding (MOU) shall handle and relocate CESA listed species.

- All electrofishing shall be performed by a qualified fisheries biologist under the supervision of CDFW and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

- USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW. .

The bridge (culvert) design and installation will meet flow carrying capacity required for a 100-year flood event as identified by specifications determined by National Oceanic and Atmospheric Administration (NOAA) Fisheries and the California Department of Fish and Wildlife (CDFW), for adult and juvenile salmonid fish passage. The project will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and criteria for fish passage as described in Volume II, Part IX, of the *California Salmonid Stream Habitat Restoration Manual*. The engineered plans for the bridge (culvert) installation shall be visually reviewed and authorized by NOAA Fisheries or California Department of Fish and Wildlife engineers prior to commencement of work.

All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*, Volume I, and Volume II Part XI and Part XII. The Grantee/landowner will maintain the new crossing, inspect the crossing in a timely manner and remove debris as necessary during the storm season.

Final structure design and placement will be determined by field consultation between the Grantee and the CDFW Grant Manager. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Burbeck (3912344) OR Sherwood Peak (3912355) OR Longvale (3912354) OR Willis Ridge (3912353) OR Northspur (3912345) OR Willits (3912343) OR Comptche (3912335) OR Greenough Ridge (3912334) OR Laughlin Range (3912333))

Possible species within the Burbeck Quad and surrounding quads for 725498 Skunk Train Coho Sediment Reduction and Fish Passage Improvement Project, T18N R14W S17, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
angel's hair lichen *Ramalina thrausta*	NLLEC3S340	None	None	G5	S2?	2B.1
Baker's meadowfoam *Limnanthes bakeri*	PDLIM02020	None	Rare	G1	S1	1B.1
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Behren's silverspot butterfly *Speyeria zerene behrensii*	IILEPJ6088	Endangered	None	G5T1	S1	
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
fisher - West Coast DPS *Pekania pennanti*	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
glandular western flax *Hesperolinon adenophyllum*	PDLIN01010	None	None	G2G3	S2S3	1B.2
grass alisma *Alisma gramineum*	PMALI01010	None	None	G5	S3	2B.2
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
Humboldt milk-vetch *Astragalus agnicidus*	PDFAB0F080	None	Endangered	G2	S2	1B.1
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
Milo Baker's lupine *Lupinus milo-bakeri*	PDFAB2B4E0	None	Threatened	G1Q	S1	1B.1
North Coast semaphore grass *Pleuropogon hooverianus*	PMPOA4Y070	None	Threatened	G2	S2	1B.1
northern goshawk *Accipiter gentilis*	ABNKC12060	None	None	G5	S3	SSC
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Nuttall's ribbon-leaved pondweed *Potamogeton epihydrus*	PMPOT03080	None	None	G5	S2S3	2B.2
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon goldthread *Coptis laciniata*	PDRAN0A020	None	None	G4	S3	4.2
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
pygmy cypress *Hesperocyparis pygmaea*	PGCUP04032	None	None	G1	S1	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
Roderick's fritillary *Fritillaria roderickii*	PMLIL0V0M0	None	Endangered	G1Q	S1	1B.1
sharp-shinned hawk *Accipiter striatus*	ABNKC12020	None	None	G5	S4	WL
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
steelhead - northern California DPS *Oncorhynchus mykiss irideus*	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
thin-lobed horkelia *Horkelia tenuiloba*	PDROS0W0E0	None	None	G2	S2	1B.2
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
Valley Oak Woodland *Valley Oak Woodland*	CTT71130CA	None	None	G3	S2.1	
watershield *Brasenia schreberi*	PDCAB01010	None	None	G5	S3	2B.3
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
yellow warbler *Setophaga petechia*	ABPBX03010	None	None	G5	S3S4	SSC

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

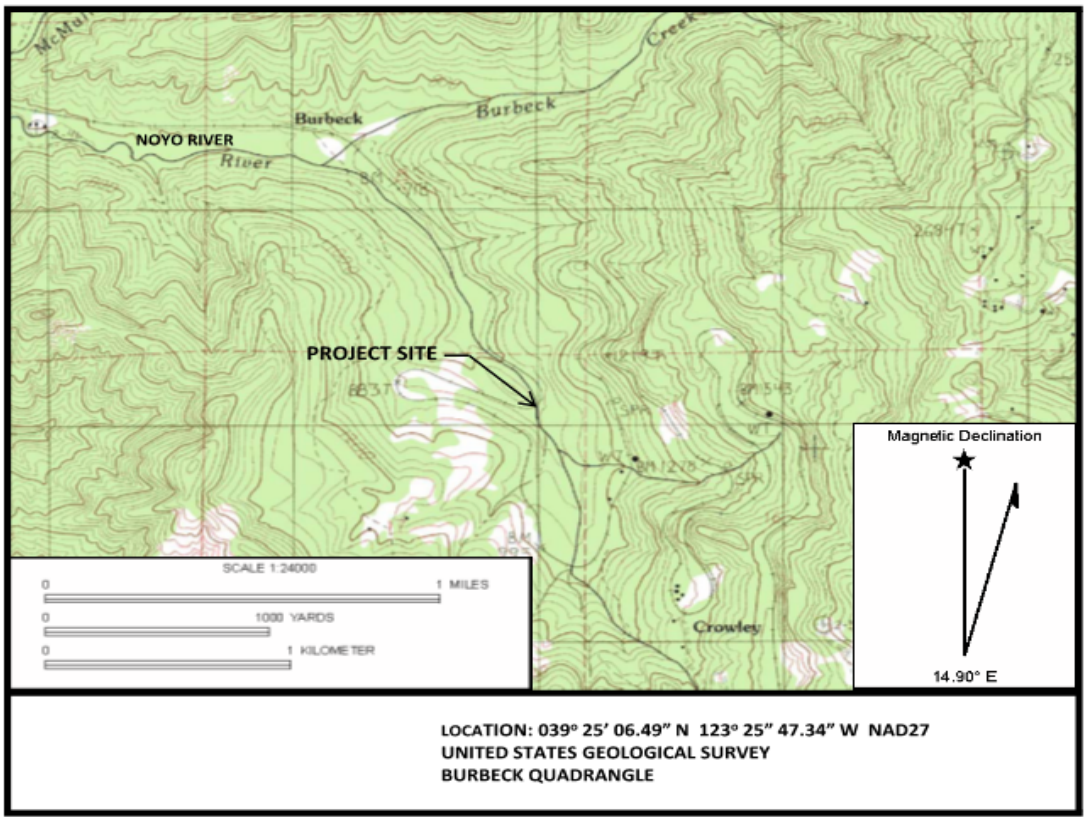
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
yellow-breasted chat *Icteria virens*	ABPBX24010	None	None	G5	S3	SSC
northern spotted owl *Strix occidentalis caurina*	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 41

Project Location Topographic Map

SUPPLEMENTAL ATTACHMENT

PROJECT LOCATION TOPO MAP



SKUNK TRAIN NOYO RIVER FISH PASSAGE DESIGN PROJECT

TROUT UNLIMITED

Rockpile Creek Sediment Reduction & Instream Barrier Removal

Introduction:

The Conservation Fund (TCF) will implement The Rockpile Creek Sediment Reduction & Instream Barrier Removal Project (Project). The Projects objectives are threefold: 1) Reduce chronic and episodic sediment delivery by decommissioning 0.49 miles and upgrading 0.09 miles of near stream road and associated crossings. 2) Restore access to 0.83 miles of suitable spawning and rearing habitat in Horsethief Canyon by modifying a large debris accumulation (LDA), and 3) Place the wood removed from the LDA back in the channel to provide for future fish habitat.

1. The purpose of the project is to decommission 0.49 miles and upgrade 0.09 miles of near stream road and associated crossings which pose a high risk of substantial future chronic and episodic sediment delivery if left untreated; resulting in approximately 1,082 yds3 of sediment savings. Two acres of uplsope area will be treated.
2. The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured.
3. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* (Parts VII, and X).

Objectives:

The objective is to decommission 0.49 miles and upgrade 0.09 miles of near stream road and associated crossings to reduce sediment to the stream, which will improve salmonid habitat. As well as dismantle an LDA which is impeding passage for salmonids and re-use the logs in the creek as large wood habitat.

Project Description:

Location:

The sediment reduction project is located on Rockpile Creek in southern Mendocino County adjacent to and north of the Mendocino/Sonoma county line. The instream barrier removal is on Horsethief Canyon which is a tributary to Rockpile Creek, which is a tributary to the South Fork Gualala River which enters the Pacific Ocean south of the town of Gualala, 114 miles north of San Francisco. Primary access to the project is via Fish Rock Road. Please see Project Location Map. The center of the project area is located at 38.78764900, -123.38120900, as shown on the Project Location Map (Attachment 1), which is attached and made part of this agreement by this reference.

Project Set Up:

The Conservation Fund (TCF) will provide all contracting oversight and administration including but not limited to obtaining permits, securing agreements (Grantor, subcontractors, and landowner), scheduling, implementation oversight, invoicing, reporting and agency and landowner communications.

Materials:

Materials for this project include straw mulch to be placed for erosion control and a 48" culvert for road upgrade.

Tasks:

Task 1 – Contract Oversight:

The Conservation Fund (TCF) will provide all contracting oversight and administration including but not limited to obtaining permits, securing agreements (Grantor, subcontractors, and landowner), scheduling, implementation oversight, invoicing, reporting and agency and landowner communications.

Task 2 – Implementation of Proposed Treatment:

TCF staff and licensed Geologist, Elias Steinbuck, will administer the project in the field to ensure timeliness, completion, and conformance with restoration and land management goals and provide project supervision. The Subcontracted Licensed Contractor will provide equipment and work under the direction of TCF. Implementation of the proposed treatment includes the following action items:

Action 1: Heavy equipment will be moved in via Lowbed to the project site. The D7 will be used to decommission 0.49 miles and upgrade 0.09 miles of near stream road and associated crossings.

Action 2: Upgrade stream crossing at road point feature 550 by installing at new 48" culvert to facilitate access to instream barrier removal site.

Action 3: Remove logs from LDA using D7 tractor with winch. The tractor will winch logs from the LDA tothe truck road located approximately 50’ upslope of the stream.

Action 4: Logs will be skidded in a downstream direction and then lowered with a winch/sidecast off the road and back into the stream.

Action 5: Decommission 0.49 miles and upgrade 0.09 miles of near stream road and associated crossings. The following general guidelines apply to road abandonment treatments:

- Stream crossings shall be excavated such that to the extent possible all fill is removed and a 100 year flood flow channel bottom is left. Crossing

approaches will be sloped back to 2:1 or otherwise stable sideslopes. Excavated spoils will be stored locally against the road cutbank where it will not erode. Where limited space is present for local spoils disposal, excavated material will be hauled offsite with dumptruck and stabilized such that it will not deliver to a watercourse.

- Road surface treatments to minimize long-term chronic erosion and facilitate revegetation will include a combination of one or all of the following measures: 1) Ripping of the road surface with mechanical rippers; 2) Excavation of perched fill and unstable sidecast and placement against the truck road cutbank to create an outslope; 3) Installation of oversized waterbars to provide road surface drainage.

Deliverables:

Project implementation will include 1) decommissioning 0.49 miles and upgrading 0.09 miles of forest road preventing approximately 1,082 cubic yards of fine sediment from entering the stream system. 2) Restore access to 0.83 miles of suitable spawning and rearing habitat in Horsethief Canyon by removing an LDA, and 3) Place the wood removed from the LDA back in the channel to provide for future fish habitat. Prior to project completion, the Grantee will submit all progress reports, invoices and other documents that are required according to the grant.

Final Report by Task which contains: (1) general grant information, (2) location of work, (3) project access, (4) landowner's name and address, (5) a description and analysis of the restoration and planning person hours expended, (6) dates of work and the number of person hours expended, (7) labeled before and after photos of selected restoration activities and techniques, (8) grant dollars spent and contributed and/or in kind services used to complete the project, (9) GIS generated maps of project achievements, (10) a quantified description of the results of the project that will include:

a. Total miles of road treated;
b. Total acres of upslope area treated;
c. For each work site indicate;
i. Cubic yards of sediment prevented from entering the stream;
ii. Miles of road treated for road drainage system improvements;
iii. Miles of road decommissioned/abandoned;
iv. Number of upslope stream crossing treated (not for fish passage);
v. Number of springs and landslides treated;
vi. Type and number of upland erosion/sediment control used, select from: erosion control structures, planting, or slope stabilization;
vii. Scientific names of plant species planted;

Timelines:

The project will be completed according to the following timeline information:

- Task 1: Grantee project oversight, coordination and reporting will begin upon final execution of the grant and will continue through the life of the project – June 2018 through March 31, 2019.
- Task 2: Implementation of work will occur from July 1, 2018 through October 31. 2018.

Additional Requirements:

The following additional requirements apply to this project:
The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

For fish relocation

The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will

implement the following measures to minimize harm and mortality to listed salmonids:

a. Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.
b. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.
c. The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.
d. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
e. USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW.

<u>For Instream portion of project</u>

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Managers. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

<u>For Watershed Restoration portion of project</u>

All road decommissioning will be done in accordance with techniques described in the Handbook for Forest and Ranch Roads, (PWA, 1994c.) and the *California Salmonid Stream Habitat Restoration Manual*, Volume II, Part X. All road upgrade and decommissioning sites and techniques shall be approved by the Grantor Project Manager before any equipment work takes place.

All crossings treated in fish bearing reaches of streams will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and the criteria for adult and juvenile salmonid fish passage as described in Volume II, Part IX of the *California Salmonid Stream Habitat Restoration Manual*.

Seeding and mulching of all exposed soils shall be done for all slopes which may deliver sediment to a stream. Woody debris will be concentrated on finished

slopes adjacent to stream crossings. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years. Mulching and seeding will take place as sites are completed to avoid unforeseen erosion. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Sites that are expected to erode and deliver sediment to the stream are the only locations where work will be authorized for reimbursement under the terms of this agreement. Reimbursement will not be authorized for work done to improve aesthetics only.

The landowner or responsible party must sign an access agreement stating they agree to maintain the erosion control project for a period of not less than 10 years. Maintenance will consist of repair to the road or stream crossing to a level that will effectively reduce sediment from entering the stream. In the event of an act of nature which results in partial or complete failure of the project, the landowner or applicant will not be held responsible for costs incurred after the act of nature. Acts of nature include, but are not limited to floods, earthquakes, volcanic eruptions, and wind storms.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (McGuire Ridge (3812374) OR Eureka Hill (3812385) OR Zeni Ridge (3812384) OR Ornbaun Valley (3812383) OR Gualala (3812375) OR Gube Mountain (3812373) OR Stewarts Point (3812364) OR Annapolis (3812363))

Possible species within McGuire Ridge Quad and surrounding quads for 725505 Rockpile Creek Sediment Reduction & Instream Barrier Removal, T11N R14W S24, Mendocino County

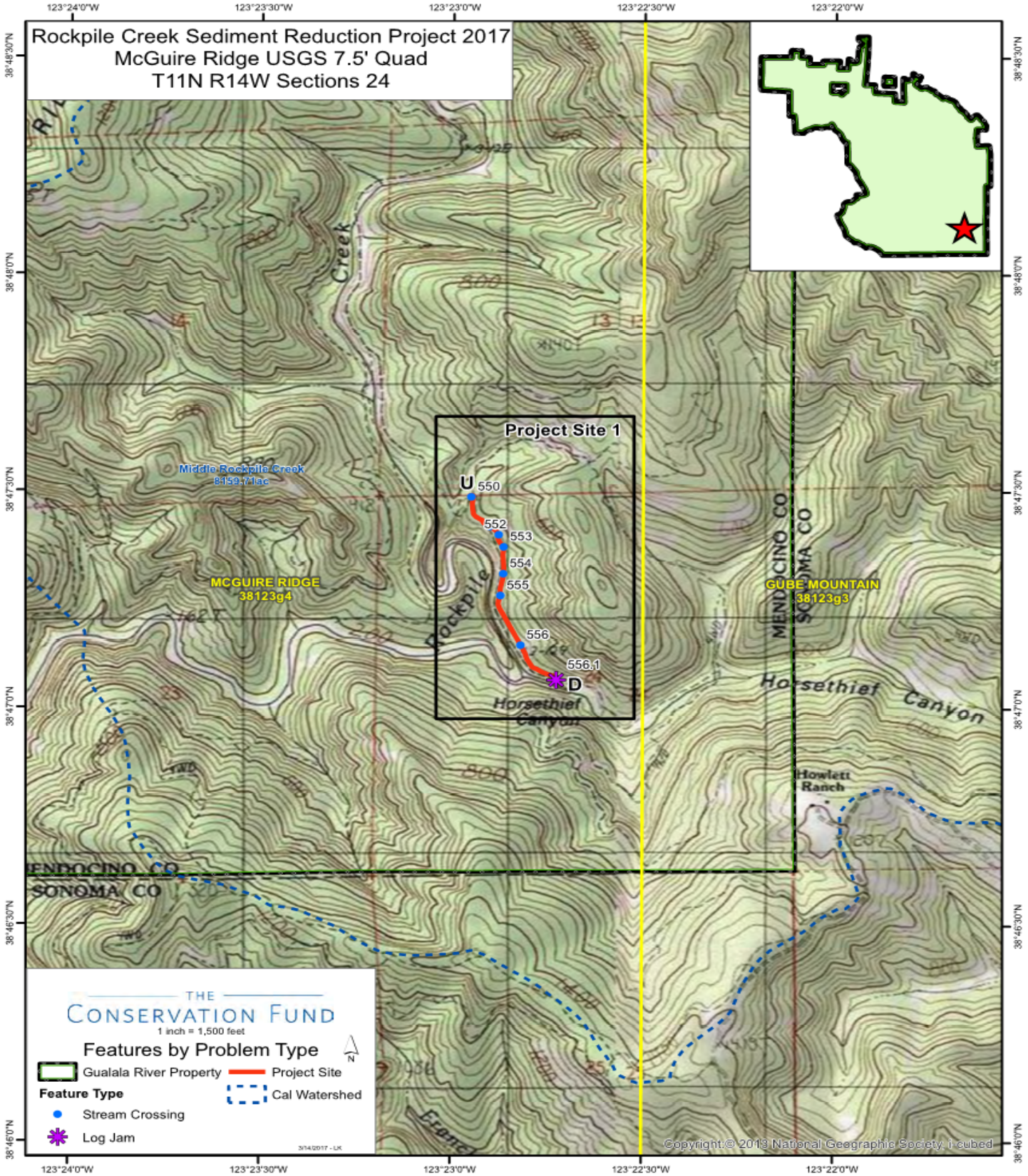
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
American manna grass *Glyceria grandis*	PMPOA2Y080	None	None	G5	S3	2B.3
Baker's goldfields *Lasthenia californica ssp. bakeri*	PDAST5L0C4	None	None	G3T1	S1	1B.2
bald eagle *Haliaeetus leucocephalus*	ABNKC10010	Delisted	Endangered	G5	S3	FP
Behren's silverspot butterfly *Speyeria zerene behrensii*	IILEPJ6088	Endangered	None	G5T1	S1	
Blasdale's bent grass *Agrostis blasdalei*	PMPOA04060	None	None	G2	S2	1B.2
bluff wallflower *Erysimum concinnum*	PDBRA160E3	None	None	G3	S2	1B.2
California giant salamander *Dicamptodon ensatus*	AAAAH01020	None	None	G3	S2S3	SSC
California red-legged frog *Rana draytonii*	AAABH01022	Threatened	None	G2G3	S2S3	SSC
California sedge *Carex californica*	PMCYP032D0	None	None	G5	S2	2B.3
coast lily *Lilium maritimum*	PMLIL1A0C0	None	None	G2	S2	1B.1
Coastal and Valley Freshwater Marsh *Coastal and Valley Freshwater Marsh*	CTT52410CA	None	None	G3	S2.1	
coastal bluff morning-glory *Calystegia purpurata ssp. saxicola*	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
Coastal Brackish Marsh *Coastal Brackish Marsh*	CTT52200CA	None	None	G2	S2.1	
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
deceiving sedge *Carex saliniformis*	PMCYP03BY0	None	None	G2	S2	1B.2
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
grasshopper sparrow *Ammodramus savannarum*	ABPBXA0020	None	None	G5	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Gualala roach *Lavinia symmetricus parvipinnis*	AFCJB19025	None	None	G4T1T2	S2S3	SSC
Humboldt milk-vetch *Astragalus agnicidus*	PDFAB0F080	None	Endangered	G2	S2	1B.1
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
marbled murrelet *Brachyramphus marmoratus*	ABNNN06010	Threatened	Endangered	G3G4	S1	
marsh pea *Lathyrus palustris*	PDFAB250P0	None	None	G5	S2	2B.2
Mendocino Coast paintbrush *Castilleja mendocinensis*	PDSCR0D3N0	None	None	G2	S2	1B.2
Mendocino dodder *Cuscuta pacifica var. papillata*	PDCUS011A2	None	None	G5T1	S1	1B.2
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
monarch - California overwintering population *Danaus plexippus pop. 1*	IILEPP2012	None	None	G4T2T3	S2S3	
Monterey clover *Trifolium trichocalyx*	PDFAB402J0	Endangered	Endangered	G1	S1	1B.1
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
northern goshawk *Accipiter gentilis*	ABNKC12060	None	None	G5	S3	SSC
Nuttall's ribbon-leaved pondweed *Potamogeton epihydrus*	PMPOT03080	None	None	G5	S2S3	2B.2
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon goldthread *Coptis laciniata*	PDRAN0A020	None	None	G4	S3	4.2
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
perennial goldfields *Lasthenia californica ssp. macrantha*	PDAST5L0C5	None	None	G3T2	S2	1B.2
Point Reyes checkerbloom *Sidalcea calycosa ssp. rhizomata*	PDMAL11012	None	None	G5T2	S2	1B.2
Point Reyes horkelia *Horkelia marinensis*	PDROS0W0B0	None	None	G2	S2	1B.2
purple-stemmed checkerbloom *Sidalcea malviflora ssp. purpurea*	PDMAL110FL	None	None	G5T1	S1	1B.2
pygmy cypress *Hesperocyparis pygmaea*	PGCUP04032	None	None	G1	S1	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
rhinoceros auklet *Cerorhinca monocerata*	ABNNN11010	None	None	G5	S3	WL
Roderick's fritillary *Fritillaria roderickii*	PMLIL0V0M0	None	Endangered	G1Q	S1	1B.1
running-pine *Lycopodium clavatum*	PPLYC01080	None	None	G5	S3	4.1
Santa Cruz clover *Trifolium buckwestiorum*	PDFAB402W0	None	None	G2	S2	1B.1
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	PDASTE5011	None	None	G4T3	S2	1B.2
small groundcone *Kopsiopsis hookeri*	PDORO01010	None	None	G4?	S1S2	2B.3
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
steelhead - northern California DPS *Oncorhynchus mykiss irideus*	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
supple daisy *Erigeron supplex*	PDAST3M3Z0	None	None	G2	S2	1B.2
swamp harebell *Campanula californica*	PDCAM02060	None	None	G3	S3	1B.2
thin-lobed horkelia *Horkelia tenuiloba*	PDROS0W0E0	None	None	G2	S2	1B.2
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tufted puffin *Fratercula cirrhata*	ABNNN12010	None	None	G5	S1S2	SSC
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
woolly-headed gilia *Gilia capitata ssp. tomentosa*	PDPLM040B9	None	None	G5T1	S1	1B.1

Record Count: 56

Project Location Topographic Map



Introduction: The Eel River Watershed Improvement Group (ERWIG) will improve Coho Salmon habitat by adding 20 complex large woody debris (LWD) features along 0.56 miles of stream made up of two contiguous reaches, one in Dunn Creek and one on an unnamed tributary to Dunn Creek. These features will enhance pools with complex cover, increase gravel sorting and provide velocity refugia for migrating salmonids. In addition, 120 conifers will be planted to enhance future wood recruitment, restore access routes, and provide additional bank stability.

This project is necessary because according to the *Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon (*Oncorhynchus kisutch) (National Oceanic and Atmospheric Administration 2014) Cottaneva Creek is a Focus population and Dunn Creek is a priority area for restoration and recovery. The current instream watershed and population conditions for Cottaneva Creek are listed as poor for habitat complexity. This project will address the priority 1 action of maintaining current LWD, boulders and other structure-providing features to maintain current stream complexity, pool frequency and depth. This project also addresses the Priority 2 and 3 long-term restoration actions that include to install large woody material, boulders and other instream features. Both the 2008 California Department of Fish and Game *Stream Inventory Report: Dunn Creek* and *Stream Inventory Report: Unnamed Tributary to Dunn Creek* found shelter to be under target values. Both reports recommend to "Increase woody cover in the pools and flatwater habitat units. Most of the existing cover in the pools is from small woody debris. Adding high quality complexity with woody cover in the pools is desirable".

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Parts VII, and XI (Flosi et al 1998 and 2002).

Objectives: The goal of this project is to install or enhance existing LWD, boulders, and other instream features to increase habitat complexity and improve pool frequency and depth. The objectives of this project include:

- Add 20 LWD features along 0.56 miles, starting in Dunn Creek and extending up in to the unnamed tributary to Dunn Creek. These 20 features will be comprised of 64 pieces of large wood of which 44 are key pieces (0.55 meters diameter and a length of 10 meters long or a volume of 2.5 cubic meters for channels with a bankfull width less than 10 meters.).
- Provide immediate enhanced habitat for Coho Salmon including:
  - enhancement of pool depth at existing pools by fluvial scour adjacent to LWD installation sites,
  - enhancement of cover in existing pools by adding complex wood structures to the margins of the existing channel,
  - refuge for Coho Salmon from high velocity flows during large storm events,
  - enhanced spawning habitat by substrate sorting adjacent to LWD structures, and

- the creation and sustainability of a complex channel environment where fish can pick and choose from a diverse suite of habitat elements within Dunn Creek rather than compete for the extremely limited habitat that currently exists.

Project Description:

Location: The project reach starts approximately 0.65 miles upstream from the confluence of the North Fork Cottaneva Creek at the bridge on Dunn Creek. The reach extends up Dunn Creek for 320 feet and continues up the unnamed tributary to Dunn Creek for another 2,357 feet. The downstream extent of the reach is located at 39.80120300: -123.82313150. The upstream extent of the reach is located at 39.80772500: -123.82368600.

Project Set Up: The Project Manager will oversee implementation of the Agreement with assistance from the Project Associate (Tasks 1, 2, 3, 4, 5, 6, 7, and 8). The Project Associate will assist with Agreement oversight, purchasing, invoicing, and reporting (Tasks 1, 4, and 8).

The Bookkeeping Subcontractor will pay out employees and subcontractors and keep the project on budget (Task 4).

The Fish Habitat Subcontractor (FHS) will participate in project preparation, implementation, tree planting and collecting metrics. The FHS will provide logistical support ensuring tool and material needs are met without delay throughout the project duration. Additionally, the FHS will provide onsite training and direction to ensure features meet the criteria set in the *California Salmonid Stream Habitat Restoration Manual*, Part VII (Flosi et al. 1998). The FHS will anchor the structures according to design and anchoring specifications. The FHS will also move LWD into position using a grip hoist come along. After logs are placed the FHS will plant trees. (Tasks 2, 3, 5, 6, and 7.)

The Heavy Equipment Subcontractor (HES) will bring heavy equipment to and from the worksite. The HES will provide a Licensed Timber Operator to select trees in the riparian zone to cut and fall into the creek according to project design specifications, and a Licensed Excavator Operator responsible for placing LWD at the features where access is available. (Tasks 2, 3, 5 and 6.)

As cost-share, the landowner's Registered Professional Forester will outline access guidelines and provide oversight and guidance for ERWIG and subcontractors, and will be the day-to-day contact (Tasks 2, 3, 5 and 6).

Materials: The materials necessary for this project include:

- Anchoring materials including 10' by 1" threaded rod (rebar), steel nuts, steel washers, drill bits & extensions, chain, bar oil, portable band saw blades, extension cords, shear pins, and ground fault interrupters.

- Rental/Repair of equipment including generators and drills.
- LWD conifer logs >1' diameter, and key piece logs >2' diameter and >30' long.
- Provided as cost share, redwood seedlings.

Tasks:

Task 1. Agreement Oversight. ERWIG will oversee the Agreement. The Project Manager and Project Associate will communicate and coordinate with the landowner to obtain entry permits, coordinate implementation schedules, obtain wood donation and purchase, and go over project implementation details. Upon receipt of the Notice to Proceed, the Project Manager will prepare the *Notification of Lake or Streambed Alteration*, hire subcontractors, and provide management and direction to subcontractors throughout the duration of the project. All reporting and billing will be pursuant to Agreement and regulatory guidelines. The Project Associate will work with the Bookkeeping Subcontractor to provide fiscal management.

Task 2. Subcontractor Preparation and Training. The Project Manager will train subcontractors on landowner concerns and protocols before they enter the property to begin project work. The training will include security issues and road protocols. ERWIG will ensure that all subcontractors understand that ONLY those designated to work on the project are allowed on the property. ERWIG will work closely with subcontractors to ensure that no actions result in the delivery of sediment to the stream channel when delivering, staging, or placing large wood in the stream. ERWIG and its subcontractors will be aware of the status of various roads within the project area, and will not enter any decommissioned roads with heavy equipment, or do anything that might cause significant impacts on the hydrology of decommissioned road segments. All subcontractors will be required to learn and practice invasive species management protocols.

Task 3. Final Feature Design and Site Preparation. The Project Manager and FHS will prepare site-specific designs based on channel morphology, access, and LWD availability. They will submit designs for landowner and Grantor Project Manager approval. The landowner's representative will provide consultation on this phase of the project. The Project Manager along with the FHS will flag sites for wood selection, staging, and installation, clear brush as needed, and designate staging areas for wood along project reaches. The Registered Professional Forester will select appropriate trees for falling for project use.

Task 4. Purchasing, including billing and invoicing. The Project Manager and Project Associate will procure tools and materials prior to the start of implementation and as needed throughout the project. The FHS will

communicate with ERWIG to ensure tool and material needs are met promptly throughout the duration of implementation. Billing and invoicing will take place in a prompt manner.

Task 5. Project Implementation. Under the direction of the Project Manager and FHS, site construction on 20 LWD structures will begin with wood placement by excavator. Lowboy tractor-trailers will transport the excavator to the project site. Log trucks will deliver logs to the site. When appropriate, a tree faller will selectively cut down trees from the riparian area to fall into the creek; logs may be bucked in order to create multiple usable logs. The Heavy Equipment Subcontractor will move logs from staging areas and place them in the stream according to the design plan using an excavator. The excavator will place logs as close as possible to the stream when access is limited.

When necessary, the FHS will move logs into position using grip hoist come alongs and cable rigging. This method will also be used for securing logs while anchoring. Site construction, wood placement, and anchoring will be in accordance with the *California Salmonid Stream Habitat Restoration Manual*, Part VII (Flosi et al. 1998). The project will utilize living riparian trees as anchors by weaving the LWD logs between them. The FHS will then anchor the sites according to design and anchoring specifications. The FHS will use one-inch threaded rebar to anchor logs to mature riparian trees, and each other. Holes will be drilled through the logs and their anchor trees, using a drill, timber bit, and drill bit extensions, when necessary. String one-inch rebar through logs and anchor trees and secure with nuts and washers. The rebar will be trimmed to specifications and cut to size using portable band saws. The electric tools will be powered by portable gas powered generators. The FHS will be supervised by the Project Manager. Structures will be mini spider jams consisting of 2-4 logs fastened together.

Erosion control methods will be employed as required, at each structure and along the equipment corridors to eliminate the possibility of sediment transport to the stream. To address concerns over invasive species follow the Eel River Watershed Improvement Group Aquatic Invasive Species Decontamination Protocol.

Task 6. Riparian Planting. The FHS will return to the project site in the winter following site construction to plant 120 conifer seedlings along the 0.56 miles of riparian zone, with a primary focus in areas lacking sufficient conifer cover.

Task 7. Post-Project Data and Photo Collection. Following implementation, the Project Manager and FHS will take post implementation photos and

collect metrics to fulfill the Agreement Annual, Progress Report and Final Report requirements.

Task 8. Reporting. The Project Manager and Project Associate will write and deliver progress reports for invoicing, Annual Reports, and a Final Report to the Grantor Project Manager.

Deliverables:

- Twenty features that contain 64 pieces of LWD along 0.56 miles of stream. Each feature will contain mini logjams consisting of 1-4 piece LWD structures that will be constructed and anchored in place.
- Progress reports with each invoice and Annual Reports for the duration of the project.
- A Final Report will be written and submitted to the Grantor Project Manager.

Timelines: The project will be competed according to the following timeline:

Task 1. Upon approval through March 31, 2022, coordinate with landowners for project entry, complete the *Notification of Lake or Streambed Alteration,* hire subcontractors, and procure LWD. Oversee and coordinate project.

Task 2. Upon approval through October 31, 2021, oversee and coordinate the project and ensure that subcontractors are trained and operate under landowner protocols.

Task 3 & 4. Upon approval through March 1, 2022, finalize design, label features, and purchase tools and materials.

Task 5. June 15, 2018 through October 31, 2018, June 15, 2019 through October 31, 2019, June 15, 2020 through October 31, 2020, and June 15, 2021 through October 31, 2021, project implementation, installation of approved LWD structures. Install erosion control as project features are completed.

Task 6. December 1, 2018 through March 1, 2019, December 1, 2019 through March 1, 2020, December 1, 2020 through March 1, 2021, December 1, 2021 through March 1, 2022, riparian plantings will occur after completion of LWD features.

Task 7. June 15, 2018, our upon Agreement approval whichever is later, through March 1, 2022, post-project description, photos, and quantitative metrics will be collected. Deliver progress reports with invoices.

Task 8. November 15, 2018, November 15, 2019, November 15, 2020, November 15, 2021 & March 31, 2022, deliver post project photos and metrics a Annual Reports, and a Final Report.

Additional Requirements: The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a Notice to Proceed letter has been received from the Grantor Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Manager. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to ensure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Hales Grove (3912377) OR Bear Harbor (3912388) OR Piercy (3912387) OR Noble Butte (3912386) OR Mistake Point (3912378) OR Leggett (3912376) OR Westport (3912367) OR Lincoln Ridge (3912366))

Possible species within Hales Grove Quad and surrounding quads for 725506 Dunn Creek Habitat Enhancement Project, T23N R18W S35, Mendocino County

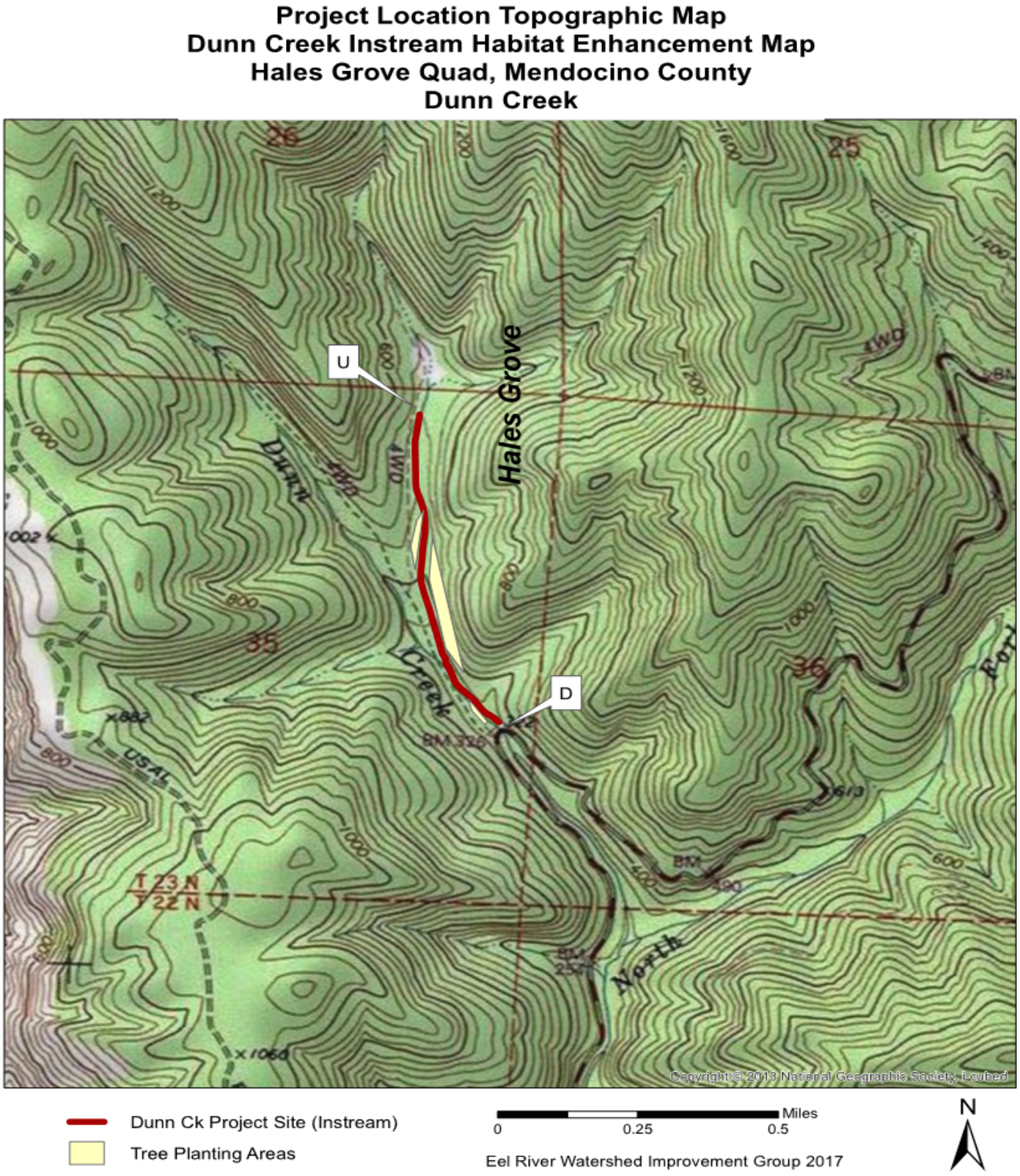
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Blasdale's bent grass *Agrostis blasdalei*	PMPOA04060	None	None	G2	S2	1B.2
bluff wallflower *Erysimum concinnum*	PDBRA160E3	None	None	G3	S2	1B.2
California floater *Anodonta californiensis*	IMBIV04020	None	None	G3Q	S2?	
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
coho salmon - southern Oregon / northern California ESU *Oncorhynchus kisutch*	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Cooper's hawk *Accipiter cooperii*	ABNKC12040	None	None	G5	S4	WL
Crotch bumble bee *Bombus crotchii*	IIHYM24480	None	None	G3G4	S1S2	
fisher - West Coast DPS *Pekania pennanti*	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Humboldt milk-vetch *Astragalus agnicidus*	PDFAB0F080	None	Endangered	G2	S2	1B.1
Kellogg's buckwheat *Eriogonum kelloggii*	PDPGN083A0	None	Endangered	G2	S2	1B.2
leafy reed grass *Calamagrostis foliosa*	PMPOA170C0	None	Rare	G3	S3	4.2
leafy-stemmed mitrewort *Mitellastra caulescens*	PDSAX0N020	None	None	G5	S4	4.2
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
McDonald's rockcress *Arabis mcdonaldiana*	PDBRA06150	Endangered	Endangered	G3	S3	1B.1
Mendocino Coast paintbrush *Castilleja mendocinensis*	PDSCR0D3N0	None	None	G2	S2	1B.2
Mendocino gentian *Gentiana setigera*	PDGEN060S0	None	None	G2	S1	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
North Central Coast Fall-Run Steelhead Stream *North Central Coast Fall-Run Steelhead Stream*	CARA2631CA	None	None	GNR	SNR	
northern goshawk *Accipiter gentilis*	ABNKC12060	None	None	G5	S3	SSC
Northern Interior Cypress Forest *Northern Interior Cypress Forest*	CTT83220CA	None	None	G2	S2.2	
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon coast paintbrush *Castilleja litoralis*	PDSCR0D012	None	None	G3	S3	2B.2
Oregon goldthread *Coptis laciniata*	PDRAN0A020	None	None	G4	S3	4.2
oval-leaved viburnum *Viburnum ellipticum*	PDCPR07080	None	None	G4G5	S3?	2B.3
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
pink sand-verbena *Abronia umbellata var. breviflora*	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Point Reyes horkelia *Horkelia marinensis*	PDROS0W0B0	None	None	G2	S2	1B.2
pygmy cypress *Hesperocyparis pygmaea*	PGCUP04032	None	None	G1	S1	1B.2
Raiche's manzanita *Arctostaphylos stanfordiana ssp. raichei*	PDERI041G2	None	None	G3T2	S2	1B.1
Red Mountain catchfly *Silene campanulata ssp. campanulata*	PDCAR0U0A2	None	Endangered	G5T3Q	S3	4.2
Red Mountain stonecrop *Sedum laxum ssp. eastwoodiae*	PDCRA0A0L1	None	None	G5T2	S2	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
robust false lupine *Thermopsis robusta*	PDFAB3Z0D0	None	None	G2	S2	1B.2
seaside bittercress *Cardamine angulata*	PDBRA0K010	None	None	G5	S1	2B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
steelhead - northern California DPS *Oncorhynchus mykiss irideus*	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
summer-run steelhead trout *Oncorhynchus mykiss irideus*	AFCHA0213B	None	None	G5T4Q	S2	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
Upland Douglas Fir Forest *Upland Douglas Fir Forest*	CTT82420CA	None	None	G4	S3.1	
Vine Hill ceanothus *Ceanothus foliosus var. vineatus*	PDRHA040D6	None	None	G3T1	S1	1B.1
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western pearlshell *Margaritifera falcata*	IMBIV27020	None	None	G4G5	S1S2	
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
Whitney's farewell-to-spring *Clarkia amoena ssp. whitneyi*	PDONA05025	None	None	G5T1	S1	1B.1
Yuma myotis *Myotis yumanensis*	AMACC01020	None	None	G5	S4	
northern spotted owl *Strix occidentalis caurina*	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 52

Project Location Topographic Map



Introduction:

The Grantee will complete the Redwood Creek (HT) Instream Habitat Enhancement Project by installing 17 LWD features along a 0.44 mile section of Redwood Creek to provide increased habitat complexity, enhance pools, and increase gravel sorting. This project is necessary because the Stream Inventory Report for Redwood Creek makes a recommendation to "increase [complex] woody cover in the pools and flat water habitat units." The report also states that, "Adding high quality complexity with woody cover in the pools is desirable." This project will provide rearing fry with protection from predation, rest from water velocity, and divide territorial units to reduce density dependent competition.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the California Salmonid Stream Habitat Restoration Manual, Part VII and Part XI.

Objectives:

The specific objective of this project is to create a total of 17 instream features within 0.44 miles of Redwood Creek, consisting of 42 logs. Additionally, 200 native plants and trees will be planted along the riparian. The addition of these structures will enhance spawning and rearing habitats by providing cover, increasing pool complexity, increasing pool depth and frequency, sorting and collecting spawning gravels, increasing the quality and quantity of rearing habitat within the project reach, and by providing velocity refuge during peak winter flows for juvenile salmonids and migrating adult salmonids. Planting seedlings will promote riparian vegetation, provide additional shade for the stream, and establish wood for future recruitment.

Project Description:

Location:

The Grantee will conduct work along a section of Redwood Creek. The project is located at - 39.77092660º north latitude, 123.76575050º west longitude at the downstream end.

Project Set Up:

The Grantee Project manager will communicate and coordinate with landowner representatives to obtain entry permits, coordinate implementation schedules, obtain wood, and review project implementation details. Upon receipt of notice to proceed, project manager will obtain 1600 permit, hire subcontractors and provide management and direction to subcontractors throughout the duration of the project. All reporting and billing will be pursuant to contract and regulatory guidelines. The ERWIG Project Associate will assist with contract oversight, purchasing and invoicing and reporting.

The Bookkeeper will pay out ERWIG employees and subcontractors and keep project on budget.

The California Conservation Corps (CCC) Conservationist I will supervise CCC Laborers in the implementation of the project and during the spike operation. CCC Laborers will provide the hand labor for the instream LWD structures. The CCC Fish Habitat Assistant will participate in project preparation, implementation, tree planting and collecting metrics and will provide logistical support to CCC Corpsmember crews ensuring tool and material needs are met without delay throughout the project duration. Additionally, the Fish Habitat Assistant will provide onsite training and direction to CCC crews to ensure features meet the criteria set by the CDFW, California Salmonid Stream Habitat Restoration Manual, Section VII (Flosi et al. 2010).

The Licensed Excavator Operator will be responsible for placing LWD at the features where access is available.

The Equipment Transporter will bring heavy equipment to and from worksite.
The Licensed Timber Operator will fall trees for project use.

Materials:

Materials necessary for this project include:

- 10’ by 1” threaded rod (rebar): will be used to anchor LWD to rock, live trees, and LWD.
- Steel nuts: are required to secure threaded rebar to LWD, live trees, and rock, increasing longevity of intended structural position.
- Steel washers will be used to lock the steel nut into place once fastened to the threaded rebar.
- Conifer seedlings: will be used as riparian cover to reduce erosion, increase riparian complexity, and increase future instream wood recruitment.
- Drill bits & extensions: Used to drill the holes through the logs and anchor trees so we can anchor the structures according to the California Salmonid Stream Habitat Restoration Manual
- Tools & Materials (drills, band saws, chain, bar oil, band saw blades, extension cords, shear pins, GFIs, Allen wrenches, misc. gear.): These miscellaneous materials are required to drill and anchor all materials to appropriate anchor points.
- Tool Repair and Rental: Working outdoors in a remote environment can be a less than ideal place for power tools. Repairing instead of replacing tools keeps the project cost down, tools will be rented if needed while tools are at the repair shop.

- Logs & rootwads: This is the LWD that will make up features to improve the instream conditions for anadromous salmonids. All logs will be >1' diameter, key pieces will be >2' diameter and >30' long.
- Native plants: these will be planted to help restore a functioning riparian corridor.

Tasks:

Task 1. Contract oversight Contract oversight will be conducted by ERWIG Project Manager. The ERWIG Project Manager will communicate and coordinate with the landowner to obtain entry permits, coordinate implementation schedules, obtain wood donation and purchase, and go over project implementation details. Upon receipt of notice to proceed, project manager will obtain 1600 permit, hire subcontractors and provide management and direction to subcontactors throughout the duration of the project. All reporting and billing will be pursuant to contract and regulatory guidelines.

Task 2. Subcontractor Prep and Training ERWIG will ensure that all subcontractors are trained on landowner concerns and protocols before they enter the property to begin project work. The training will include security issues and road protocols. ERWIG will ensure that all subcontractors understand that ONLY those designated crew member for the project are allowed on the property. ERWIG will work closely with subcontractors to ensure that no actions result in the delivery of sediment to the stream channel when delivering, staging, and placing large wood in the stream ERWIG and its subcontractors will be aware of the status of various roads within the project area, and will not enter any decommissioned roads with heavy equipment, or do anything that might cause significant impacts on the hydrology of decommissioned road segments.

Task 3. Final Feature Design & Site Preparation ERWIG Project Manager and CCC Fish Habitat Assistant will prepare site specific designs based on channel 9 morphology, equipment access, and LWD availability. They will submit designs for landowner and CDFW Project Manager approval. ERWIG Project Manager along with CCC Fish Habitat Assistant will flag sites for wood delivery and installation, Clear brush for equipment as needed, designate staging areas for equipment and wood along project reaches. Excavator will be delivered by lowboy to staging area. Wood will be delivered by log trucks, dump trucks or self-loader and staged along project reach or staging areas.

Task 4. Project Implementation Under the direction of the Project Manager and CCC Fish Habitat Assistant, site construction on 17 LWD structures will begin with wood and rock placement by excavator. When necessary, CCC corpsmembers will move LWD into position using a griphoist come along. This method is also used for placing and securing rootwads to logs while anchoring is taking place. Site construction, wood placement, and anchoring will be in accordance with DFG

California Salmonid Stream Habitat Restoration Manual, Section VII (Flosi et al.1998). The project will utilize living riparian trees as anchors by wedging the logs between them where feasible. California Conservation Corps (CCC) Corpsmembers under supervision of the Conservationist 1 (C1) will then anchor the sites according to design and anchoring specifications. Corpsmembers will use one-inch threaded rebar to anchor logs to mature riparian trees, and each other. Holes will be drilled through the logs and their anchor trees, using a hole hawg drill, timber bit, and drill bit extensions when necessary. One-inch rebar will be strung through the log and secured with nuts and washers. Corpsmembers will be supervised by a Conservationist 1 (C1), Fish Habitat Assistant, and the ERWIG Project Manager. Structures will be complex consisting of logs fastened together along with stumps with rootwads attached.

Erosion control methods will be employed as required at each structure and along the equipment corridors to eliminate the possibility of sediment transport to the stream. To address concerns over invasive species, this project will follow the California Department of Fish and Wildlife Aquatic Invasive Species Decontamination Protocols and U.S. Department of the Interior-Bureau of Reclamation 2012 Inspection and Cleaning Manual for Equipment and Vehicles to prevent the spread of invasive species.

Task 5. Riparian Planting To promote riparian vegetation, increase canopy cover above the creek, and to establish wood for future instream recruitment, CCC crews will return to the project site in the winter of 2017 to plant 200 native plants along the .44 miles of riparian zone, with a primary focus in areas of excavator ingress and egress.

Task 6. Post-Project Data and Photo Collection: Following implementation, post-implementation photos will be taken and metrics shall be collected which satisfy the Grant Agreement Annual Progress Report(s) and Final Report.

Task 7. Reporting Write and deliver progress reports for invoicing, Annual Progress report(s), and Final Report to CDFW Project Manager.

Deliverables:

Seventeen LWD features will be constructed and anchored in place and will contain a total of 42 logs and rootwads. These structures will enhance existing pools, increase gravel sorting, increase habitat complexity, and provide velocity refugia for salmonids. An additional 200 native plants and coniferous trees will be planted for riparian functionality and future LWD recruitment. ERWIG Project Manager and Project Associate will write and deliver progress reports for invoicing, and Annual Progress Report(s) for the duration of the project. A Final Report will be written and submitted to CDFW Project Manager after the project has been completed. The report will include: (1) the grant agreement number, (2) location of

work – project location will be shown using a USGS 7.5 minute topographical map, (3) specific project access using public and private roads and trails, with appropriate landowner contact information, (4) a description and analysis of the restoration and planning techniques used, (5) a description of project results, including project metrics, (6) dates of work and the number of person hours expended, (7) Labeled photographs of all restoration activities and techniques pre and post project implementation, (8) As-built drawings that include structure placement and alignment, crosssections and longitudinal profiles, and sizes and quantity of material added and (9) a financial overview of grant dollars spent and/or in kind services used to complete the project.

Timelines:

Task 1- Upon approval through March 31, 2022, Coordinate with landowners for project entry, apply for 1600 permit, hire sub-contractors and procure LWD. Oversee and coordinate project.

Task 2- Upon approval through October 31, 2021, oversee and coordinate project and ensure that subcontractors are trained and operate under landowner protocols.

Task 3 & 4- Upon approval through March 1, 2022, finalize design, label features, and purchase tools and materials.

Task 5- June 15, 2018 through October 31, 2018, June 15, 2019 through October 31, 2019, June 15, 2020 through October 31, 2020, and June 15, 2021 through October 31, 2021. Project implementation, installation of approved LWD structures. Erosion control will be installed as project features are completed.

Task 6- November 1, 2018 through March 1, 2019, November 1, 2019 through March 1, 2020, November 1, 2020 through March 1, 2021, November 1, 2021 through March 1, 2022 riparian plantings will occur after completion of features.

Task 7-June 15, 2018 through March 1, 2022. post-project description, photos and quantitative metrics will be collected. Progress reports will be written and delivered for invoicing.

Task 8- November 15, 2018, November 15, 2019, November 15, 2020, November 15, 2021 & March 31, 2022, post project photos and metrics will be delivered in an Annual Report, and a Final Report.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil

absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

a. Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.
b. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.
c. The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.
d. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
e. USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Managers. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.* Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Hales Grove (3912377) OR Bear Harbor (3912388) OR Piercy (3912387) OR Noble Butte (3912386) OR Mistake Point (3912378) OR Leggett (3912376) OR Westport (3912367) OR Lincoln Ridge (3912366))

Possible species within Hales Grove Quad and surrounding quads for 725575 Redwood Creek (HT) Instream Habitat Enhancement Project, T22N R17W S8, Mendocino County

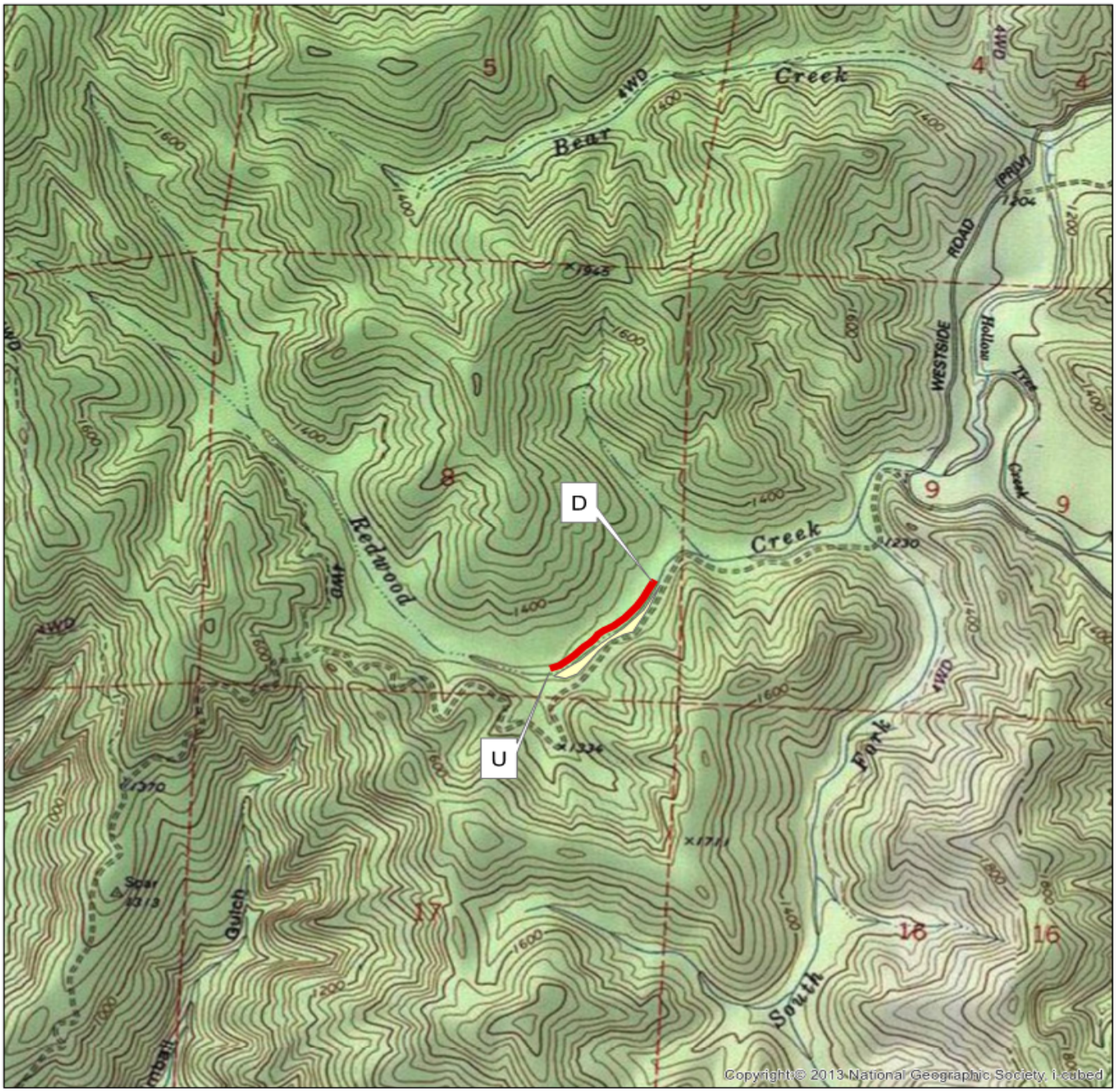
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Blasdale's bent grass *Agrostis blasdalei*	PMPOA04060	None	None	G2	S2	1B.2
bluff wallflower *Erysimum concinnum*	PDBRA160E3	None	None	G3	S2	1B.2
California floater *Anodonta californiensis*	IMBIV04020	None	None	G3Q	S2?	
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
coho salmon - southern Oregon / northern California ESU *Oncorhynchus kisutch*	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Cooper's hawk *Accipiter cooperii*	ABNKC12040	None	None	G5	S4	WL
Crotch bumble bee *Bombus crotchii*	IIHYM24480	None	None	G3G4	S1S2	
fisher - West Coast DPS *Pekania pennanti*	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Humboldt milk-vetch *Astragalus agnicidus*	PDFAB0F080	None	Endangered	G2	S2	1B.1
Kellogg's buckwheat *Eriogonum kelloggii*	PDPGN083A0	None	Endangered	G2	S2	1B.2
leafy reed grass *Calamagrostis foliosa*	PMPOA170C0	None	Rare	G3	S3	4.2
leafy-stemmed mitrewort *Mitellastra caulescens*	PDSAX0N020	None	None	G5	S4	4.2
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
McDonald's rockcress *Arabis mcdonaldiana*	PDBRA06150	Endangered	Endangered	G3	S3	1B.1
Mendocino Coast paintbrush *Castilleja mendocinensis*	PDSCR0D3N0	None	None	G2	S2	1B.2
Mendocino gentian *Gentiana setigera*	PDGEN060S0	None	None	G2	S1	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
North Central Coast Fall-Run Steelhead Stream *North Central Coast Fall-Run Steelhead Stream*	CARA2631CA	None	None	GNR	SNR	
northern goshawk *Accipiter gentilis*	ABNKC12060	None	None	G5	S3	SSC
Northern Interior Cypress Forest *Northern Interior Cypress Forest*	CTT83220CA	None	None	G2	S2.2	
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon coast paintbrush *Castilleja litoralis*	PDSCR0D012	None	None	G3	S3	2B.2
Oregon goldthread *Coptis laciniata*	PDRAN0A020	None	None	G4	S3	4.2
oval-leaved viburnum *Viburnum ellipticum*	PDCPR07080	None	None	G4G5	S3?	2B.3
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
pink sand-verbena *Abronia umbellata var. breviflora*	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Point Reyes horkelia *Horkelia marinensis*	PDROS0W0B0	None	None	G2	S2	1B.2
pygmy cypress *Hesperocyparis pygmaea*	PGCUP04032	None	None	G1	S1	1B.2
Raiche's manzanita *Arctostaphylos stanfordiana ssp. raichei*	PDERI041G2	None	None	G3T2	S2	1B.1
Red Mountain catchfly *Silene campanulata ssp. campanulata*	PDCAR0U0A2	None	Endangered	G5T3Q	S3	4.2
Red Mountain stonecrop *Sedum laxum ssp. eastwoodiae*	PDCRA0A0L1	None	None	G5T2	S2	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
robust false lupine *Thermopsis robusta*	PDFAB3Z0D0	None	None	G2	S2	1B.2
seaside bittercress *Cardamine angulata*	PDBRA0K010	None	None	G5	S1	2B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
steelhead - northern California DPS *Oncorhynchus mykiss irideus*	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
summer-run steelhead trout *Oncorhynchus mykiss irideus*	AFCHA0213B	None	None	G5T4Q	S2	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
Upland Douglas Fir Forest *Upland Douglas Fir Forest*	CTT82420CA	None	None	G4	S3.1	
Vine Hill ceanothus *Ceanothus foliosus var. vineatus*	PDRHA040D6	None	None	G3T1	S1	1B.1
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western pearlshell *Margaritifera falcata*	IMBIV27020	None	None	G4G5	S1S2	
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
Whitney's farewell-to-spring *Clarkia amoena ssp. whitneyi*	PDONA05025	None	None	G5T1	S1	1B.1
Yuma myotis *Myotis yumanensis*	AMACC01020	None	None	G5	S4	
northern spotted owl *Strix occidentalis caurina*	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 51

Project Location Topographic Map
Redwood Creek (HT) Instream Habitat Enhancement Project
Hales Grove Quad, Mendocino County
Redwood Creek



Redwood Project Reach
Tree Planting Area

0 0.4 0.8 Miles

N

Eel River Watershed Improvement Group
February 2017

Introduction:
The Mendocino Land Trust (MLT) will install Large Wood features throughout the 2,350 foot project reach of James Creek tributary to the Big River in Mendocino County with the goal of improving habitat complexity, frequency and depth of pools, providing refugia for migrating salmon and collecting spawning gravels.

A combination of historic logging practices and the efforts to remove large woody debris in streams in the 1980s as a perceived improvement of fish passage has left many streams, including James Creek with a lack of large wood in the channel and a lack of deep pools. The 2006 CDFW Big River Basin Assessment pointed to a simplification of salmonid habitat in tributaries to Big River with a high incidence of shallow pools and lack of cover and large woody debris. The oversimplification of salmonid habitat has been linked to declines in coho salmon populations in both State and federal salmonid recovery plans. The 2010 CDFW salmonid habitat inventory report for James Creek indicated that all segments of James Creek lacked in-stream cover and pool depth. This project to add large wood features to a segment of James Creek is necessary to increase the amount of instream cover, scour deeper pools, and collect spawning gravels, thereby, increasing the habitat complexity for coho and other salmonids.

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Parts VII, XI, XI and XII (Flosi et al 1998 and 2002).

Objective(s):
The goal of this project is to improve the quality and quantity of spawning and rearing habitat for coho salmon and steelhead. The objectives are to improve habitat complexity, pool frequency, and pool depth within the project reach by installing 47 pieces of large wood and rootwads at 20 sites along a 2,350 foot reach of James Creek.

Project Description:

Location:
The locations of the project boundaries are 39.38013º north latitude, 123.49253º west longitude at the upstream end; and 39.37609º north latitude, 123.49836º west longitude at the downstream end on James Creek in Mendocino County. The project reach begins at the confluence of North Fork James Creek with and James Creek and continues upstream 2,350 feet.

Project Set Up:
The Grantee (MLT) Project Manager will provide contracting oversight and administration including obtaining permits; scheduling of Archeological and Listed Plant Surveys; securing contracts (grantors, subcontractors, landowner); project scheduling; implementation oversite; invoicing; report preparation. The Grantee

Project Coordinator will assist in processing invoices and vendor payments and collecting information for report preparation as well as facilitating agency and landowner communications. The Grantee Director of Conservation will assist in grant oversight and communication with the Grantor as well as finalizing grant reports.

The California Conservation Corps (CCC), as a subcontractor, will be responsible for design/installation/photo documentation and reporting information regarding large wood features. The staff levels involved are as follows: Fisheries Technical Assistant and/or Fish Habitat Specialist, Fish Habitat Assistant will perform pre-project design, photo documentation, implementation oversight, and reporting; reservation of spike camp location. Conservationist II (C-II; not funded by grant) will oversee purchasing and delivery of project materials; tool and equipment service and repair. Conservationist I supervises Corps Member crew operations. Corps Member crews provide the hand labor for installing the in-stream LWD features and applying erosion control treatments before predicted chance of significant precipitation.

Landowner (and project partner, CAL FIRE/Jackson Demonstration State Forest) will provide project oversight and access as a cost share. Specific staff levels involved are CAL FIRE Forester I and Forester II to conduct project review, site inspections, and coordinate access; and CAL FIRE crews to clear trail through windfall on decommissioned road to provide access to project reach.

Materials:

Materials for implementing this project include Redwood and Douglas Fir logs with a minimum DBH of 14 inches, and/or root-wads (landowner-partner cost share); CCC Laborer Meals – food supplies to feed Corps Member crews while on spike; Spike Supplies (briquettes, propane, etc.) for preparing Corps Member meals while on spike; Campsite Rental for crews to utilize for spike camp operations (partner cost share); Generator Rental for operating power equipment used during in-stream structure anchoring process; Materials for anchoring large wood features - threaded rebar, nuts, washers, cable, cable clamps, and epoxy glue; wood and rock drill bits for drilling logs/root-wads/trees during in-stream structure anchoring process; car washing nozzle - used for pressure washing tools to prevent spread of aquatic invasive species and sudden oak death; Decontamination chemicals - used for decontamination of tools/gear; Safety & First Aid supplies (gloves, hard hats, safety glasses, bandages, antibiotic ointments); Hand tools & supplies (chain, bar oil, files, hacksaws, bit extensions, shearpins, and related supplies) for installing large wood features; Materials for tool/equipment service/repair (oil, grease, and other materials for maintaining or repairing tools/equipment used during project implementation; Office supplies (paper, printer supplies) used for creating designs, work-plans, all pertinent documents relating to the project;

Vehicle mileage for travel to/from project site during project (cost share); 1600 permit - required for construction of in-stream features.

Tasks:
Task 1. Grant Oversight: Grantee will provide all contracting, oversight, and administration including obtaining permits; securing contracts (grantor, subcontractors, landowner); scheduling; implementation oversight; invoicing; developing and delivering required reports; and agency and landowner communications. This task will occur throughout the life of the project.

All reporting and billing will be pursuant to grant and regulatory guidelines. Upon final execution of the Grant and prior to receiving a Final Notice to Proceed, Grantee shall deliver the following items to the Grantor Project Manager:

- Final Landowner Access Agreement – written permission from landowner to for access to perform grant work.

- Subcontractor Agreements. If a subcontractor is to be used, then a written copy of the sub agreement(s) shall be submitted to the Grantor Project Manager. The subcontract shall include specific language which establishes the rights of the auditors of the State to examine the records of the subcontractor relative to the services and materials provided under the grant.

A Preliminary Notice to Proceed can be requested from the Grantor Project Manager, if necessary, to prepare for project implementation (e.g., obtain permits, secure subcontracts, purchase supplies, apply for a Streambed Alteration Agreement).

A Final Notice to Proceed will be delivered to the Grantee when Final Landowner Access Agreement(s) and subcontracts are delivered to Grantor Project Manager, and when all required permits have been finalized (e.g., 401 State Water Quality Control Board Permit, Streambed Alteration Agreement).

The Grantee shall notify the Grantor Project Manager a minimum of 10 business days prior to the beginning of project implementation.

Task 2. Final Feature Design, Pre-Project Surveys, and Preparation: Subcontractor Fish Habitat Specialist, Fish Habitat Assistant, and/or Fisheries Technical Assistant will reserve spike camp location, ensure large wood feature site flagging is intact prior to implementation, finalize site-specific structure designs based on local channel characteristics, large wood availability and equipment access and obtain design approval from landowner and Grantor Project Manager.

Subcontractor Conservationist II will oversee purchase and delivery of project materials as well as preparing tools and equipment for use. Subcontractor Field

crews will set-up and maintain spike camp operations. Subcontractor will also perform photo-documentation to provide matched photos of feature sites prior to structure installation and photos of features after they are installed.

Grantee (Mendocino Land Trust) will schedule Archeological and Listed Plant Surveys for the project area.

Landowner - Jackson Demonstration State Forest (JDSF) will provide grantee any surveys or information on Northern Spotted Owl and Marbled Murrelet activity in the project area at the time of submission of 1600 permit Notification.

CAL FIRE Forester I and Forester II with JDSF will conduct project review, site inspections, and coordinate access. Cal Fire crews will clear trail through windfall on decommissioned road to provide access to project reach.

Task 3. Project Implementation:

Task 3A. Install Instream Habitat Features: Installation of 20 LWD features including 47 logs/rootwads of Redwood or Douglas fir will be completed over a 2,350 foot reach of James Creek using grip-hoist and wire rope rigging techniques for log placement. LWD will be composed of Redwood and Douglas fir logs with a minimum DBH of 14 inches, and root wads. Anchoring of LWD will be accomplished using threaded rebar inserted through the logs and anchor trees and secured with washers and nuts. Cable and polyester resin adhesive may be used, as applicable. Some logs may be wedged between suitable riparian trees. All features will be placed and anchored in a manner consistent with procedures in the DFG California Salmonid Stream Habitat Restoration Manual, Section VII. Available slash and smaller woody debris at each structure site will be installed into features after site completion to provide immediate cover for salmonids present at time of construction.

Task 3B. Erosion Control: Mulching will take place on all exposed soils that may deliver sediment to a stream. Ground surface disturbed during construction of features will be protected using on-site forest materials (slash and other small wood) to prevent erosion and delivery of fine sediment into the stream channel. Seeding and mulching will take place as needed to stabilize bare soils and avoid potential erosion.

Task 3C. Avoidance of Spread of Aquatic Invasive species, chytrid disease, and Sudden Oak Death: All personal gear as well as tools/equipment used in the field will be properly decontaminated before moving to a new location even within the same watershed, in compliance with CDFW and CA Oak Mortality Task Force decontamination protocol requirements.

Task 3D. Project Completion: Subcontractor Crews will break down spike camp and transport equipment and supplies back to base at project completion.

Task 4. Post Implementation Surveys: Post-Project Data and Photo Collection: Following implementation, post-project photos will be taken and required performance metrics collected (which satisfy the Grant Agreement Annual Progress Report(s) and Final Report.

Task 5. Reporting: Write and deliver progress reports for invoicing and Annual Progress Report(s). Summarize and interpret instream wood and other survey information, and summarize performance measures and prepare Final Report and deliver to Grantor.

The Annual and Final reports will contain:
a) The grant agreement number
b) Location of work – project location will be shown using a USGS 7.5 minute topographical map
c) Specific project access using public and private roads and trails, and landowner name and address
d) A description and analysis of the restoration and planning techniques used
e) A description of the results of the project
f) Paired Pre- and Post-installation of each Large Wood feature site.
g) Performance metrics indicated in the CDFW Final Report template for Instream Habitat Enhancement (HI) projects.
h) Dates of work and the number of person hours expended
i) A Final Budget table indicating grant dollars spent as well as contributed cash and in-kind services used to complete the project.

Deliverables:

- A total of 20 features containing 47 pieces of properly sized large wood will be constructed in existing and newly-developed pool habitat within a 2,350 foot stream reach of James Creek.
- Matched Pre- and Post-construction photos of all structure sites (on CD included with Final Report).
- Final Landowner Access Agreement
- Grantor Notification of Lake or Streambed Alteration Application with payment for the 1600 permit
- Site-specific plans for in-stream habitat features
- Progress Reports submitted with each billing invoice
- Annual Reports by November 15
- Draft Final Report for grant manager review and a finalized Final Report with any edits resulting from grant manager review.

Timelines:

Contract Timeline is expected to be June 1, 2018 or upon approval to December 31, 2021.

Task 1. Grant Oversight June 1, 2018 or, upon approval, through December 31, 2021.

Task 2. Finalize Feature Designs with CDFW: July 9, 2018 and subcontractor ordering of materials and supplies: June – July 2018

Task 2. Pre-Project Surveys, and Preparation: July 10 - August 10 2018, 2019, 2020, and/or 2021 (depending on subcontractor availability/schedule).

Task 3. Project Implementation: July 10 to October 31, 2018; July 10 to October 31, 2019; or July 10 to Oct 31, 2020; or July 10 to October 31, 2021 (depending on potential Northern Spotted Owl work restrictions and subcontractor scheduling); Includes log staging, feature installation, erosion control, equipment decontamination; All wood installation work will be completed during low-flow periods when impacts to water quality can be minimized or avoided.

Task 4. Post Implementation Surveys: November 1-15, 2018; November 1-15, 2019; November 1-15, 2020; or November 1-15, 2021

Task 5. Reporting:

Annual Reports due November 15 2018, 2019, and 2020
Draft Final Report due November 26, 2021
Final Report/Invoice/Budget due December 31, 2021

Summer Season Work time frame will be July 10 – October 31, activity restrictions are modified through surveys indicating the absence of Northern Spotted Owls.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a “notice to proceed” letter has been received from the Grantor Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW. The Grantee should use the largest whole tree material available.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the

channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Manager. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

The Grantee will seed and mulch all exposed soils which may deliver sediment to a stream. Mulching and seeding can occur at any time during construction but will need to be completed prior to Oct. 15. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years.

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Burbeck (3912344) OR Sherwood Peak (3912355) OR Longvale (3912354) OR Willis Ridge (3912353) OR Northspur (3912345) OR Willits (3912343) OR Comptche (3912335) OR Greenough Ridge (3912334) OR Laughlin Range (3912333))

Possible species within Burbeck Quad and surrounding quads for 725527 James Creek Coho Stream Habitat Enhancement Project - Phase II at T18N R15W S35, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
angel's hair lichen *Ramalina thrausta*	NLLEC3S340	None	None	G5	S2?	2B.1
Baker's meadowfoam *Limnanthes bakeri*	PDLIM02020	None	Rare	G1	S1	1B.1
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Behren's silverspot butterfly *Speyeria zerene behrensii*	IILEPJ6088	Endangered	None	G5T1	S1	
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
fisher - West Coast DPS *Pekania pennanti*	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
glandular western flax *Hesperolinon adenophyllum*	PDLIN01010	None	None	G2G3	S2S3	1B.2
grass alisma *Alisma gramineum*	PMALI01010	None	None	G5	S3	2B.2
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
Humboldt milk-vetch *Astragalus agnicidus*	PDFAB0F080	None	Endangered	G2	S2	1B.1
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
Milo Baker's lupine *Lupinus milo-bakeri*	PDFAB2B4E0	None	Threatened	G1Q	S1	1B.1
North Coast semaphore grass *Pleuropogon hooverianus*	PMPOA4Y070	None	Threatened	G2	S2	1B.1
northern goshawk *Accipiter gentilis*	ABNKC12060	None	None	G5	S3	SSC
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC

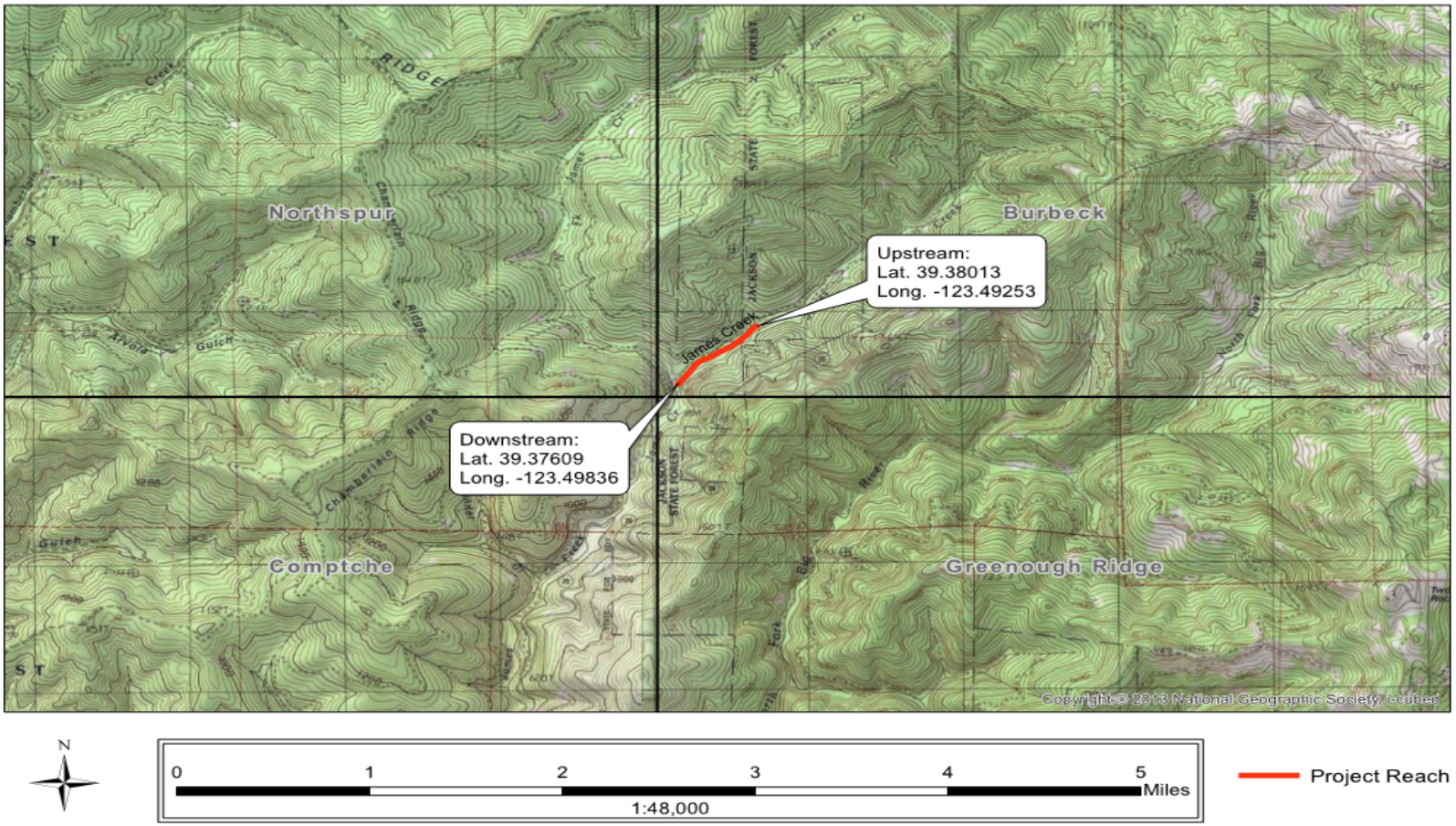
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Nuttall's ribbon-leaved pondweed *Potamogeton epihydrus*	PMPOT03080	None	None	G5	S2S3	2B.2
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon goldthread *Coptis laciniata*	PDRAN0A020	None	None	G4	S3	4.2
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
pygmy cypress *Hesperocyparis pygmaea*	PGCUP04032	None	None	G1	S1	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
Roderick's fritillary *Fritillaria roderickii*	PMLIL0V0M0	None	Endangered	G1Q	S1	1B.1
sharp-shinned hawk *Accipiter striatus*	ABNKC12020	None	None	G5	S4	WL
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
steelhead - northern California DPS *Oncorhynchus mykiss irideus*	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
thin-lobed horkelia *Horkelia tenuiloba*	PDROS0W0E0	None	None	G2	S2	1B.2
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
Valley Oak Woodland *Valley Oak Woodland*	CTT71130CA	None	None	G3	S2.1	
watershield *Brasenia schreberi*	PDCAB01010	None	None	G5	S3	2B.3
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
yellow warbler *Setophaga petechia*	ABPBX03010	None	None	G5	S3S4	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
yellow-breasted chat *Icteria virens*	ABPBX24010	None	None	G5	S3	SSC
northern spotted owl *Strix occidentalis caurina*	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 41

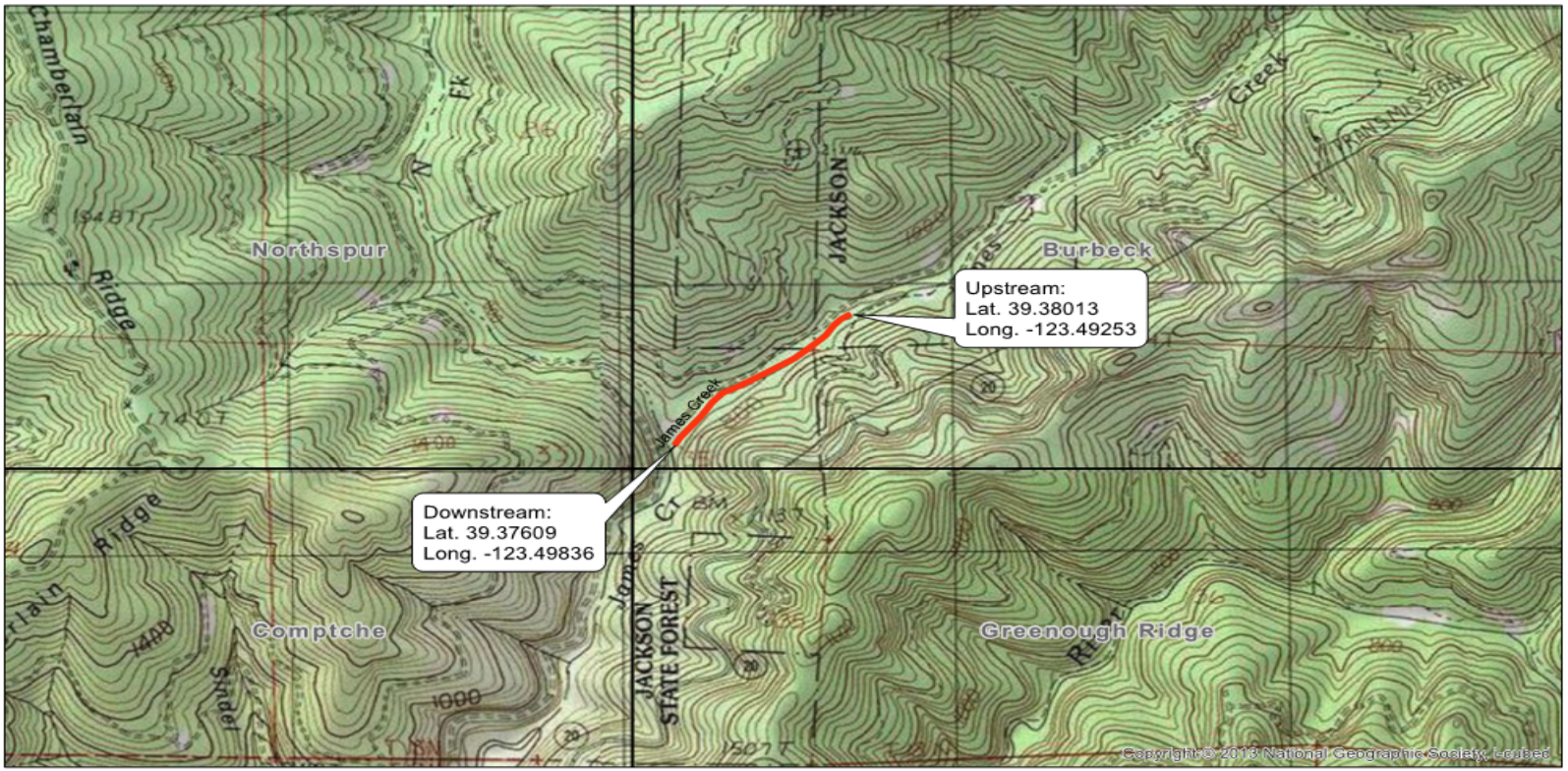
Project Location Topographic Map

California Conservation Corps
James Creek Coho Stream Habitat Enhancement Project Phase II
Project Location Map I
Burbeck Quad, Mendocino County



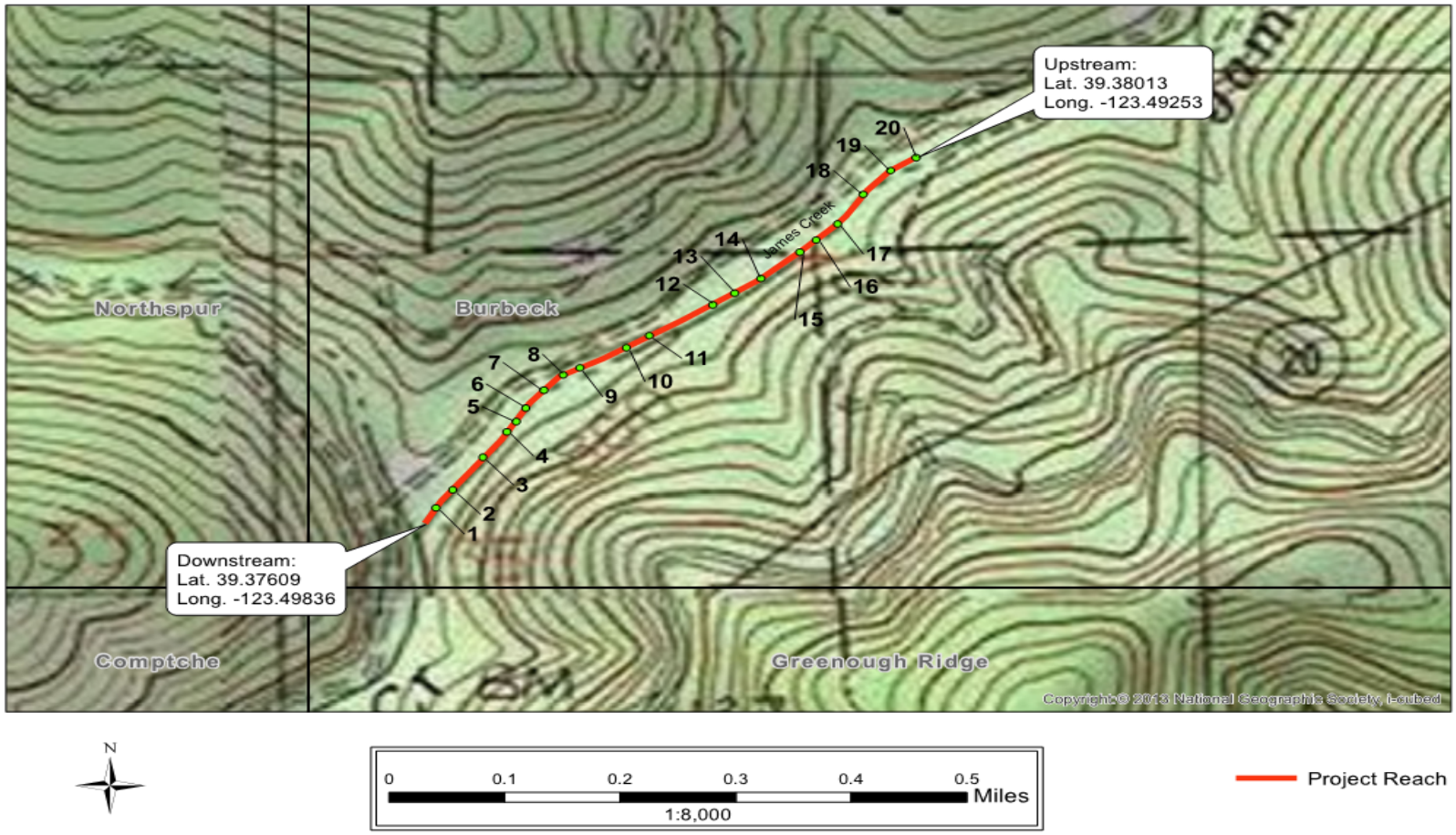
Project Location Topographic Map

California Conservation Corps
James Creek Coho Stream Habitat Enhancement Project Phase II
Project Location Map II (USGS 7.5 Min.)
Burbeck Quad, Mendocino County



Project Location Topographic Map

California Conservation Corps
James Creek Coho Stream Habitat Enhancement Project Phase II
Site Locations Map
Burbeck Quad, Mendocino County



N

0 0.1 0.2 0.3 0.4 0.5 Miles
1:8,000

Project Reach

Introduction:
The Grantee, California Conservation Corps (CCC), will install large wood features throughout the 3,130 foot project reach of North Fork Noyo River and Dewarren Creek tributaries to the Noyo River in Mendocino County. The project goal is to improve habitat complexity, frequency and depth of pools, provide refugia for migrating salmon and collect spawning gravels

A combination of historic logging practices and the efforts to remove large woody debris in streams in the 1980s as a perceived improvement of fish passage has left many streams, including North Fork Noyo River lacking in instream large wood and deep pools. The 2006 CDFW Noyo River Watershed Enhancement Plan listed the North Fork Noyo River as a high priority stream for restoration utilizing the addition of large wood features as the recommended treatment. The existing habitat metric for instream large wood is "Poor" with an average of less than 2 key pieces of wood/100 meters, based on the criteria from the 2012 NOAA Central California Coast Coho Salmon Recovery Plan. The addition of wood in this project would increase the large wood habitat metric to "Good" with an average of 6 – 11 key pieces of wood/100 meters.

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Parts VII, XI, XI and XII (Flosi et al 1998 and 2002).

Objective(s):
The goal of this project is to improve the quality and quantity of spawning and rearing habitat for coho salmon and steelhead. The objectives are to improve habitat complexity, pool frequency, and pool depth within the project reach by installing 71 pieces of large wood and rootwads at 25 sites along a 3,130 foot reach of the North Fork Noyo River and Dewarren Creek.

Project Description:

Location: The locations of the project boundaries are 39.48178º north latitude, 123.55596º west longitude at the upstream end on Dewarren Creek; and 39.47578º north latitude, 123.55260º west longitude at the downstream end on North Fork Noyo River in Mendocino County. The project reach begins on the North Fork Noyo River, 2.43 miles upstream of its confluence with Hayworth Creek, and continues upstream 520 feet on the North Fork Noyo River to its confluence with Dewarren Creek and then continues up Dewarren Creek for an additional 2,610 feet.

Project Set Up: The Grantee Fisheries Technical Assistant will provide contracting oversight and administration including obtaining permits; scheduling of Archeological and Listed Plant Surveys; securing contracts (landowner); project

scheduling; implementation oversight, invoicing; report preparation; vendor payments; as well as facilitating agency and landowner communications.

The Grantee will also be responsible for design/installation/photo documentation and reporting information regarding large wood features. Fisheries Technical Assistant will perform pre-project design, photo documentation, implementation oversight, and reporting; coordinating with landowner regarding spike camp location. Conservationist II (position funded through other sources) will oversee purchasing and delivery of project materials; tool and equipment service and repair. Timber Faller will fell trees to be utilized in large wood features. Conservationist I supervises Corps Member crew operations. Corps Member crews provide the hand labor for set-up and break-down of spike camp; installing the in-stream large wood features; applying erosion control treatments before predicted chance of significant precipitation and at the end of implementation.

Landowner and project partner, Mendocino Redwood Company (MRC) will provide project oversight and access as a cost share. MRC Forester will conduct pre- and post-implementation project review and approve selected trees to be felled with the purpose of maintain good canopy cover and bank stability. The MRC Lead Biologist and the Hydrologist will also review project relative to fish and wildlife aspects and stream channel and flow characteristics, respectively. MRC Forester, Staff Biologist, and hydrologist will provide assistance with access, gate combinations, maps, and general stream/project area information. The MRC heavy equipment operator will use equipment to bring wood to staging areas, as applicable. MRC Licensed Timber Operator (LTO) may also fell trees near project sites for instream feature construction, as needed. MRC staff hours are provided as cost share, except for the requested LTO time.

Materials: Materials for implementing this project include: Redwood and Douglas Fir logs with a minimum DBH of 14 inches, and/or root-wads (landowner-partner cost share); Grantee Laborer Meals – food supplies to feed Corps Member crews while on spike; Spike Supplies (briquettes, propane, etc.) for preparing Corps Member meals while on spike; Portable Toilet Rental for Crews at spike camp; Generator hours for operating power equipment used during in-stream structure anchoring process; Materials for anchoring large wood features - threaded rebar, nuts, washers, cable, cable clamps, and epoxy glue; wood and rock drill bits for drilling logs/root-wads/trees during in-stream structure anchoring process; Car washing nozzle - used for pressure washing tools to prevent spread of aquatic invasive species and sudden oak death; Decontamination chemicals - used for decontamination of tools/gear; Safety & First Aid supplies (gloves, hard hats, safety glasses, bandages, antibiotic ointments); Hand tools & supplies (chain, bar oil, files, hacksaws, bit extensions, shear pins, and related supplies) for installing large wood features; Materials for tool/equipment service/repair (oil, grease, and other materials for maintaining or repairing tools/equipment used during project

implementation; Office supplies (paper, printer supplies) used for creating designs, work-plans, all pertinent documents relating to the project; Vehicle mileage for travel to/from project site during project (Grantee cost share); 1600 permit - required for construction of in-stream features.

Tasks:

Task 1. Grant Oversight: Grantee will provide all contracting, oversight, and administration including obtaining permits; securing contracts and landowner access agreement; scheduling; implementation oversight; invoicing; developing and delivering required reports; and Grantor, agency, and landowner communications. This task will occur throughout the life of the project.

All reporting and billing will be pursuant to grant and regulatory guidelines. Upon final execution of the Grant and prior to receiving a Final Notice to Proceed, Grantee shall deliver the following item to the Grantor Project Manager:

Final Landowner Access Agreement – written permission from landowner for access to perform grant work.

A Preliminary Notice to Proceed can be requested from the Grantor Project Manager, if necessary, to prepare for project implementation (e.g., obtain permits, secure subcontracts, purchase supplies, apply for a Streambed Alteration Agreement).

A Final Notice to Proceed will be delivered to the Grantee when Final Landowner Access Agreement(s) and subcontracts are delivered to Grantor Project Manager, and when all required permits have been finalized (e.g., 401 State Water Quality Control Board Permit, Streambed Alteration Agreement).

The Grantee shall notify the Grantor Project Manager a minimum of 10 business days prior to the beginning of project implementation.

Task 2. Final Feature Design, Pre-Project Surveys, and Preparation:
Grantee Fisheries Technical Assistant will work with landowner to determine spike camp location, rent portable toilets, ensure large wood feature site flagging is in place for Grant Manager review and prior to implementation, finalize site-specific structure designs based on local channel characteristics, large wood availability and equipment access and obtain feature design and location approval from landowner (MRC) and Grantor Project Manager.

Grantee Conservationist II will oversee purchase and delivery of project materials as well as preparing tools and equipment for use and making sure they are serviced and repaired, as needed. Field crews will set-up and maintain spike camp operations. Fisheries Technical Assistant will schedule Archeological and Listed

Plant Surveys for the project area and perform photo-documentation to provide matched photos of feature sites prior to large wood installation and photos of features after they are installed.

Landowner (MRC) will provide grantee any surveys or information on Northern Spotted Owl and Marbled Murrelet activity in the project area at the time of submission of 1600 permit Notification.

MRC staff will conduct pre-implementation project review, site inspections, and coordinate access

Task 3. Project Implementation:
Task 3A. Select and Fell Trees, and Stage logs and rootwads for large wood feature construction. MRC Forester will review/approve trees marked for felling ensuring that stream canopy and bank stability are maintained. MRC LTO and CCC Timber Faller will fell and limb trees. MRC heavy equipment operator will move trees to staging areas near stream sites.

Task 3B. Install Instream Habitat Features: Installation of 25 large wood features including 71 logs/rootwads of Redwood or Douglas fir will be completed over a 3,130 foot reach of the North Fork Noyo River and Dewarren Creek using grip-hoist and wire rope rigging techniques for log placement. The Redwood and Douglas fir logs will have a minimum diameter breast height (DBH) of 14 inches. Anchoring of the large wood will be accomplished using threaded rebar inserted through the logs and anchor trees and secured with washers and nuts. Cable and polyester resin adhesive may be used, as applicable. Some logs may be wedged between suitable riparian trees. All features will be placed and anchored in a manner consistent with procedures in the DFG California Salmonid Stream Habitat Restoration Manual, Section VII. Available slash and smaller woody debris at each structure site will be installed into features after site completion to provide immediate cover for salmonids present at time of construction.

Task 3C. Erosion Control: Mulching will take place on all exposed soils which may deliver sediment to a stream. Ground surface disturbed during construction of features will be protected using on-site forest materials (slash and other small wood) to prevent erosion and delivery of fine sediment into the stream channel.

Task 3D. Avoidance of Spread of Aquatic Invasive species, chytrid disease, and Sudden Oak Death: All personal gear as well as tools/equipment used in the field will be properly decontaminated before moving to a new location even within the same watershed, in compliance with CDFW and California Oak Mortality Task Force decontamination protocol requirements.

Task 3E. Project Completion: Crews will break down spike camp and transport equipment and supplies back to base at project completion.

Task 4. Post Implementation Surveys:
Post-Project Data and Photo Collection: Following implementation, Fisheries Technical Assistant will 1) take post-implementation photos at photo points near features that will be matched with pre-implementation photos taken at the same sites and 2) collect the performance metrics that are required for Annual Progress Report(s) and the Grant Final Report.

Task 5. Reporting: Grantee Fisheries Technical Assistant will write and deliver progress reports for invoicing and Annual Progress Report(s). Summarize and interpret instream wood and other survey information, and summarize performance measures and prepare Final Report and deliver to Grantor Grant Manager.

The Annual and Final reports will contain:
a) The grant agreement number
b) Location of work – project location will be shown using a USGS 7.5 minute topographical map
c) Specific project access using public and private roads and trails, and landowner name and address
d) A description and analysis of the restoration and planning techniques used
e) A description of the results of the project
f) Paired Pre- and Post-installation photos of each Large Wood feature site.
g) Performance metrics indicated in the CDFW Final Report template for Instream Habitat Enhancement (HI) projects.
h) Dates of work and the number of person hours expended
i) A Final Budget table indicating grant dollars spent as well as amounts of contributed cash and in-kind services used to complete the project.

Deliverables:
- A total of 25 features containing 71 pieces of properly sized large wood will be constructed in existing and newly-developed pool habitat within a 3,130 foot stream reach of North Fork Noyo River.
- Matched Pre- and Post-construction photos of all structure sites (on CD included with Final Report).
- Final Landowner Access Agreement
- Grantor Notification of Lake or Streambed Alteration Application with payment for the 1600 permit
- Final site-specific plans for in-stream habitat features
- Progress Reports submitted with each billing invoice
- Annual Reports by November 15

• Draft Final Report for grant manager review and a finalized Final Report including any edits resulting from grant manager review.

Timelines:

Contract Timeline is expected to be June 1, 2018 or upon approval through January 31, 2022.

Task 1: Grant Oversight June 1, 2018 or, upon approval, through December 30, 2021

Task 2: Final Feature Design and ordering of materials and supplies: June - July 2018.

Task 2: Pre-Project Surveys, and Preparation: July 10 – August 10 2018, 2019, 2020, and 2021

Task 3: Project Implementation: July 10 to October 31, 2018; July 10 to October 31, 2019; July 10 to Oct 31, 2020; or July 10 to October 31, 2021 (depending on NSO work restrictions and scheduling). Includes tree falling and staging as well as feature installation, erosion control, equipment decontamination. All wood installation work will be completed during low-flow periods when impacts to water quality can be minimized or avoided.

Task 4. Post Implementation Surveys: November 1-15, 2018; November 1-15, 2019; November 1-15, 2020; or November 1-15, 2021.

Task 5. Reporting:

Annual Reports due November 15 2018, 2019, and 2020
Draft Final Report due November 26, 2021
Final Report/Invoice/Budget due December 31, 2021

Summer Season Work time frame will be July 10 – October 31, unless activity restrictions are modified through surveys indicating absences of Northern Spotted Owls.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a “notice to proceed” letter has been received from the California Department of Fish and Wildlife (CDFW) Grant Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

Final structure design and placement will be determined by field consultation between the Grantee and the CDFW Grant Manager. All habitat improvements will follow techniques described in the California Salmonid Stream Habitat Restoration Manual.

The Grantee will mulch all exposed soils which may deliver sediment to a stream. Mulching can occur at any time during construction but will need to be completed prior to Oct. 15. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Northspur (3912345) OR Dutchmans Knoll (3912356) OR Sherwood Peak (3912355) OR Longvale (3912354) OR Noyo Hill (3912346) OR Burbeck (3912344) OR Mathison Peak (3912336) OR Comptche (3912335) OR Greenough Ridge (3912334))

Possible species within the Northspur quadrangle and surrounding quads for 725529 North Fork Noyo River-Dewarren Creek Coho Habitat Enhancement Project, T19N R15W S29, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
angel's hair lichen *Ramalina thrausta*	NLLEC3S340	None	None	G5	S2?	2B.1
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Behren's silverspot butterfly *Speyeria zerene behrensii*	IILEPJ6088	Endangered	None	G5T1	S1	
Bolander's beach pine *Pinus contorta ssp. bolanderi*	PGPIN04081	None	None	G5T2	S2	1B.2
California sedge *Carex californica*	PMCYP032D0	None	None	G5	S2	2B.3
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
coast lily *Lilium maritimum*	PMLIL1A0C0	None	None	G2	S2	1B.1
Coastal and Valley Freshwater Marsh *Coastal and Valley Freshwater Marsh*	CTT52410CA	None	None	G3	S2.1	
Coastal Brackish Marsh *Coastal Brackish Marsh*	CTT52200CA	None	None	G2	S2.1	
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	PDAST4R065	None	None	G5T1T2	S1S2	1B.2
dark-eyed gilia *Gilia millefoliata*	PDPLM04130	None	None	G2	S2	1B.2
deceiving sedge *Carex saliniformis*	PMCYP03BY0	None	None	G2	S2	1B.2
fisher - West Coast DPS *Pekania pennanti*	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
glandular western flax *Hesperolinon adenophyllum*	PDLIN01010	None	None	G2G3	S2S3	1B.2
grass alisma *Alisma gramineum*	PMALI01010	None	None	G5	S3	2B.2

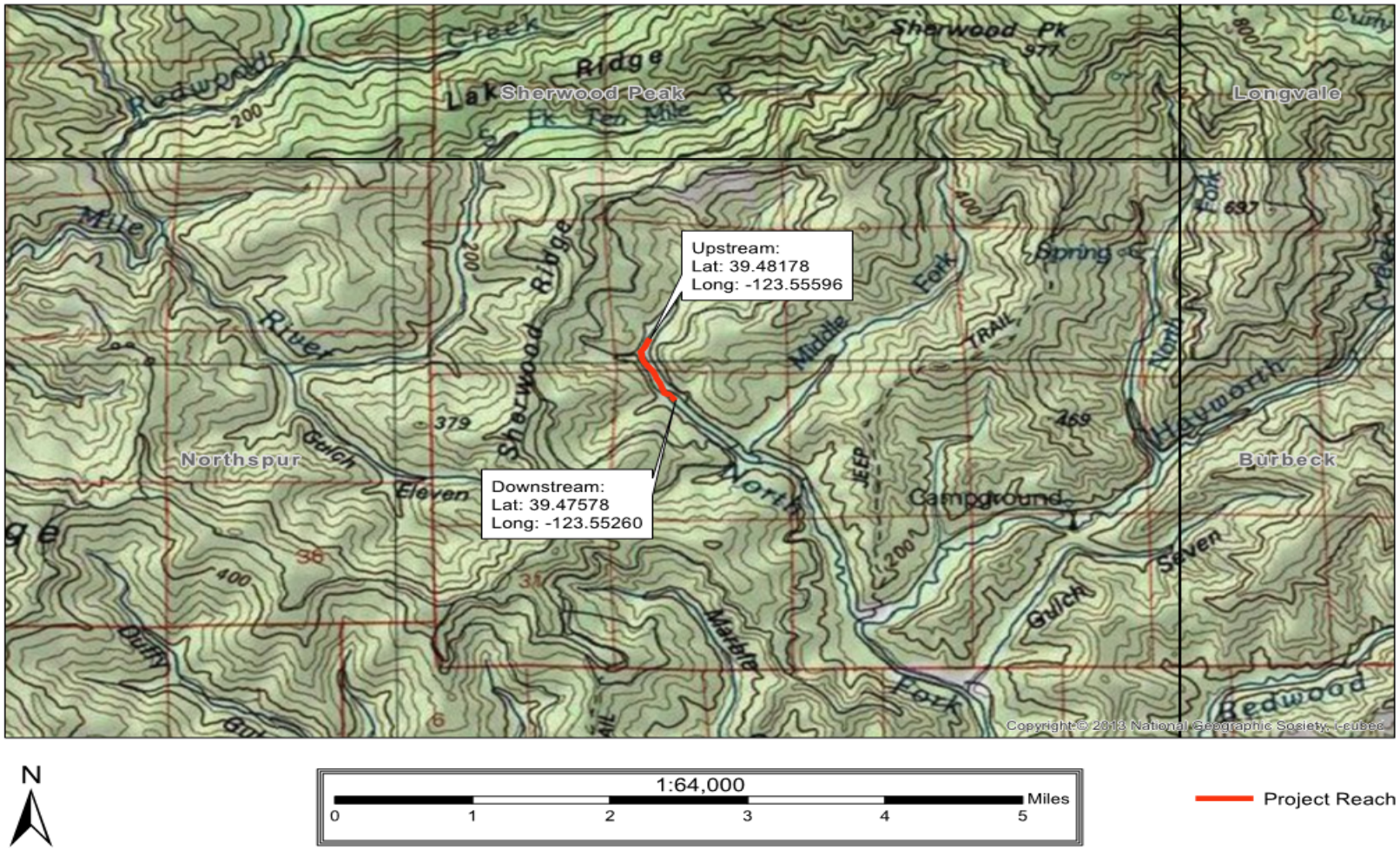
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
Humboldt milk-vetch *Astragalus agnicidus*	PDFAB0F080	None	Endangered	G2	S2	1B.1
lagoon sedge *Carex lenticularis var. limnophila*	PMCYP037A7	None	None	G5T5	S1	2B.2
leafy-stemmed mitrewort *Mitellastra caulescens*	PDSAX0N020	None	None	G5	S4	4.2
Lyngbye's sedge *Carex lyngbyei*	PMCYP037Y0	None	None	G5	S3	2B.2
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
Mendocino Pygmy Cypress Forest *Mendocino Pygmy Cypress Forest*	CTT83161CA	None	None	G2	S2.1	
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
Milo Baker's lupine *Lupinus milo-bakeri*	PDFAB2B4E0	None	Threatened	G1Q	S1	1B.1
Monterey clover *Trifolium trichocalyx*	PDFAB402J0	Endangered	Endangered	G1	S1	1B.1
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
North Coast semaphore grass *Pleuropogon hooverianus*	PMPOA4Y070	None	Threatened	G2	S2	1B.1
northern goshawk *Accipiter gentilis*	ABNKC12060	None	None	G5	S3	SSC
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon goldthread *Coptis laciniata*	PDRAN0A020	None	None	G4	S3	4.2
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
Pacific lamprey *Entosphenus tridentatus*	AFBAA02100	None	None	G4	S4	SSC
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
Point Reyes horkelia *Horkelia marinensis*	PDROS0W0B0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
purple martin *Progne subis*	ABPAU01010	None	None	G5	S3	SSC
pygmy cypress *Hesperocyparis pygmaea*	PGCUP04032	None	None	G1	S1	1B.2
pygmy manzanita *Arctostaphylos nummularia ssp. mendocinoensis*	PDERI04280	None	None	G3?T1	S1	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
running-pine *Lycopodium clavatum*	PPLYC01080	None	None	G5	S3	4.1
seacoast ragwort *Packera bolanderi var. bolanderi*	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
sharp-shinned hawk *Accipiter striatus*	ABNKC12020	None	None	G5	S4	WL
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
Sphagnum Bog *Sphagnum Bog*	CTT51110CA	None	None	G3	S1.2	
steelhead - northern California DPS *Oncorhynchus mykiss irideus*	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
swamp harebell *Campanula californica*	PDCAM02060	None	None	G3	S3	1B.2
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
watershield *Brasenia schreberi*	PDCAB01010	None	None	G5	S3	2B.3
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
white beaked-rush *Rhynchospora alba*	PMCYP0N010	None	None	G5	S2	2B.2
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
northern spotted owl *Strix occidentalis caurina*	ABMSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 60

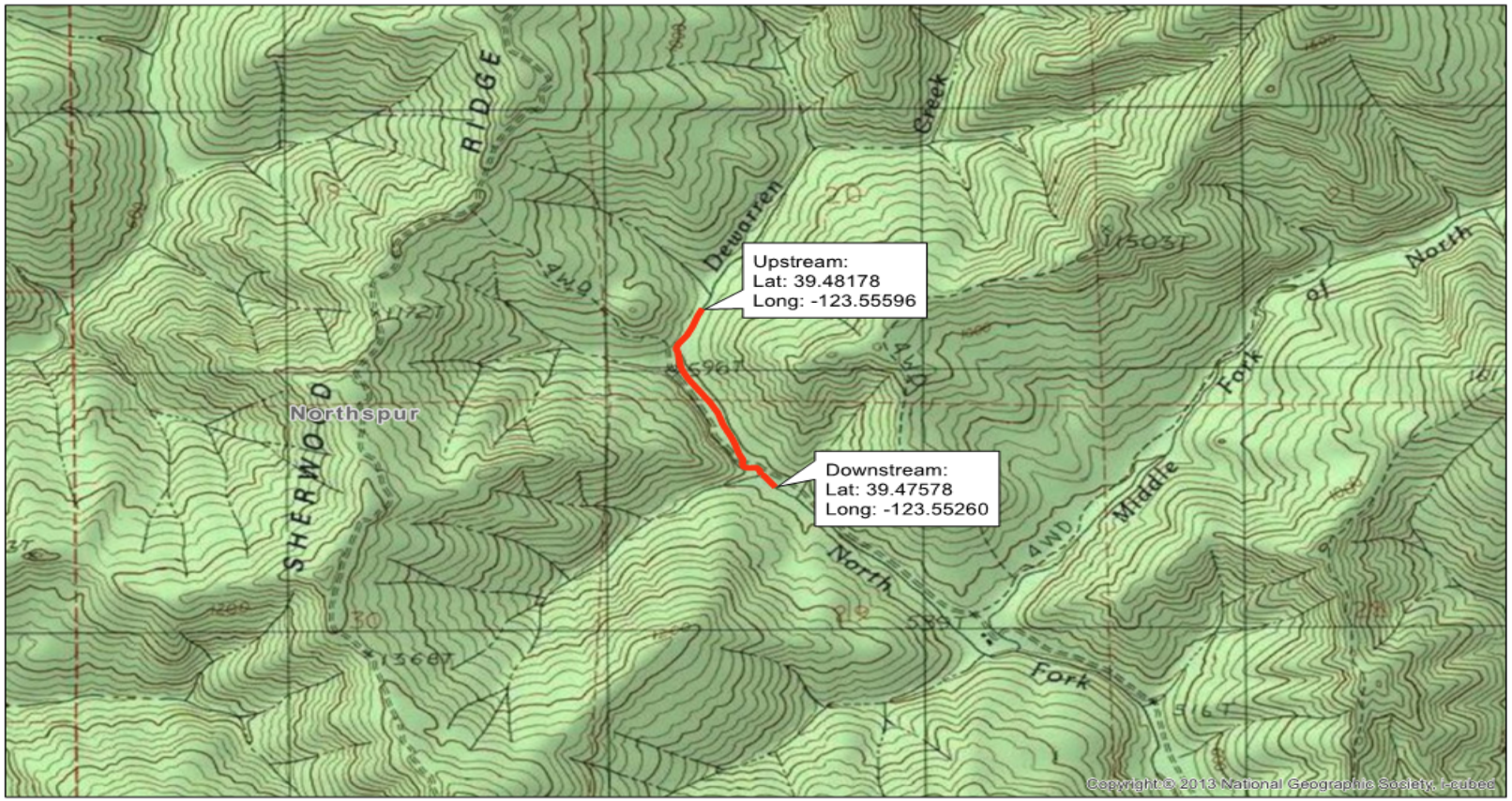
Project Location Topographic Map

California Conservation Corps
North Fork Noyo River - Dewarren Creek Coho Stream Enhancement Project
Project Location Map I
Northspur Quad, Mendocino County



Project Location Topographic Map

California Conservation Corps
North Fork Noyo River - Dewarren Creek Coho Stream Enhancement Project
Project Location Map II (USGS 7.5 Min.)
Northspur Quad, Mendoncino County



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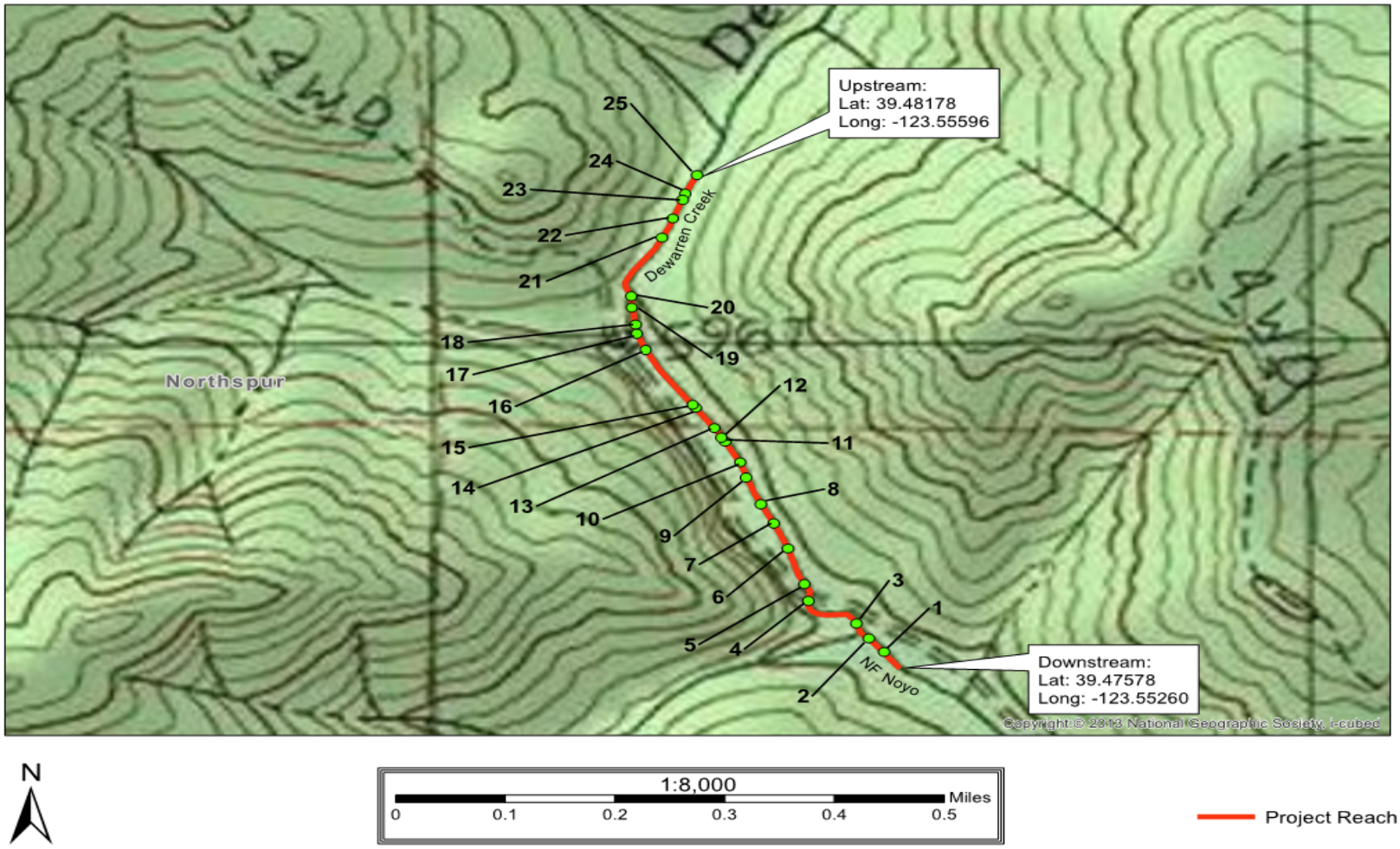
Project Reach

Project Location Topographic Map

California Conservation Corps
North Fork Noyo River - Dewarren Creek Coho Stream Enhancement Project
Site Locations Map
Northspur Quad, Mendoncino County



Coulborn and Sebbas Creeks Sediment Reduction and Salmonid Habitat Enhancement 2017

Introduction: The Mattole Salmon Group will reduce sediment delivery and improve water quality for all life stages of salmonids in Indian Creek by preventing the delivery of approximately 5,129 yd3 of sediment from road-related sediment delivery features to Coulborn and Sebbas Creeks including, upgrading 17 features on 1.9 miles of road and decommissioning 38 features on 3.5 miles of road (a total of 55 features on 5.4 miles of road)..

Anecdotal information provided by Scott Downie (CDFW, retired), local foresters with historical knowledge, and several sources of unpublished literature, indicate that instream habitat in the Indian Creek tributaries became degraded primarily in the 1950s to 1980s as a result of unrestricted logging, tractor yarding, and road construction practices. Many of the Indian Creek watershed tributaries were filled with logging debris and sediment, and were used as skid trails and railroad routes during the first and second cycles of logging, the remnants of which can still be observed today. In the 1970s these watersheds were further subjected to stream clearing, which resulted in the removal of significant volumes of Large Woody Debris (LWD). The legacy effect of all of these deleterious activities is clearly identified in each stream inventory report and is manifested as chronic fine sediment delivery from the road system, episodic catastrophic failure of stream crossings, a diminished pool frequency and cover, significant bank erosion along stream channels, locally dysfunctional or poorly functioning riparian habitat, and high values of substrate embeddedness..

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Parts VII, IX, XI, and XII (Flosi et al 1998 and 2002).

Objectives: The goal of this project is to reduce sediment delivery and improve water quality for all life stages of salmonids in Indian Creek by preventing the delivery of approximately 5,129 yd3 of sediment from road-related sediment delivery features to Coulborn and Sebbas Creeks including, upgrading 17 features on 1.9 miles of road and decommissioning 38 features on 3.5 miles of road (a total of 55 features on 5.4 miles of road).

Project Description:

Location: This project is located at Sebbas Creek, which is roughly 7.0 miles upstream of the Indian Creek and South Fork Eel River confluence; and Coulborn Creek, located roughly 7.7 miles upstream of the Indian Creek and South Fork Eel River confluence. The center point of the project area is at 39.97743000 N, 123.89720000 W.

Project Set Up: Contract oversight will be conducted by Mattole Salmon Group. All reporting and billing will be pursuant to contract and regulatory guidelines. MSG

contract Admin/Bookkeeper will process invoices from subcontractors and develop and submit invoices to the grantor. MSG Executive Director will perform periodic reviews of project progress. Mattole Salmon Group will ensure adherence of billing practices and project performance as stated in the CDFW Grant Agreement. MSG Executive Director and Admin/Bookkeeper will conduct all Grant Oversight. Grant oversight includes but is not limited to contracting oversight and administration, invoicing, scheduling, implementation oversight, landowner communications, and obtaining, developing and adhering to all permits. All reporting and billing will be pursuant to grant and regulatory guidelines. Upon final execution of the grant, and prior to receiving a final Notice to Proceed, MSG will deliver the landowner access agreements and subcontracts, and assure all permits are finalized. Elements of this task will continue throughout the life of the project.

Heavy equipment and labor subcontractor (McCullough Construction, Inc.) – McCullough Construction, a highly skilled and well qualified heavy equipment contractor, will provide all the necessary heavy equipment, experienced operators, and skilled laborers required to complete the project as designed. This includes but may not be limited to the excavation of stream crossing fills, unstable road fills, road drainage treatments, and installation of instream structures using a team of hydraulic excavators, bulldozers, and dump trucks. In addition, laborers will be used to spread straw and mulch, man and monitor pumps during any necessary dewatering operations, maintain and monitor equipment, and work on in-stream habitat improvement structures. Laborers will also conduct seeding, tree planting, straw delivery and mulching.

Geologic subcontractor (PWA technical oversight) - The geologic subcontractor will provide treatment layout, technical oversight and supervision of heavy equipment and labor operations.

1. The Project Manager and Technical Staff perform project permitting, pre-construction layout, and preproject monitoring for the upslope project elements. This includes laying out (flagging) specific treatments and extent of excavations, carrying out pre-treatment surveys of stream crossings, and pre-treatment monitoring. Layout hours include a wet weather inspection to help identify seeps and springs along the road proposed for treatment. Other layout steps include compiling the field information into a detailed set of construction maps, road logs, detailed treatment information, and state and federal permits that will be provided to the heavy equipment contractor. Specifically, Project Manager and Technical Staff hours, costs, and expenses are based on the length of road proposed for treatment and ease of access (walk, quad, or drive) to the project specific roads (5.36 miles), and erosional features (55 upslope features). The GIS staff provides project support through development of GIS

maps and products for the field, database interfaces, GPS data organization and analysis.

2. The Senior Geologist (PG) and Project Manager supervise the heavy equipment implementation and provide technical oversight. Heavy equipment technical oversight and supervision hours are based on the total excavator hours and number of work weeks for site specific and road drainage treatments (500 excavator hours; 12.5 weeks). The Project Manager has the overall charge of daily on-going activities including technical oversight and supervision of heavy equipment and labor operations. Hours include materials coordination, project planning meetings, and communications with the landowner, subcontractors, and agency staff. For this task, the Technical Staff hours include field preparation, coordination, field vehicle maintenance, and field map creation and transfer for the GIS staff. Nevertheless, photo downloading and file management, as well as data entry for annual report metrics, as-built construction road logs, stream crossing surveys, and heavy equipment time logs for hours spent treating each feature on the proposed roads are part of the technical staff duties.

   Field review costs and expenses including pre- and post-construction inspections by the Principal and Senior Geologist (PG) are based on the number of heavy equipment hours and work weeks (12.5 weeks). The Principal and Senior Geologist (PG) review the technical aspects of the implementation project and provide guidance for the Project Manager and Technical Staff as required in complex landform issues. The Senior Geologist (PG) or Engineering Geologist (CEG) ensures compliance with the Geologist and Geophysicist Act (California Business and Professions Code 7800). In addition, the Principal and Engineering Geologist ensure that the project is implemented as designed, and follows or exceeds the CDFW standards for road upgrading and decommissioning.

3. The Project Manager and Technical Staff will perform post-treatment data collection, photographic monitoring, data analysis, and reporting. All required information will be compiled at the end of the project in a final summary report that includes post-construction metric tables, as-built construction road logs and maps, and photo monitoring pairs of pre- and post-treatments showing the condition of the decommissioned road. Expenses include quality assurance and quality control including final report technical editing and review by the Principal and Engineering Geologist. For the final report, the GIS staff will generate and provide final report maps.

Materials: Materials necessary for this project include:
Culverts: Galvanized steel culverts at stream crossings include 1-24 in diameter x 40 ft long, 4-24 in diameter x 50 ft long, 1-24 in diameter x 60 ft long, 1-30 in

diameter x 40 ft long, for installing or replacing undersized 14 culverts at stream crossings.

Trees (planting): For this project 946 trees ($5.00/tree; includes labor) will be planted by specialized laborers. Native conifer saplings will be planted in the riparian zone and at skid access points to stream reaches disturbed by heavy equipment.

Straw: For this project 429 bales of straw mulch is used to protect and promote growth of native seedlings used in re-planting in areas disturbed from restoration activities. Straw mulch will also be used for erosion control.

Seed: For this project 300 pounds of native grass seed is used to re-plant bare earth areas and reduce surface erosion in areas that have been disturbed from restoration activities.

Debris/Trash Pump: Implementation of the CSCSRSHEP project is estimated to require the use/rental of one pump for site-specific work (approximately 10 days). Pumps are used during construction to pump clean streamflow around the construction features and manage turbidity.

Pressure washer: A (hot water) pressure washer is used to decontaminate heavy equipment between each use in different waterbodies to prevent the spread of invasive species as per the equipment decontamination methods stated in the CDFW decontamination protocol.

Rip-rap: Approximately 165 yd3 of rock rip-rap will be used to stabilize locations that are prone to erosion or failure.

Miscellaneous field and office supplies: Many small field and office supplies are used to complete the project including: photographic supplies, flagging, wood stakes, field maps, Mylar overlays for field maps, photo duplication for final reports, copying/binding for final reports, report maps, phone, fax, email and postage.

Flex pipe, 6” diameter (200 feet): Used for dewatering live stream crossings during decommissioning. The flex pipe will be used to convey streamflow around the work area in conjunction with the trash pump or using gravity feed to dewater stream crossings during decommissioning activities.

Fuel (gasoline and diesel): Implementation of the project is estimated to require the use of 300 gallons of 15 gasoline and 10,675 gallons of diesel for operating pick-up trucks, pumps, generators and heavy equipment that will be used to remove the road system and install the instream structures.

The heavy equipment contractor will be responsible for acquiring the following materials: 1. Rock armor 2. Trash pump 3. Flex pipe (6" diameter) 4. Hot water pressure washer 5. Fuel (gasoline and diesel)

PWA will be responsible for acquiring the following materials: 1. Trees 2. Miscellaneous field and office supplies 6. Fuel (gasoline) 7. Culverts 8. Straw bales 9. Seed

Tasks:

Task A: Grant and Contract Oversight - Contract oversight will be conducted by Mattole Salmon Group and Pacific Watershed Associates. All reporting and billing will be pursuant to contract and regulatory guidelines. MSG contract Admin/Bookkeeper and PWA Clerical Staff will process invoices from subcontractors and develop and submit invoices to the grantor. PWA Professional Geologists will administer the project in the field to ensure timeliness, completion, and conformance with restoration and land management goals of the landowner. MSG Executive Director will perform periodic reviews of project progress. Pacific Watershed Associates will ensure adherence of billing practices and project performance as stated in the CDFW Grant Agreement. MSG Executive Director, Admin/Bookkeeper, and PWA Project Manager will conduct all Grant Oversight. Grant oversight includes but is not limited to contracting oversight and administration, invoicing, obtaining and adhering to permits, scheduling, implementation oversight, and landowner communications. All reporting and billing will be pursuant to grant and regulatory guidelines. Upon final execution of the grant, and prior to receiving a final Notice to Proceed, MSG will deliver the landowner access agreements and subcontracts, and assure all permits are finalized. Elements of this task will continue throughout the life of the project.

Task B: Project Implementation Overview - This project will implement road upgrading and decommisisoning, and complete road-related sediment reduction treatments, included in the Sebbas Creek and Colborn Creek erosion control plan developed by PWA through a previous CDFW FRGP-funded upslope sediment source assessment. PWA will be in charge of executing the implementation of the project. The PWA clerical team will compile invoices and track budgets throughout the lifetime of the project.

Task B-1: Pre-project layout and pre-implementation monitoring - PWA will flag heavy equipment access routes and construction boundaries (layout) as well as spoil disposal areas, equipment exclusion areas for biologic and/or cultural resource protection. They will also set up before-after photo point monitoring stations at selected construction locations for final reporting. Pre-project monitoring will be completed prior to implementation, following the CDFW guidelines and data forms.

Task B-2: Heavy equipment mobilization - Low bed trucks will be used to move heavy equipment in and out of the project area at the beginning and end of the work season and will require a pilot car to move through the public highway system.

Task B-3: Road opening and erosion control - PWA will work with the selected heavy equipment operators to reopen the proposed roads for equipment access and decommissioning treatments. All treatment prescriptions proposed in the CSCSRSHEP follow guidelines in the Handbook for Forest, Ranch, and Rural Roads (Pacific Watershed Associates, 2015), as well as Part X of the California Department of Fish and Game Salmonid Habitat Stream Restoration Manual (Weaver et al., 2006). Exclusionary fencing for salmonids and other aquatic species will be installed upstream and downstream of project work areas in fish-bearing stream reaches to prevent migration into the construction area as deemed necessary by the grant manager and the project manager. Additionally, all (heavy) equipment, vehicles, and materials used to implement this project will be cleaned and treated in accordance with the invasive species protocol included in the supplemental information of this proposal. A hydraulic excavator and bulldozer will be used to reopen the roads proposed for decommissioning by removing the vegetation and installing temporary crossings at live streams. A trash pump will be used to protect water quality during installation of temporary crossings and these will be managed by a laborer.

Task B-4: Upslope Implementation Component - The Coulborn and Sebbas Creeks Sediment Reduction and Salmonid Habitat Enhancement Project (CSCSRSHEP), the hydraulic excavator, bulldozer, dump trucks, water truck and laborers will implement storm-proofing upgrading and decommissioning treatments at 55 sediment source features, along a total of 5.36 miles of forest road, largely designated as high or moderate treatment immediacy in the sediment source assessment. All 3.0 miles (15,840 ft) of hydrologically connected road surfaces associated with the features are recommended for treatment in this proposal. Upgrading and decommissioning of these 55 sediment source features and 3.0 miles of connected road will result in sediment savings of approximately 4,361 yd3 from episodic sources and 768 yd3/decade from hydrologically connected road surfaces. Concurrently working with the hydraulic excavator and bulldozer, the dump 17 truck will deliver rock to specific areas for placement by the excavator.

Task B-5: Sediment source site decommissioning - The hydraulic excavator, bulldozer and dump trucks will be used to remove the anthropogenic fill material from the decommissioned stream crossings and other sediment source features. Similarly, they will be used to treat all of the road surface drainage as they work their way from the end of the propose road segments to the beginning. A trash pump will be used to protect water quality during decommissioning of live stream crossings and will be managed by a laborer. Concurrently working with the

hydraulic excavator and bulldozer, the dump truck will deliver rock to specific areas for placement by the excavator and endhaul spoil from decommissioned sediment source locations to stable spoil locations. Laborers will be used to spread seed and straw and plant trees at completed implementation features. In accordance with the invasive species protocol included in this proposal, all heavy equipment will be cleaned before entering and prior to leaving the project work area.

Task C: Post-implementation monitoring - PWA will reoccupy photo points to document pre- and post-implementation conditions at sediment source feature locations. In addition to the proposed monitoring specified within this proposal, PWA will conduct pre- and post-project monitoring to assess upslope and instream restoration project outcomes using CDFW monitoring protocols, guidelines, and data forms.

Task D: Summary Reporting - PWA Project Manager and Technical Staff will prepare a final summary report detailing project accomplishments, containing pre- and post-construction photographic documentation, and all summary reporting metrics required by the FRGP contract. PWA Principal will be responsible for final editing of the summary report.

Deliverables:

Task A: Project deliverables will include the information listed below as well as everything that will be delivered to the CDFW Project Manager during the life of the project: Final Landowner Access Agreements; Notification and payment of LSAA/1600 Agreement Application; Progress Reports submitted with invoices, annual Reports, and Final Report. See description below for information included in the annual and final reports.

Task B-1: Pre-project layout and pre-implementation monitoringLabelled pre-implementation photographs of upslope sediment source treatment features.

Task C: Post-implementation monitoring- * Labelled as-built post-implementation photographs of upslope sediment source features.

Task D: Data analysis and reporting- * Miles of road treated. * Acres of upslope area treated (total). * Miles of road treated for road drainage system improvements. * Miles of road decommissioned. * Types of upland erosion and sediment control. * Number of erosion/sediment control installations. * Species scientific names of plants planted. * Number of trees planted. * Cubic yards of sediment prevented from entering the stream system. * Spoil volumes. * Number of stream crossings treated. * Project location map and as-built road map. * As-built road logs. * Results of dewatering and fish relocation data (where applicable). * Heavy equipment

hours organized by road segment or sediment source feature. * Annual and final project reports (see description below).

Annual report: Upon completion of each year of restoration activities, MSG and PWA shall submit an annual report detailing the work completed that season. The annual report will include the following if applicable: (1) implementation start and end dates, (2) percentage of the project completed in total to date, (3) dewatering and fish relocation data on DFW data sheet (to be provided by the DFW Grant Manager upon request), (4) project start and end dates for work to be implemented the following season, (5) road length segment decommissioned, (6) sediment spoils volume estimate, (7) upslope stream crossings decommissioned (not for fish passage), (8) stream crossings treated to improve fish passage (number), (9) stream length opened for fish passage by improving stream crossings (miles), (10) sediment volume prevented from entering the stream, (11) upslope area treated (fillslope failures), (12) amount of riparian area treated (acres), and (13) number and species of trees planted.

Final report: Upon completion of the project, MSG and PWA shall submit a written completion report which contains: (1) general grant information, (2) location of work, (3) project access, (4) participating landowner's name and address, (5) a description and analysis of the restoration and planning person hours expended, (6) a quantified description of the results of the project, including as-built road logs, and number of features treated. (7) dates of work and the number of person hours expended, (8) labeled before and after photos of selected restoration activities and techniques, (9) grant dollars spent and contributed and/or in kind services used to complete the project, and (10) GIS generated maps and shapefiles of the project area and as-built results.

Timelines:

The following time frame assumes grant award notification by May, 2018

Task A: MSG and PWA's project management and coordination will begin once the grant contract is signed and continue through the life of the project. This task will extend from May 31, 2018 through March 31, 2021.

Tasks B and C: The construction components of the project will take place from June 15, 2018 through October 31, 2020.

Task D: Summary reporting tasks will take place between October 2020 and March 31, 2021.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a "notice to proceed" letter has been received from the California Department of Fish and Wildlife (CDFW) Grant Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within

this timeframe, are at the discretion of CDFW.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the CDFW Grant Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for CDFW personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other native aquatic species from the project area. If the project requires dewatering of the site and the relocation of listed aquatic species, the Grantee will implement the following measures to minimize harm and mortality to listed species as well as other native aquatic species:

- Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year.

- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit, NMFS Biological Opinion, and project's Lake and Streambed Alteration Agreement (1600 permit).

- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

- Only qualified fisheries biologist that are approved by USFWS and permitted by CDFW under a California Endangered Species Act (CESA) Memorandum of Understanding (MOU) shall handle and relocate CESA listed species.

- All electrofishing shall be performed by a qualified fisheries biologist under the supervision of CDFW and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

- USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW. .

All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*, Volume I, and Volume II Part XI and Part XII. The Grantee/landowner will maintain the new crossing, inspect the crossing in a timely manner and remove debris as necessary during the storm season.

All road decommissioning will be done in accordance with techniques described in the Handbook for Forest and Ranch Roads, (PWA, 1994c.) and the *California Salmonid Stream Habitat Restoration Manual*, Volume II, Part X. All road upgrade and decommissioning sites and techniques shall be approved by the CDFW Grant Manager before any equipment work takes place.

All crossings treated in fish bearing reaches of streams will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and the criteria for adult and juvenile salmonid fish passage as described in Volume II, Part IX of the *California Salmonid Stream Habitat Restoration Manual*.

Seeding and mulching of all exposed soils shall be done for all slopes which may deliver sediment to a stream. Woody debris will be concentrated on finished slopes adjacent to stream crossings. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years. Mulching and seeding will take place as sites are completed to avoid unforeseen erosion. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Sites which are expected to erode and deliver sediment to the stream are the only locations where work will be authorized for reimbursement under the terms of this agreement. Reimbursement will not be authorized for work done to improve aesthetics only.

The landowner or responsible party must sign an access agreement stating they

agree to maintain the erosion control project for a period of not less than 10 years. Maintenance will consist of repair to the road or stream crossing to a level that will effectively reduce sediment from entering the stream. In the event of an act of nature which results in partial or complete failure of the project, the landowner or applicant will not be held responsible for costs incurred after the act of nature. Acts of nature include, but are not limited to floods, earthquakes, volcanic eruptions, and wind storms.

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to ensure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Bear Harbor (3912388) OR Shelter Cove (4012411) OR Briceland (4012318) OR Garberville (4012317) OR Piercy (3912387) OR Mistake Point (3912378) OR Hales Grove (3912377))

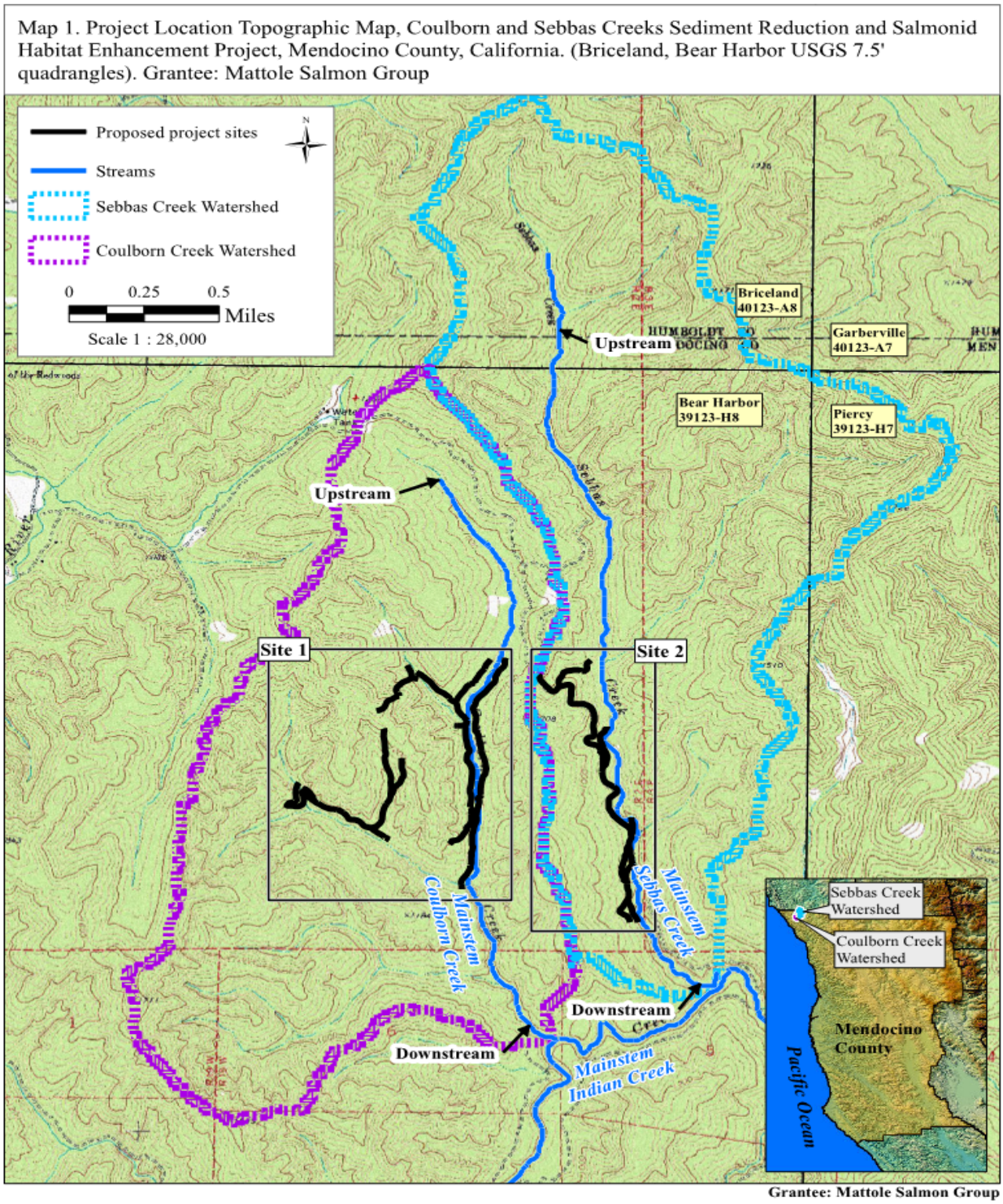
Possible species within the Bear Harbor quadrangle and surrounding quads for 725531 Coulborn & Sebbas Cks Sediment Reduction & Salmonid Habitat Enhancement, T05S R02E S36, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
coho salmon - southern Oregon / northern California ESU *Oncorhynchus kisutch*	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Cooper's hawk *Accipiter cooperii*	ABNKC12040	None	None	G5	S4	WL
fisher - West Coast DPS *Pekania pennanti*	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Howell's montia *Montia howellii*	PDPOR05070	None	None	G3G4	S2	2B.2
Humboldt milk-vetch *Astragalus agnicidus*	PDFAB0F080	None	Endangered	G2	S2	1B.1
leafy reed grass *Calamagrostis foliosa*	PMPOA170C0	None	Rare	G3	S3	4.2
leafy-stemmed mitrewort *Mitellastra caulescens*	PDSAX0N020	None	None	G5	S4	4.2
long-eared myotis *Myotis evotis*	AMACC01070	None	None	G5	S3	
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
marsh pea *Lathyrus palustris*	PDFAB250P0	None	None	G5	S2	2B.2
Mendocino Coast paintbrush *Castilleja mendocinensis*	PDSCR0D3N0	None	None	G2	S2	1B.2
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon coast paintbrush *Castilleja litoralis*	PDSCR0D012	None	None	G3	S3	2B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Oregon goldthread *Coptis laciniata*	PDRAN0A020	None	None	G4	S3	4.2
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
perennial goldfields *Lasthenia californica ssp. macrantha*	PDAST5L0C5	None	None	G3T2	S2	1B.2
Point Reyes horkelia *Horkelia marinensis*	PDROS0W0B0	None	None	G2	S2	1B.2
pygmy cypress *Hesperocyparis pygmaea*	PGCUP04032	None	None	G1	S1	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
robust false lupine *Thermopsis robusta*	PDFAB3Z0D0	None	None	G2	S2	1B.2
seaside bittercress *Cardamine angulata*	PDBRA0K010	None	None	G5	S1	2B.1
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
summer-run steelhead trout *Oncorhynchus mykiss irideus*	AFCHA0213B	None	None	G5T4Q	S2	SSC
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
Whitney's farewell-to-spring *Clarkia amoena ssp. whitneyi*	PDONA05025	None	None	G5T1	S1	1B.1
Yuma myotis *Myotis yumanensis*	AMACC01020	None	None	G5	S4	
northern spotted owl *Strix occidentalis caurina*	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 38

Project Location Topographic Map



Map 1. Project Location Topographic Map, Coulborn and Sebbas Creeks Sediment Reduction and Salmonid Habitat Enhancement Project, Mendocino County, California. (Briceland, Bear Harbor USGS 7.5' quadrangles). Grantee: Mattole Salmon Group

Grantee: Mattole Salmon Group

Middle Fork North Fork Noyo River Coho Habitat Enhancement Project 2017

Introduction:

The Grantee, California Conservation Corps (CCC), will install large wood features throughout the 3,080 foot project reach of the Middle Fork North Fork Noyo River tributary to the Noyo River in Mendocino County. The project goal is to improve habitat complexity, frequency and depth of pools, provide refugia for migrating salmon and collect spawning gravels

A combination of historic logging practices and the efforts to remove large woody debris in streams in the 1980s as a perceived improvement of fish passage has left many streams, including the Middle Fork of the North Fork Noyo River lacking in instream large wood and deep pools. The 2006 CDFW Noyo River Watershed Enhancement Plan listed the North Fork Noyo River as a high priority stream for restoration utilizing the addition of large wood features as the recommended treatment. The 2013 Middle Fork North Fork Noyo River CDFW Stream Inventory Report determined that most of the existing cover in the pools is from small woody debris and that it is important for salmonids to increase woody cover in the pools and flatwater habitat units. The existing habitat metric for instream large wood is "Poor" with an average of less than 4 key pieces of wood/100 meters, based on the criteria from the 2012 NOAA Central California Coast Coho Salmon Recovery Plan. The addition of wood in this project would increase the large wood habitat metric to "Good" with an average of 6 – 11 key pieces of wood/100 meters.

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Parts VII, XI, XI and XII (Flosi et al 1998 and 2002).

Objective(s):

The goal of this project is to improve the quality and quantity of spawning and rearing habitat for coho salmon and steelhead. The objectives are to improve habitat complexity, pool frequency, and pool depth within the project reach by installing 73 pieces of large wood and rootwads at 32 sites along a 3,080 foot reach of the Middle Fork North Fork Noyo River.

Project Description:

Location: The locations of the project boundaries are 39.47636º north latitude, 123.53986º west longitude at the upstream end on Dewarren Creek; and 39.47006º north latitude, 123.54416º west longitude at the downstream end on North Fork Noyo River in Mendocino County. The project reach begins at the confluence of the Middle Fork of North Fork Noyo River with the North Fork Noyo River and continues upstream 3,080 feet on the Middle Fork North Fork Noyo River.

Project Set Up: The Grantee Fisheries Technical Assistant will provide contracting oversight and administration including obtaining permits; scheduling of Archeological and Listed Plant Surveys; securing contracts (landowner); project scheduling; implementation oversight, invoicing; report preparation; vendor payments; as well as facilitating agency and landowner communications.

The Grantee will also be responsible for design/installation/photo documentation and reporting information regarding large wood features. Fisheries Technical Assistant will perform pre-project design, photo documentation, implementation oversight, and reporting; coordinating with landowner regarding spike camp location. Conservationist II (position funded through other sources) will oversee purchasing and delivery of project materials; tool and equipment service and repair. Timber Faller will fell trees to be utilized in large wood features. Conservationist I supervises Corps Member crew operations. Corps Member crews provide the hand labor for set-up and break-down of spike camp; installing the in-stream large wood features; applying erosion control treatments before predicted chance of significant precipitation and at the end of implementation.

Landowner and project partner, Mendocino Redwood Company (MRC) will provide project oversight and access as a cost share. MRC Forester will conduct pre- and post-implementation project review and approve selected trees to be felled with the purpose of maintain good canopy cover and bank stability. The MRC Lead Biologist and the Hydrologist will also review project relative to fish and wildlife aspects and stream channel and flow characteristics, respectively. MRC Forester, Staff Biologist, and hydrologist will provide assistance with access, gate combinations, maps, and general stream/project area information. The MRC heavy equipment operator will use equipment to bring wood to staging areas, as applicable. MRC Licensed Timber Operator (LTO) may also fell trees near project sites for instream feature construction, as needed. MRC staff hours are provided as cost share, except for the requested LTO time.

Materials: Materials for implementing this project include: Redwood and Douglas Fir logs with a minimum DBH of 14 inches, and/or root-wads (landowner-partner cost share); Grantee Laborer Meals – food supplies to feed Corps Member crews while on spike; Spike Supplies (briquettes, propane, etc.) for preparing Corps Member meals while on spike; Portable Toilet Rental for Crews at spike camp; Generator hours for operating power equipment used during in-stream structure anchoring process; Materials for anchoring large wood features - threaded rebar, nuts, washers, cable, cable clamps, and epoxy glue; wood and rock drill bits for drilling logs/root-wads/trees during in-stream structure anchoring process; Car washing nozzle - used for pressure washing tools to prevent spread of aquatic invasive species and sudden oak death; Decontamination chemicals - used for decontamination of tools/gear; Safety & First Aid supplies (gloves, hard hats, safety glasses, bandages, antibiotic ointments); Hand tools & supplies (chain, bar

oil, files, hacksaws, bit extensions, shear pins, and related supplies) for installing large wood features; Materials for tool/equipment service/repair (oil, grease, and other materials for maintaining or repairing tools/equipment used during project implementation; Office supplies (paper, printer supplies) used for creating designs, work-plans, all pertinent documents relating to the project; Vehicle mileage for travel to/from project site during project (Grantee cost share); 1600 permit - required for construction of in-stream features.

Tasks:

Task 1. Grant Oversight: Grantee will provide all contracting, oversight, and administration including obtaining permits; securing contracts and landowner access agreement; scheduling; implementation oversight; invoicing; developing and delivering required reports; and Grantor, agency, and landowner communications. This task will occur throughout the life of the project.

All reporting and billing will be pursuant to grant and regulatory guidelines. Upon final execution of the Grant and prior to receiving a Final Notice to Proceed, Grantee shall deliver the following item to the Grantor Project Manager:

Final Landowner Access Agreement – written permission from landowner for access to perform grant work.

A Preliminary Notice to Proceed can be requested from the Grantor Project Manager, if necessary, to prepare for project implementation (e.g., obtain permits, secure subcontracts, purchase supplies, apply for a Streambed Alteration Agreement).

A Final Notice to Proceed will be delivered to the Grantee when Final Landowner Access Agreement(s) and subcontracts are delivered to Grantor Project Manager, and when all required permits have been finalized (e.g., 401 State Water Quality Control Board Permit, Streambed Alteration Agreement).

The Grantee shall notify the Grantor Project Manager a minimum of 10 business days prior to the beginning of project implementation.

Task 2. Final Feature Design, Pre-Project Surveys, and Preparation:
Grantee Fisheries Technical Assistant will work with landowner to determine spike camp location, rent portable toilets, ensure large wood feature site flagging is in place for Grant Manager review and prior to implementation, finalize site-specific structure designs based on local channel characteristics, large wood availability and equipment access and obtain feature design and location approval from landowner (MRC) and Grantor Project Manager.

Grantee Conservationist II will oversee purchase and delivery of project materials as well as preparing tools and equipment for use and making sure they are

serviced and repaired, as needed. Field crews will set-up and maintain spike camp operations. Fisheries Technical Assistant will schedule Archeological and Listed Plant Surveys for the project area and perform photo-documentation to provide matched photos of feature sites prior to large wood installation and photos of features after they are installed.

Landowner (MRC) will provide grantee any surveys or information on Northern Spotted Owl and Marbled Murrelet activity in the project area at the time of submission of 1600 permit Notification.

MRC staff will conduct pre-implementation project review, site inspections, and coordinate access

Task 3. Project Implementation:

Task 3A. Select and fell trees, and stage logs and rootwads for large wood feature construction. MRC Forester will review/approve trees marked for felling ensuring that stream canopy and bank stability are maintained. MRC LTO and CCC Timber Faller will fell and limb trees. MRC heavy equipment operator will move trees to staging areas near stream sites.

Task 3B. Install Instream Habitat Features: Installation of 25 large wood features including 71 logs/rootwads of Redwood or Douglas fir will be completed over a 3,130 foot reach of the North Fork Noyo River and Dewarren Creek using grip-hoist and wire rope rigging techniques for log placement. The Redwood and Douglas fir logs will have a minimum diameter breast height (DBH) of 14 inches. Anchoring of the large wood will be accomplished using threaded rebar inserted through the logs and anchor trees and secured with washers and nuts. Cable and polyester resin adhesive may be used, as applicable. Some logs may be wedged between suitable riparian trees. All features will be placed and anchored in a manner consistent with procedures in the DFG California Salmonid Stream Habitat Restoration Manual, Section VII. Available slash and smaller woody debris at each structure site will be installed into features after site completion to provide immediate cover for salmonids present at time of construction.

Task 3C. Erosion Control: Mulching will take place on all exposed soils which may deliver sediment to a stream. Ground surface disturbed during construction of features will be protected using on-site forest materials (slash and other small wood) to prevent erosion and delivery of fine sediment into the stream channel.

Task 3D. Avoidance of Spread of Aquatic Invasive species, chytrid disease, and Sudden Oak Death: All personal gear as well as tools/equipment used in the field will be properly decontaminated before moving to a new location even within the same watershed, in compliance with CDFW and California Oak Mortality Task Force decontamination protocol requirements.

Task 3E. Project Completion: Crews will break down spike camp and transport equipment and supplies back to base at project completion.

Task 4. Post Implementation Surveys:
Post-Project Data and Photo Collection: Following implementation, Fisheries Technical Assistant will 1) take post-implementation photos at photo points near features that will be matched with pre-implementation photos taken at the same sites and 2) collect the performance metrics that are required for Annual Progress Report(s) and the Grant Final Report.

Task 5. Reporting: Grantee Fisheries Technical Assistant will write and deliver progress reports for invoicing and Annual Progress Report(s). The Fisheries Technical Assistant will also summarize and interpret instream wood and other survey information, summarize performance measures, and prepare Final Report with delivery to the Grantor Grant Manager.

The Annual and Final reports will contain:
a) The grant agreement number
b) Location of work – project location will be shown using a USGS 7.5 minute topographical map
c) Specific project access using public and private roads and trails, and landowner name and address
d) A description and analysis of the restoration and planning techniques used
e) A description of the results of the project
f) Paired Pre- and Post-installation photos of each Large Wood feature site.
g) Performance metrics indicated in the CDFW Final Report template for Instream Habitat Enhancement (HI) projects.
h) Dates of work and the number of person hours expended
i) A Final Budget table indicating grant dollars spent as well as amounts of contributed cash and in-kind services used to complete the project.

Deliverables:
- A total of 32 features containing 73 pieces of properly sized large wood will be constructed in existing and newly-developed pool habitat within a 3,080 foot stream reach of Middle Fork of North Fork Noyo River.
- Matched Pre- and Post-construction photos of all structure sites (on CD included with Final Report).
- Final Landowner Access Agreement
- Grantor Notification of Lake or Streambed Alteration Application with payment for the 1600 permit
- Final site-specific plans for in-stream habitat features
- Progress Reports submitted with each billing invoice
- Annual Reports by November 15 each year of the project

• Draft Final Report for grant manager review and a finalized Final Report including any edits resulting from grant manager review.

Timelines:

Contract Timeline is expected to be June 1, 2018 or upon approval through January 31, 2022.

Task 1: Grant Oversight June 1, 2018 or, upon approval, through December 30, 2021.

Task 2: Final Feature Design and ordering of materials and supplies: June - July 2018.

Task 2: Pre-Project Surveys and Preparation: July 10 – August 10 2018, 2019, 2020, and/or 2021(depending on crew scheduling for multiple projects and number of projects in watershed).

Task 3: Project Implementation: July 10 to October 31, 2018; July 10 to October 31, 2019; July 10 to Oct 31, 2020; or July 10 to October 31, 2021 (depending on Northern Spotted Owl work restrictions and crew scheduling). Includes tree falling and staging as well as feature installation, erosion control, equipment decontamination. All wood installation work will be completed during low-flow periods when impacts to water quality can be minimized or avoided.

Task 4. Post Implementation Surveys: November 1-15, 2018; November 1-15, 2019; November 1-15, 2020; or November 1-15, 2021.

Task 5. Reporting:

Annual Reports due November 15 2018, 2019, and 2020
Draft Final Report due November 26, 2021
Final Report/Invoice/Budget due December 31, 2021

Summer Season Work time frame will be July 10 – October 31, unless activity restrictions are modified through surveys indicating the absence of Northern Spotted Owls.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a “notice to proceed” letter has been received from the Grantor Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW. The Grantee should use the largest whole tree material available.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Manager. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

The Grantee will seed and mulch all exposed soils which may deliver sediment to a stream. Mulching and seeding can occur at any time during construction but will need to be completed prior to Oct. 15. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years.

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Northspur (3912345) OR Dutchmans Knoll (3912356) OR Sherwood Peak (3912355) OR Longvale (3912354) OR Noyo Hill (3912346) OR Burbeck (3912344) OR Mathison Peak (3912336) OR Comptche (3912335) OR Greenough Ridge (3912334))

Possible species within the Northspur quadrangle and surrounding quads for 725532 Middle Fork of North Fork Noyo River Coho Habitat Enhancement Project, T19N R15W S29, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
angel's hair lichen *Ramalina thrausta*	NLLEC3S340	None	None	G5	S2?	2B.1
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Behren's silverspot butterfly *Speyeria zerene behrensii*	IILEPJ6088	Endangered	None	G5T1	S1	
Bolander's beach pine *Pinus contorta ssp. bolanderi*	PGPIN04081	None	None	G5T2	S2	1B.2
California sedge *Carex californica*	PMCYP032D0	None	None	G5	S2	2B.3
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
coast lily *Lilium maritimum*	PMLIL1A0C0	None	None	G2	S2	1B.1
Coastal and Valley Freshwater Marsh *Coastal and Valley Freshwater Marsh*	CTT52410CA	None	None	G3	S2.1	
Coastal Brackish Marsh *Coastal Brackish Marsh*	CTT52200CA	None	None	G2	S2.1	
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	PDAST4R065	None	None	G5T1T2	S1S2	1B.2
dark-eyed gilia *Gilia millefoliata*	PDPLM04130	None	None	G2	S2	1B.2
deceiving sedge *Carex saliniformis*	PMCYP03BY0	None	None	G2	S2	1B.2
fisher - West Coast DPS *Pekania pennanti*	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
glandular western flax *Hesperolinon adenophyllum*	PDLIN01010	None	None	G2G3	S2S3	1B.2
grass alisma *Alisma gramineum*	PMALI01010	None	None	G5	S3	2B.2

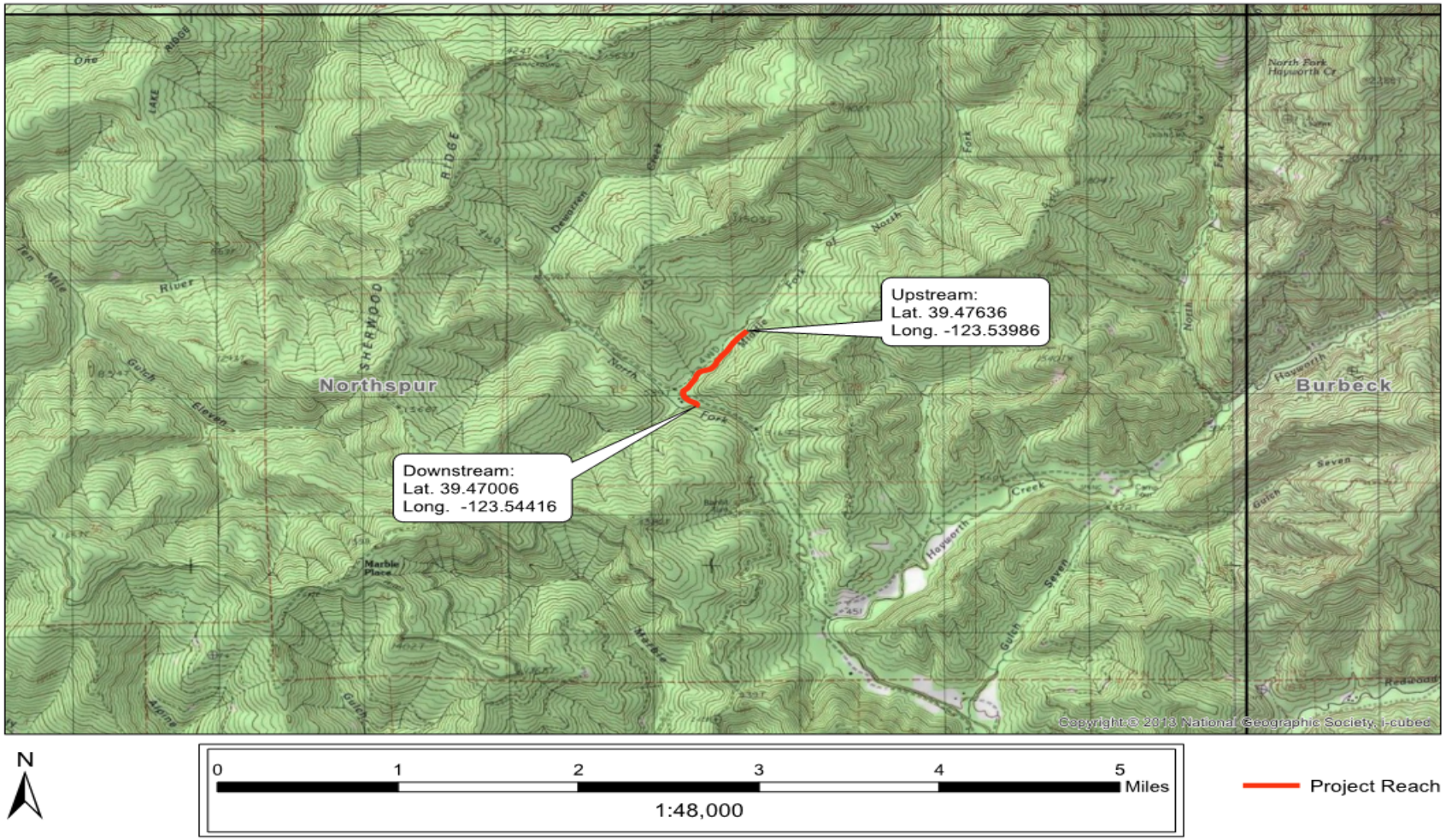
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
Humboldt milk-vetch *Astragalus agnicidus*	PDFAB0F080	None	Endangered	G2	S2	1B.1
lagoon sedge *Carex lenticularis var. limnophila*	PMCYP037A7	None	None	G5T5	S1	2B.2
leafy-stemmed mitrewort *Mitellastra caulescens*	PDSAX0N020	None	None	G5	S4	4.2
Lyngbye's sedge *Carex lyngbyei*	PMCYP037Y0	None	None	G5	S3	2B.2
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
Mendocino Pygmy Cypress Forest *Mendocino Pygmy Cypress Forest*	CTT83161CA	None	None	G2	S2.1	
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
Milo Baker's lupine *Lupinus milo-bakeri*	PDFAB2B4E0	None	Threatened	G1Q	S1	1B.1
Monterey clover *Trifolium trichocalyx*	PDFAB402J0	Endangered	Endangered	G1	S1	1B.1
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
North Coast semaphore grass *Pleuropogon hooverianus*	PMPOA4Y070	None	Threatened	G2	S2	1B.1
northern goshawk *Accipiter gentilis*	ABNKC12060	None	None	G5	S3	SSC
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon goldthread *Coptis laciniata*	PDRAN0A020	None	None	G4	S3	4.2
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
Pacific lamprey *Entosphenus tridentatus*	AFBAA02100	None	None	G4	S4	SSC
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
Point Reyes horkelia *Horkelia marinensis*	PDROS0W0B0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
purple martin *Progne subis*	ABPAU01010	None	None	G5	S3	SSC
pygmy cypress *Hesperocyparis pygmaea*	PGCUP04032	None	None	G1	S1	1B.2
pygmy manzanita *Arctostaphylos nummularia ssp. mendocinoensis*	PDERI04280	None	None	G3?T1	S1	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
running-pine *Lycopodium clavatum*	PPLYC01080	None	None	G5	S3	4.1
seacoast ragwort *Packera bolanderi var. bolanderi*	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
sharp-shinned hawk *Accipiter striatus*	ABNKC12020	None	None	G5	S4	WL
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
Sphagnum Bog *Sphagnum Bog*	CTT51110CA	None	None	G3	S1.2	
steelhead - northern California DPS *Oncorhynchus mykiss irideus*	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
swamp harebell *Campanula californica*	PDCAM02060	None	None	G3	S3	1B.2
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
watershield *Brasenia schreberi*	PDCAB01010	None	None	G5	S3	2B.3
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
white beaked-rush *Rhynchospora alba*	PMCYP0N010	None	None	G5	S2	2B.2
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
northern spotted owl *Strix occidentalis caurina*	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 60

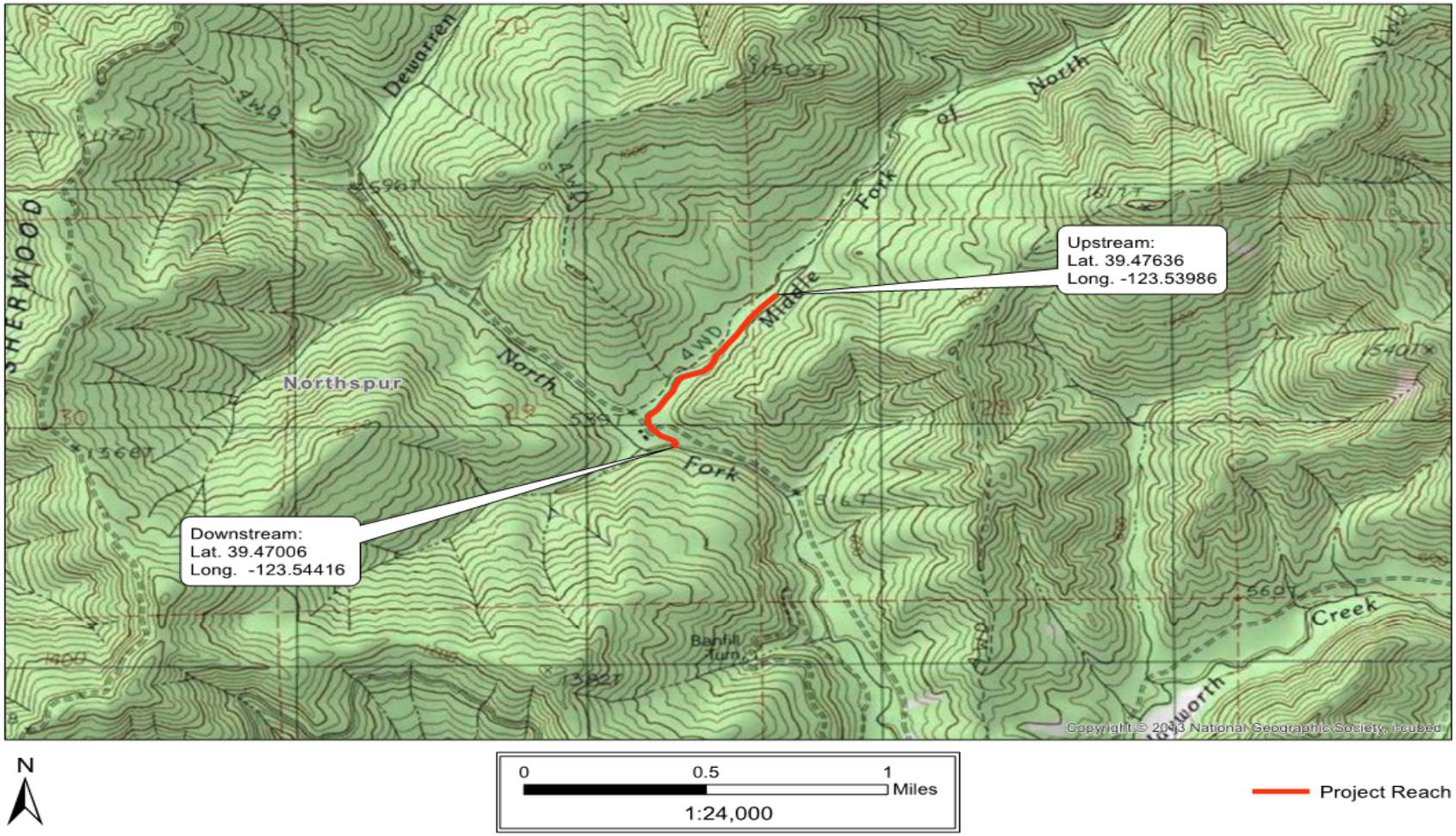
Project Location Topographic Map

California Conservation Corps
Middle Fork of North Fork Noyo River Coho Straem Habitat Enhancement Project
Project Location Map I
Northspur Quad, Mendocino County



Project Location Topographic Map

California Conservation Corps
Middle Fork of North Fork Noyo River Coho Straem Habitat Enhancement Project
Project Location Map II (USGS 7.5 Min.)
Northspur Quad, Mendocino County



Introduction:

The Grantee, California Conservation Corps (CCC), will install large wood features throughout the 3,035 foot project reach of North Fork Big River tributary to the Big River in Mendocino County. The project goal is to improve habitat complexity, frequency and depth of pools, provide refugia for migrating salmon and collect spawning gravels

A combination of historic logging practices and the efforts to remove large woody debris in streams in the 1980s as a perceived improvement of fish passage has left many streams, including North Fork Noyo River lacking in instream large wood and deep pools. The 2006 CDFW Big River Basin Assessment determined that a high incidence of shallow pools, lack of cover, and lack of large wood indicate fish habitat simplification in surveyed tributary reaches. The 2014 CDFW Stream Habitat Inventory Report determined that increasing woody cover in pools and flatwater habitat units is recommended to remedy some of the key deficiencies in salmonid habitat for the North Fork Big River. The existing habitat metric for instream large wood is "Poor" with an average of less than 4 key pieces of wood/100 meters, based on the criteria from the 2012 NOAA Central California Coast Coho Salmon Recovery Plan. The addition of wood in this project would increase the large wood habitat metric to "Good" with an average of 6 – 11 key pieces of wood/100 meters.

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Parts VII, XI, XI and XII (Flosi et al 1998 and 2002).

Objective(s):

The goal of this project is to improve the quality and quantity of spawning and rearing habitat for coho salmon and steelhead. The objectives are to improve habitat complexity, pool frequency, and pool depth within the project reach by installing 62 pieces of large wood and rootwads at 25 sites along a 3,035 foot reach of the North Fork Big River.

Project Description:

Location: The locations of the project boundaries are 39.34673º north latitude, 123.49692º west longitude at the upstream end; and 39.34344º north latitude, 123.50578º west longitude at the downstream end on North Fork Big River in Mendocino County. The project reach begins on the North Fork Big River, 3,340 feet upstream of its confluence with James Creek, and continues upstream 3,035 feet.

Project Set Up: The Grantee Fisheries Technical Assistant will provide contracting oversight and administration including obtaining permits; scheduling of Archeological and Listed Plant Surveys; securing contracts (grantor and

landowner); project scheduling; implementation oversight, invoicing; report preparation; vendor payments; as well as facilitating agency and landowner communications.

The Grantee will also be responsible for design/installation/photo documentation and reporting information regarding large wood features. Fisheries Technical Assistant will perform pre-project design, photo documentation, implementation oversight, and reporting; reservation of spike camp location. Conservationist II (funded through sources other than this grant) will oversee purchasing and delivery of project materials; tool and equipment service and repair. Conservationist I supervises Corps Member crew operations. Corps Member crews provide the hand labor for set-up and break-down of spike camp; installing the in-stream large wood features; applying erosion control treatments before predicted chance of significant precipitation and at the end of implementation.

Landowner (and project partner CAL FIRE/Jackson Demonstration State Forest) will provide project oversight and access as a cost share. CAL FIRE Forester I and Forester II will conduct project review, site inspections, and coordinate access; CAL FIRE crews and bulldozer hours will be used to brush and grade Forest Road 911 to provide access to project reach.

Materials: Materials for implementing this project include Redwood and Douglas Fir logs with a minimum DBH of 14 inches, and/or root-wads (landowner-partner cost share); CCC Laborer Meals – food supplies to feed Corps Member crews while on spike; Spike Supplies (briquettes, propane, etc.) for preparing Corps Member meals while on spike; Campsite Rental for crews to utilize for spike camp operations (partner cost share); Generator Rental for operating power equipment used during in-stream structure anchoring process; Materials for anchoring large wood features - threaded rebar, nuts, washers, cable, cable clamps, and epoxy glue; wood and rock drill bits for drilling logs/root-wads/trees during in-stream structure anchoring process; Car washing nozzle - used for pressure washing tools to prevent spread of aquatic invasive species and sudden oak death; Decontamination chemicals - used for decontamination of tools/gear; Safety & First Aid supplies (gloves, hard hats, safety glasses, bandages, antibiotic ointments); Hand tools & supplies (chain, bar oil, files, hacksaws, bit extensions, shear pins, and related supplies) for installing large wood features; Materials for tool/equipment service/repair (oil, grease, and other materials for maintaining or repairing tools/equipment used during project implementation; Office supplies (paper, printer supplies) used for creating designs, work-plans, all pertinent documents relating to the project; Vehicle mileage for travel to/from project site during project (cost share); 1600 permit - required for construction of in-stream features.

Tasks:

Task 1. Grant Oversight: Grantee will provide all contracting, oversight, and administration including obtaining permits; securing contracts (grantor, and landowner); scheduling; implementation oversight; invoicing; developing and delivering required reports; and agency and landowner communications. This task will occur throughout the life of the project.

All reporting and billing will be pursuant to grant and regulatory guidelines. Upon final execution of the Grant and prior to receiving a Final Notice to Proceed, Grantee shall deliver the following item to the Grantor Project Manager:

Final Landowner Access Agreement – written permission from landowner to for access to perform grant work.

A Preliminary Notice to Proceed can be requested from the Grantor Project Manager, if necessary, to prepare for project implementation (e.g., obtain permits, secure subcontracts, purchase supplies, apply for a Streambed Alteration Agreement).

A Final Notice to Proceed will be delivered to the Grantee when Final Landowner Access Agreement(s) and subcontracts are delivered to Grantor Project Manager, and when all required permits have been finalized (e.g., 401 State Water Quality Control Board Permit, Streambed Alteration Agreement).

The Grantee shall notify the Grantor Project Manager a minimum of 10 business days prior to the beginning of project implementation.

Task 2. Final Feature Design, Pre-Project Surveys, and Preparation:
Grantee Fisheries Technical Assistant will reserve spike camp location, ensure large wood feature site flagging is intact prior to implementation, finalize site-specific structure designs based on local channel characteristics, large wood availability and equipment access and obtain design approval from landowner and Grantor Project Manager. Fisheries Technical Assistant will also ensure that any equipment exclusion zones for biological/archeological restrictions are flagged, if required.

Grantee Conservationist II (not funded through this grant) will oversee purchase and delivery of project materials as well as preparing tools and equipment for use. Field crews will set-up and maintain spike camp operations. Fisheries Technical Assistant will schedule Archeological and Listed Plant Surveys for the project area and perform photo-documentation to provide matched photos of feature sites prior to structure installation and photos of features after they are installed.

Landowner - Jackson Demonstration State Forest (JDSF) will provide grantee any surveys or information on Northern Spotted Owl and Marbled Murrelet activity in the project area at the time of submission of 1600 permit Notification.

Cal Fire Forester I and Forester II with JDSF will conduct project review, site inspections, and coordinate access. Cal Fire crews will brush and grade Forest Road 911 for access to project reach.

Task 3. Project Implementation:
Task 3A. Install Instream Habitat Features: Installation of 25 large wood features including 62 logs/rootwads of Redwood or Douglas fir will be completed over a 3,035 foot reach of the North Fork Big River using grip-hoist and wire rope rigging techniques for log placement. The Redwood and Douglas fir logs will have a minimum diameter breast height (DBH) of 14 inches. Anchoring of the large wood will be accomplished using threaded rebar inserted through the logs and anchor trees and secured with washers and nuts. Cable and polyester resin adhesive may be used, as applicable. Some logs may be wedged between suitable riparian trees. All features will be placed and anchored in a manner consistent with procedures in the DFG California Salmonid Stream Habitat Restoration Manual, Section VII. Available slash and smaller woody debris at each structure site will be installed into features after site completion to provide immediate cover for salmonids present at time of construction.

Task 3B. Erosion Control: Mulching will take place on all exposed soils which may deliver sediment to a stream. Ground surface disturbed during construction of features will be protected using on-site forest materials (slash and other small wood) to prevent erosion and delivery of fine sediment into the stream channel. Seeding and mulching will take place as needed to stabilize bare soils and avoid potential erosion.

Task 3C. Avoidance of Spread of Aquatic Invasive species, chytrid disease, and Sudden Oak Death: All personal gear as well as tools/equipment used in the field will be properly decontaminated before moving to a new location even within the same watershed, in compliance with CDFW and California Oak Mortality Task Force decontamination protocol requirements.

Task 3D. Project Completion: Crews will break down spike camp and transport equipment and supplies back to base at project completion.

Task 4. Post Implementation Surveys:
Post-Project Data and Photo Collection: Following implementation, post-project photos will be taken and required performance metrics collected which satisfy the Grant Agreement Annual Progress Report(s) and Final Report.

Task 5. Reporting: Write and deliver progress reports for invoicing and Annual Progress Report(s). Summarize and interpret instream wood and other survey information, and summarize performance measures and prepare Final Report and deliver to Grantor.

The Annual and Final reports will contain:
a) The grant agreement number
b) Location of work – project location will be shown using a USGS 7.5 minute topographical map
c) Specific project access using public and private roads and trails, and landowner name and address
d) A description and analysis of the restoration and planning techniques used
e) A description of the results of the project
f) Paired Pre- and Post-installation photos of each Large Wood feature site.
g) Performance metrics indicated in the CDFW Final Report template for Instream Habitat Enhancement (HI) projects.
h) Dates of work and the number of person hours expended
i) A Final Budget table indicating grant dollars spent as well as amounts of contributed cash and in-kind services used to complete the project.

Deliverables:
- A total of 25 features containing 62 pieces of properly sized large wood will be constructed in existing and newly-developed pool habitat within a 3,035 foot stream reach of North Fork Big River.
- Matched Pre- and Post-construction photos of all structure sites (on Compact Disk included with Final Report).
- Final Landowner Access Agreement
- Grantor Notification of Lake or Streambed Alteration Application with payment for the 1600 permit
- Site-specific plans for in-stream habitat features
- Progress Reports submitted with each billing invoice
- Annual Reports by November 15
- Draft Final Report for grant manager review and a finalized Final Report with any edits resulting from grant manager review.

Timelines:
Contract Timeline is expected to be June 1, 2018, or upon approval, through December 30, 2021.

Task 1: Grant Oversight June 1, 2018 or, upon approval, through December 30, 2021

Task 2: Approval of final feature design: June - July 2018.

Task 2: Pre-Project Surveys, and Preparation: July 10 – August 10 2018, 2019, 2020, and/or 2021 (depending on crew scheduling for multiple projects and number of projects in watershed)

Task 3. Project Implementation: July 10 to October 31, 2018; July 10 to October 31, 2019; or July 10 to Oct 31, 2020; or July 10 to October 31, 2021 (depending on NSO work restrictions and crew scheduling). Includes tree falling and staging as well as feature installation, erosion control, equipment decontamination. All wood installation work will be completed during low-flow periods when impacts to water quality can be minimized or avoided.

Task 4. Post Implementation Surveys: November 1-15, 2018; November 1-15, 2019; November 1-15, 2020; or November 1-15, 2021.

Task 5. Reporting:

Annual Reports due November 15 2018, 2019, and 2020
Draft Final Report due November 26, 2021
Final Report/Invoice/Budget due December 31, 2021

Summer Season Work time frame will be July 10 – October 31, unless activity restrictions are modified through surveys indicating the absence of Northern Spotted Owls.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a "notice to proceed" letter has been received from the Grantor Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW. The Grantee should use the largest whole tree material available.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic

Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Manager. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

The Grantee will seed and mulch all exposed soils which may deliver sediment to a stream. Mulching and seeding can occur at any time during construction but will need to be completed prior to Oct. 15. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years.

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Comptche (3912335) OR Noyo Hill (3912346) OR Northspur (3912345) OR Burbeck (3912344) OR Mathison Peak (3912336) OR Greenough Ridge (3912334) OR Elk (3912326) OR Navarro (3912325) OR Bailey Ridge (3912324))

Possible species within the Comptche quadrangle and surrounding quads for 725533 North Fork Big River Coho Stream Habitat Enhancement Project - Phase II, T17N R15W S11, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American peregrine falcon *Falco peregrinus anatum*	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
angel's hair lichen *Ramalina thrausta*	NLLEC3S340	None	None	G5	S2?	2B.1
Behren's silverspot butterfly *Speyeria zerene behrensii*	IILEPJ6088	Endangered	None	G5T1	S1	
Blasdale's bent grass *Agrostis blasdalei*	PMPOA04060	None	None	G2	S2	1B.2
bluff wallflower *Erysimum concinnum*	PDBRA160E3	None	None	G3	S2	1B.2
Bolander's beach pine *Pinus contorta ssp. bolanderi*	PGPIN04081	None	None	G5T2	S2	1B.2
California sedge *Carex californica*	PMCYP032D0	None	None	G5	S2	2B.3
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
coast lily *Lilium maritimum*	PMLIL1A0C0	None	None	G2	S2	1B.1
Coastal and Valley Freshwater Marsh *Coastal and Valley Freshwater Marsh*	CTT52410CA	None	None	G3	S2.1	
Coastal Brackish Marsh *Coastal Brackish Marsh*	CTT52200CA	None	None	G2	S2.1	
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	PDAST4R065	None	None	G5T1T2	S1S2	1B.2
deceiving sedge *Carex saliniformis*	PMCYP03BY0	None	None	G2	S2	1B.2
fisher - West Coast DPS *Pekania pennanti*	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
glandular western flax *Hesperolinon adenophyllum*	PDLIN01010	None	None	G2G3	S2S3	1B.2
Grand Fir Forest *Grand Fir Forest*	CTT82120CA	None	None	G1	S1.1	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
grass alisma *Alisma gramineum*	PMALI01010	None	None	G5	S3	2B.2
great burnet *Sanguisorba officinalis*	PDROS1L060	None	None	G5?	S2	2B.2
Humboldt milk-vetch *Astragalus agnicidus*	PDFAB0F080	None	Endangered	G2	S2	1B.1
lagoon sedge *Carex lenticularis var. limnophila*	PMCYP037A7	None	None	G5T5	S1	2B.2
leafy-stemmed mitrewort *Mitellastra caulescens*	PDSAX0N020	None	None	G5	S4	4.2
Lyngbye's sedge *Carex lyngbyei*	PMCYP037Y0	None	None	G5	S3	2B.2
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
Mendocino Coast paintbrush *Castilleja mendocinensis*	PDSCR0D3N0	None	None	G2	S2	1B.2
Mendocino leptonetid spider *Calileptoneta wapiti*	ILARAU6040	None	None	G1	S1	
Mendocino Pygmy Cypress Forest *Mendocino Pygmy Cypress Forest*	CTT83161CA	None	None	G2	S2.1	
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
minute pocket moss *Fissidens pauperculus*	NBMUS2W0U0	None	None	G3?	S2	1B.2
Monterey clover *Trifolium trichocalyx*	PDFAB402J0	Endangered	Endangered	G1	S1	1B.1
Navarro roach *Lavinia symmetricus navarroensis*	AFCJB19023	None	None	G4T1T2	S2S3	SSC
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
North Coast semaphore grass *Pleuropogon hooverianus*	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Northern Coastal Salt Marsh *Northern Coastal Salt Marsh*	CTT52110CA	None	None	G3	S3.2	
northern goshawk *Accipiter gentilis*	ABNKC12060	None	None	G5	S3	SSC
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon goldthread *Coptis laciniata*	PDRAN0A020	None	None	G4	S3	4.2

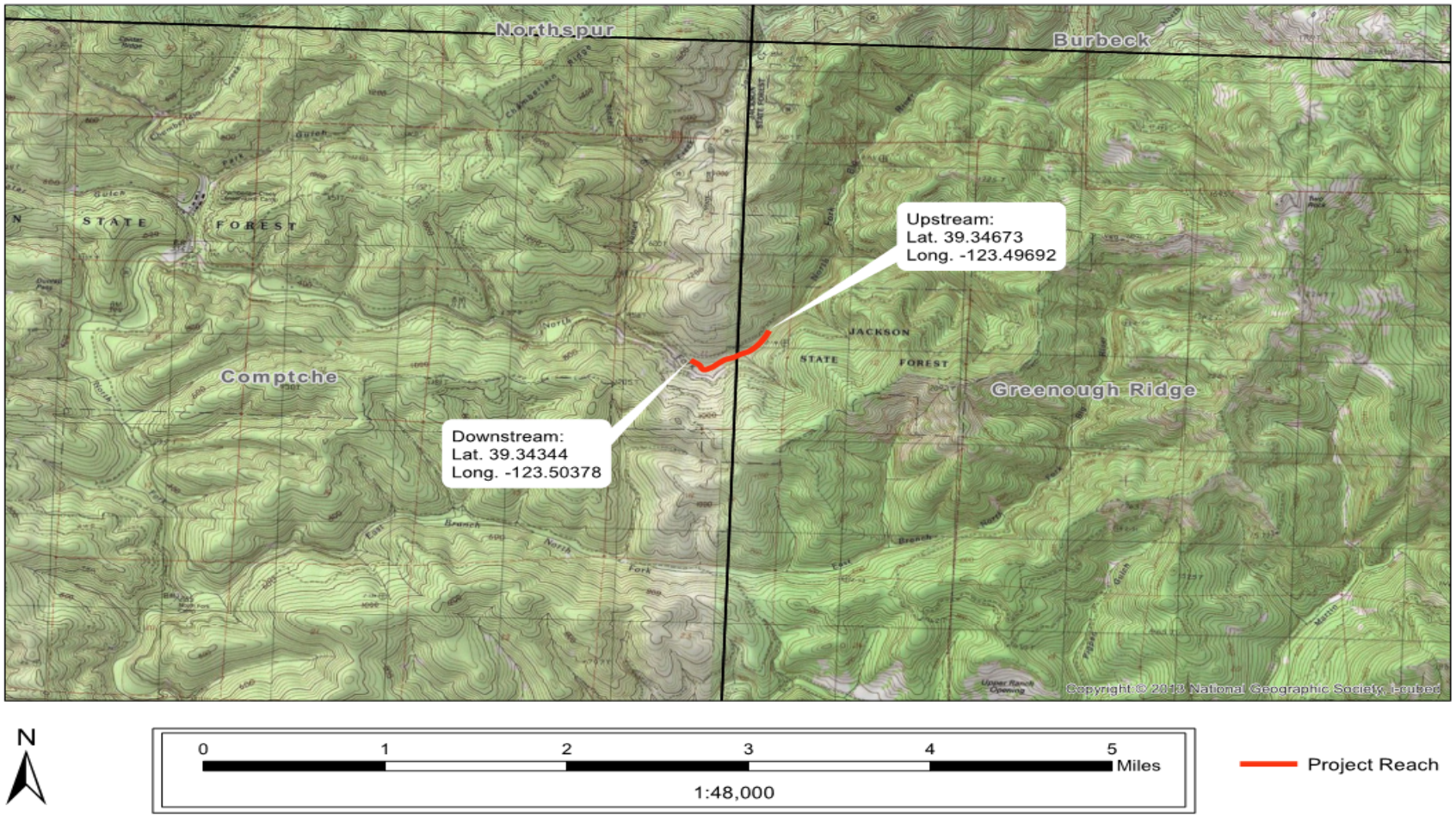
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
Point Reyes checkerbloom *Sidalcea calycosa ssp. rhizomata*	PDMAL11012	None	None	G5T2	S2	1B.2
Point Reyes horkelia *Horkelia marinensis*	PDROS0W0B0	None	None	G2	S2	1B.2
Pomo bronze shoulderband *Helminthoglypta arrosa pomoensis*	IMGASC2033	None	None	G2G3T1	S1	
purple martin *Progne subis*	ABPAU01010	None	None	G5	S3	SSC
pygmy cypress *Hesperocyparis pygmaea*	PGCUP04032	None	None	G1	S1	1B.2
pygmy manzanita *Arctostaphylos nummularia ssp. mendocinoensis*	PDERI04280	None	None	G3?T1	S1	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
running-pine *Lycopodium clavatum*	PPLYC01080	None	None	G5	S3	4.1
seacoast ragwort *Packera bolanderi var. bolanderi*	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
sharp-shinned hawk *Accipiter striatus*	ABNKC12020	None	None	G5	S4	WL
small groundcone *Kopsiopsis hookeri*	PDORO01010	None	None	G4?	S1S2	2B.3
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
Sphagnum Bog *Sphagnum Bog*	CTT51110CA	None	None	G3	S1.2	
steelhead - northern California DPS *Oncorhynchus mykiss irideus*	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
swamp harebell *Campanula californica*	PDCAM02060	None	None	G3	S3	1B.2
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
watershield *Brasenia schreberi*	PDCAB01010	None	None	G5	S3	2B.3
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
white beaked-rush *Rhynchospora alba*	PMCYP0N010	None	None	G5	S2	2B.2
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
white-tailed kite *Elanus leucurus*	ABNKC06010	None	None	G5	S3S4	FP
northern spotted owl *Strix occidentalis caurina*	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 67

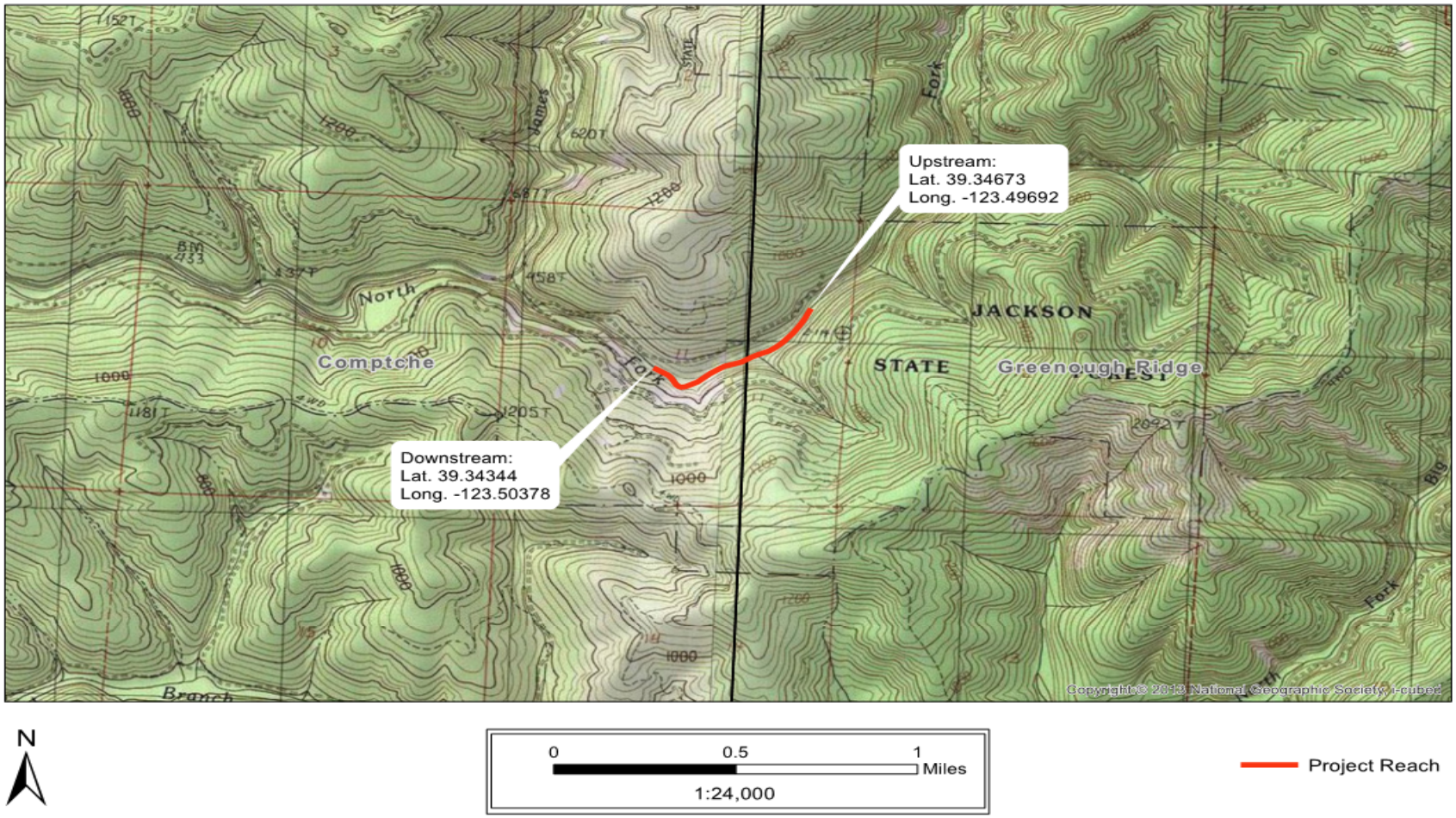
Project Location Topographic Map

California Conservation Corps
North Fork Big River Coho Stream Habitat Enhancement Project - Phase II
Project Location Map I
Comptche and Greenough Ridge Quads, Mendocino County



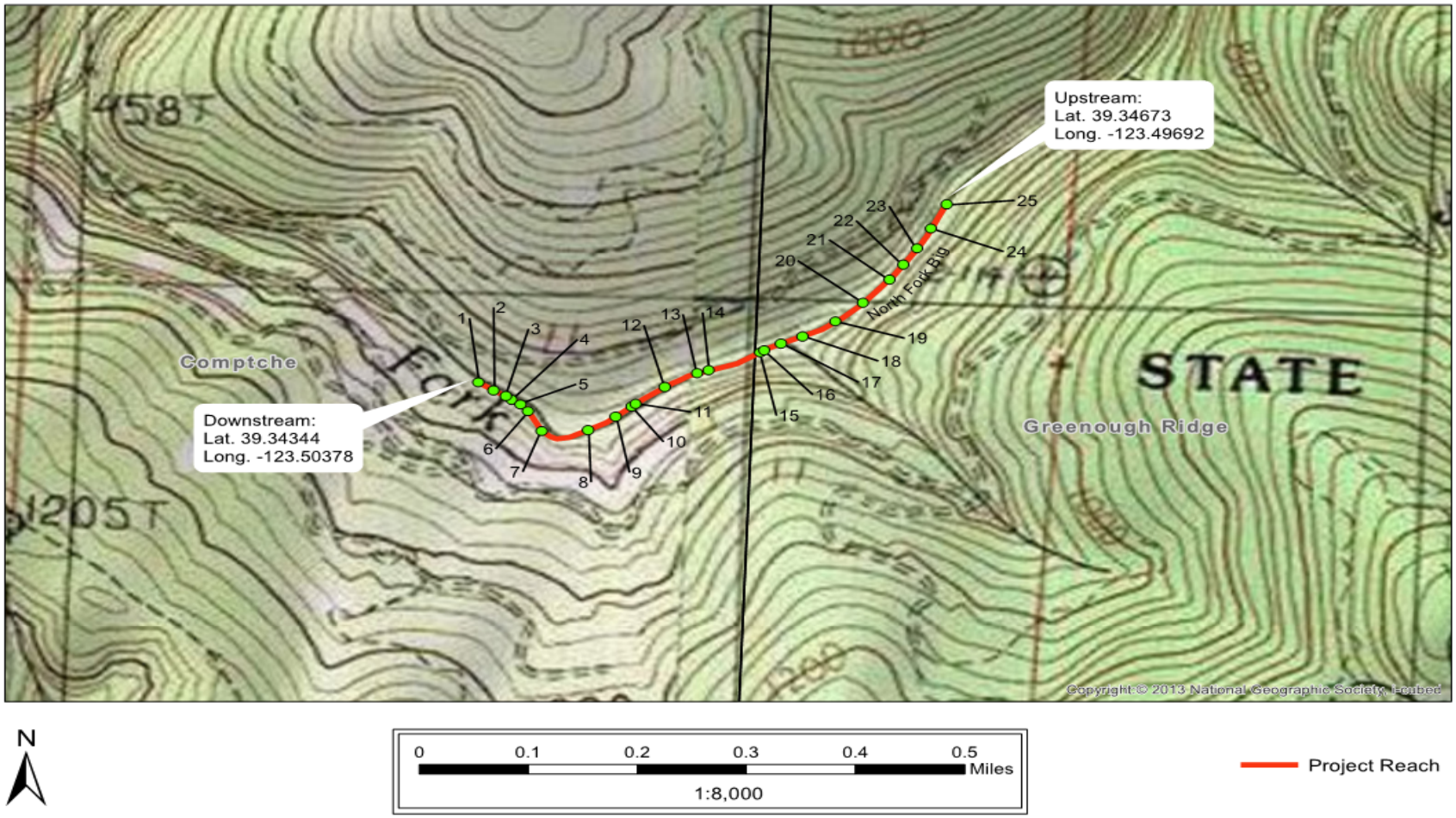
Project Location Topographic Map

California Conservation Corps
North Fork Big River Coho Stream Habitat Enhancement Project - Phase II
Project Location Map II (USGS 7.5 Min.)
Comptche and Greenough Ridge Quads, Mendocino County



Project Location Topographic Map

California Conservation Corps
North Fork Big River Coho Stream Habitat Enhancement Project - Phase II
Site Locations Map
Comptche and Greenough Ridge Quads, Mendocino County



Introduction: Trout Unlimited's North Coast Coho Project will prevent approximately 9,745 cubic yards of sediment from entering the Little North Fork (LNF) Noyo River by treating 32 features and 1.20 miles of hydrologically connected, abandoned legacy inner gorge and riparian road reaches with permanent road decommissioning. The total amount of road to be decommissioned is 2.31 miles.

This project is necessary because currently the LNF Noyo River supports populations of anadromous salmonids including Coho Salmon and steelhead trout. Habitat inventory assessments conducted by the California Department of Fish and Wildlife (CDFW) (2010), and the landowner (on-going), as well as observations of fish use (D. Wright, personal communication January 2015) indicate the LNF Noyo River has nearly 5 miles of habitat with water temperatures that fall consistently within thresholds listed as desirable for salmonid survival and production. The LNF Noyo Watershed also generally has adequate canopy cover, good stream bank cover vegetation, and is a popular tributary for adult spawners (CDFW 2006, 2010). However, field observations of channel geomorphology by the Technical Subcontractor suggest there are excessive amounts of channel stored sediment within the mainstem and tributaries of the LNF Noyo River resulting in incised channel cross sections. Additionally, CDFW stream inventory reports also indicate that only 24% of the identified pools in the watershed were more than 2 feet deep. Overall recommendations in the 2010 Stream Inventory Report Little North Fork Noyo River include: "Active and potential sediment sources related to the road system need to be identified, mapped, and treated according to their potential for sediment yield to the stream and its tributaries."

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Parts VII, XI, XI and XII (Flosi et al 1998 and 2002).

Objectives: The goal of this project is to prevent approximately 9,745 cubic yards of sediment from entering the LNF Noyo River by treating 32 features and 1.20 miles of hydrologically connected, abandoned, legacy inner gorge and riparian road reaches with permanent road decommissioning. The total amount of road to be decommissioned is 2.31 miles. The objectives of this project include:

- Address the *Recovery Plan for the Evolutionarily Significant Unit of Central Coast Coho Salmon Final Plan* National Oceanic and Atmospheric Administration (NOAA) 2012 task NoR-CCC-23.1.1.6 "Restoration projects that upgrade or decommission high risk roads in Core areas should be considered an extremely high priority for funding".
- Address *the Recovery Strategy for California Coho Salmon* (CDFW 2004) task MC-NO-03 – "Implement actions of a sediment reduction plan to improve water quality".
- Address the *Final Coastal Multispecies Recovery Plan* (NOAA 2015) task NoyoR-NCSW-23.1.1.7 – "Restoration projects that upgrade or decommission high risk

roads in high priority areas should be considered an extremely high priority for funding (e.g. PCSRF)".

- Directly address adverse impacts to the LNF Noyo Watershed resulting from legacy forest practices, particularly an excess of sediment discharge from old forest roads and landings.

Project Description:

Location: The project area is located along the LNF Noyo River, west of Fort Bragg, California. The LNF Noyo River confluence with the mainstem of the Noyo River is approximately 5 miles upstream from the Pacific Ocean. The project area encompasses the upper portion of the inner gorge road system within the watershed. The center of the project area is located at 39.45082900: -123.65932800.

Project Set Up: The Project Management will provide all Agreement and subcontract oversight and project administration including but not limited to obtaining permits; securing Agreements, subcontracts and Final Landowner Access Agreements, etc.; scheduling; implementation oversight; invoicing and reporting; and agency and landowner communications. The Conservation Grants Coordinator will assist in processing invoices and vendor payments, Agreement tracking, and reporting.

The implementation of the road decommissioning will be completed by the Technical Subcontractor (construction manager). The Technical Subcontractor will be on-site to layout the proposed heavy equipment construction treatments in the project area. The Technical Subcontractor will provide an Engineering Geologist to provide project and construction oversight and quality assurance/quality control of project products. The Technical Subcontractor will manage project layout, construction oversight, monitoring, and reporting. The Technical Subcontractor will conduct surveys, construction oversight, pre-, during-, and post-construction monitoring and data entry. The Technical Subcontractor will provide field layout maps, digitize layout and as-built project data, and develop report maps. The Technical Subcontractor will track and monitor hours and create invoices during the project. All Technical Subcontractor work elements will be supervised by a Principal. The final reporting of the project will be done by the Technical Subcontractor Engineering Geologist closely involved in the project, with assistance and oversight from Project Management.

The Heavy Equipment Subcontractor will be responsible for construction activities.

The Biological Subcontractor will conduct electrofishing and fish exclusion.

Materials: The following materials will be utilized to complete this project:

- Trees (planting): Approximately 798 trees
- Straw: Approximately 98 bales of straw mulch
- Seed: Approximately 68 pounds of native seed
- Pressure Washer
- Debris/Trash Pump (rental) and hosing
- Rip-rap/large wood: 220 cubic yards of clean rip-rap or large wood
- Culvert: Approximately 300-feet of 6-inch flex pipe
- Gasoline: Approximately 3,125 gallons of gasoline and 10,500 gallons of diesel
- Technical Subcontractor miscellaneous field and office supplies including photographic supplies, flagging, wood stakes, field maps, plastic overlays for field maps, photo duplication for final reports, copying/binding for final reports, report maps, phone, fax, and postage.
- Field/Office Supplies including flagging, measuring tapes, wooden stakes, waterproof paper, notebooks and notepads, writing utensils, charting pads, envelopes, poster board, and fastening supplies.
- Printing/Duplication Supplies including paper, ink, toner, and external printing or copying services
- Postage including supplies and costs for sending or shipping Agreement administration items such as reports, permit applications, invoices, and Agreements/subcontracts.

Tasks: Accomplish the project goal by completing the following tasks:

Task A: Grant Oversight and Project Administration (Grantee) – provide all Agreement and subcontracting oversight and administration as pursuant to Agreement and regulatory guidelines. This includes obtaining permits, securing Agreements and subcontracts, scheduling, implementation oversight, invoicing, reporting, and agency and landowner communications. Upon final execution of the Agreement and prior to receiving a Final Notice to Proceed, deliver the Final Landowner Access Agreements, subcontracts, and ensure all permits are finalized. Additionally, the Conservation Grants Coordinator will assist with invoicing and vendor payment. This task will occur throughout the life of the project.

Task B: Implementation of the road decommissioning (Technical Subcontractor) – The Technical Subcontractor will be responsible for executing project implementation. The Technical Subcontractor team will stay at local hotels. The Technical Subcontractor will compile invoices and track budgets throughout the lifetime of the project.

Task B-1: Pre-project layout – The Technical Subcontractor will coordinate the appropriate surveys for northern spotted owls if prudent. The Technical Subcontractor will flag heavy equipment access routes and construction boundaries (layout) as well as spoils disposal sites,

equipment exclusion areas for botanical or cultural resource protection, and large woody debris staging areas. They will also document the existing conditions on a subset of the stream crossings and setup photo point monitoring stations at the construction locations for final reporting. Preconstruction monitoring will be performed by the Technical Subcontractor in a manner consistent with requirements of the Forest Land Anadromous Restoration focus.

Task B-2: Road opening, feature treatment, and erosion control – the Technical Subcontractor will work with the Heavy Equipment Subcontractor heavy equipment operators to reopen the proposed road site for equipment access and decommissioning treatments. Exclusionary fencing for salmonids and other aquatic species will be installed at the confluence of flowing tributaries to prevent upstream migration into the construction areas as deemed necessary by the Grantor's Project Manager and the Technical Subcontractor. Additionally, all equipment, vehicles and materials used to implement this project will be cleaned and treated in accordance with the Trout Unlimited's Aquatic Invasive Species Decontamination Plan. Personal field gear and heavy equipment working in or near a stream will be decontaminated according to the Trout Unlimited Aquatic Invasive Species Decontamination Plan. Several methods will be employed to avoid the spread of invasive species during the implementation of the project. The Biological Subcontractor will perform fish exclusion and fish relocation.

Task B-2-2 - An excavator and bulldozer will be used to reopen the road proposed for decommissioning by removing the vegetation and developing temporary stream crossings if prudent. A gasoline powered water pump will be used to protect water quality during installation of temporary crossings; these will be managed by the Heavy Equipment Subcontractor.

Task B-2-3 - The Heavy Equipment Subcontractor's excavator, bulldozer and dump truck will be used to remove the anthropogenic road fill material from the proposed stream crossing decommissioning features and other site specific features specified for treatment. Similarly, they will be used to treat and restore all road surface drainage as they work their way out from the end of the road. A gas powered water pump will be used to divert flow and protect water quality during decommissioning of live stream crossings; these will be managed by the Heavy Equipment Subcontractor. Concurrently working with the excavator and bulldozer, the dump truck will deliver

rock to specific treatment areas for placement by the excavator and endhaul spoil from decommission areas to designated spoil disposal sites. The Heavy Equipment Operator's water truck will be used for dust abatement to protect water quality and riparian vegetation, and laborers will be used to spread seed and straw, and plant trees at completed construction sites. In accordance with the invasive species protocol, all heavy equipment will be cleaned before and after entering/leaving the work area.

Task B-2-4 - Post-construction monitoring, including photographic monitoring, and stream crossing profiles, will be performed by the Technical Subcontractor.

Task C - Reporting – The Technical Subcontractor will conduct post-decommissioning surveys on a subset of the stream crossings and reoccupy photo points to document pre- and post-conditions at the feature locations. The Technical Subcontractor will develop a that documents the work completed and the total costs to implement the project.

Deliverables: The following will be delivered as part of this project:

Deliverable 1 (Task A): Project deliverables will include the information listed below as well as everything that will be delivered to the Grantor's Project Manager during the life of the project: Final Landowner Access Agreements; Notification of Lake or Streambed Alteration with fee; Progress Reports submitted with invoices; and Annual Reports. The project deliverables will also include any invoices, additional progress reports or any other documentation pursuant to the Agreement requirements, including a Final Report and final budget.

Deliverable 2 (Task B): As-built Road Logs for permanent road decommissioning of 2.31 mi of inner gorge and streamside riparian road in the LNF Noyo River Watershed; direct treatment of 32 site specific erosional features along the decommission road alignment; prevention of 9,010 cubic yards of anthropogenic related sediment from entering the LNF Noyo River stream system. Road Logs to be included in the Final Report.

Deliverable 3 (Task C): Upon completion of the project the Grantee and Technical Subcontractor will submit a written completion report which contains: (1) general Agreement information, (2) location of work, (3) project access, (4) participating landowner's name and address, (5) a description and analysis of the restoration and planning person hours expended, (6) a quantified description of the results of the project, including as-built road logs, (7) dates of work and the number of person hours expended, (8) labeled before-and-

after photos of selected restoration activities and techniques, (9) grant dollars spent and contributed and/or in-kind services used to complete the project, (10) geographic information system generated maps and shapefiles of the project area, and (11) monitoring checklists, databases, spreadsheets and any other data products produced.

Timelines: Implement the project following the following timeline:

Task A: The start date will be June 1, 2018, or upon final execution of the Agreement. Prior to receiving a Final Notice to Proceed, deliver Final Landowner Access Agreements, subcontract agreements, and ensure all permits are finalized. Upon approval and through the Agreement term ending on March 31, 2020, manage and coordinate the project.

Task B: June 1, 2018, or upon final execution of the Agreement, through December 31, 2019. Begin on-the-ground implementation occur during the summer of 2018. Because of potential permitting, seasonal and weather limitations on operations, it is expected that the full project may take up to two work seasons to complete. Timeline below reflects the two season possibility.

Task B-1: June 1, 2018, or upon award through June 15, 2018 and complete before August 15, 2018, preconstruction project permitting, preconstruction layout, and pre-project monitoring tasks will begin. Prior to implementation, pre-project photos and quantitative metrics which satisfy the reporting and monitoring requirements will be collected.

Task B-2.1: Mobilization complete by June 15, 2018, Season 2- June 15, 2019.

Task B-2.2: Open appurtenant roads complete June 30, 2018, Season 2- June 30, 2019.

Task B-2.3: Implementation (permanent road decommissioning) is estimated to take 7 work weeks; June 15, 2018 through October 31, 2018, Season 2- June 15, 2019 through October 31, 2019.

Task B-2.4: Fall of 2017 and 2018, post-construction monitoring data collection.

Task C: Compile data, prepare final report, and submit to CDFW Project Manager by February 28, 2020, 1 month prior to the Grant Agreement Term End Date of March 31, 2020.

Additional Requirements: The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a notice to proceed letter has been received from the Grantor's Project Grant Manager. Work in flowing streams is restricted per the Army Corp of Engineers

Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the Grantor's Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for CDFW personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other native aquatic species from the project area. If the project requires dewatering of the site and the relocation of listed aquatic species, the Grantee will implement the following measures to minimize harm and mortality to listed species as well as other native aquatic species:

- Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year.

- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit, NMFS Biological Opinion, and project's Lake and Streambed Alteration Agreement (1600 permit).

- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

- Only qualified fisheries biologist that are approved by USFWS and permitted by CDFW under a California Endangered Species Act (CESA) Memorandum of Understanding (MOU) shall handle and relocate CESA listed species.

- All electrofishing shall be performed by a qualified fisheries biologist under the supervision of CDFW and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

- USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the Grantor's Project Manager on a form provided by CDFW. .

All road decommissioning will be done in accordance with techniques described in the Handbook for Forest and Ranch Roads, (PWA, 1994c.) and the *California Salmonid Stream Habitat Restoration Manual*, Volume II, Part X. All road upgrade and decommissioning sites and techniques shall be approved by the CDFW Grant Manager before any equipment work takes place.

All crossings treated in fish bearing reaches of streams will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and the criteria for adult and juvenile salmonid fish passage as described in Volume II, Part IX of the *California Salmonid Stream Habitat Restoration Manual*.

Seeding and mulching of all exposed soils shall be done for all slopes which may deliver sediment to a stream. Woody debris will be concentrated on finished slopes adjacent to stream crossings. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years. Mulching and seeding will take place as sites are completed to avoid unforeseen erosion. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Sites which are expected to erode and deliver sediment to the stream are the only locations where work will be authorized for reimbursement under the terms of this agreement. Reimbursement will not be authorized for work done to improve aesthetics only.

The landowner or responsible party must sign an access agreement stating they agree to maintain the erosion control project for a period of not less than 10 years. Maintenance will consist of repair to the road or stream crossing to a level that will effectively reduce sediment from entering the stream. In the event of an act of nature which results in partial or complete failure of the project, the landowner or applicant will not be held responsible for costs incurred after the act

of nature. Acts of nature include, but are not limited to floods, earthquakes, volcanic eruptions, and wind storms.

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to ensure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Noyo Hill (3912346) OR Inglenook (3912357) OR Dutchmans Knoll (3912356) OR Sherwood Peak (3912355) OR Fort Bragg (3912347) OR Northspur (3912345) OR Mendocino (3912337) OR Mathison Peak (3912336) OR Comptche (3912335))

Possible species within the Noyo Hill quadrangle and surrounding quads for 725548 Little North Fork Noyo Sediment Reduction and Coho Recovery Project, T18N R16W S4, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
alpine marsh violet *Viola palustris*	PDVIO041G0	None	None	G5	S1S2	2B.2
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
angel's hair lichen *Ramalina thrausta*	NLLEC3S340	None	None	G5	S2?	2B.1
ashy storm-petrel *Oceanodroma homochroa*	ABNDC04030	None	None	G2	S2	SSC
Baker's goldfields *Lasthenia californica ssp. bakeri*	PDAST5L0C4	None	None	G3T1	S1	1B.2
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Behren's silverspot butterfly *Speyeria zerene behrensii*	IILEPJ6088	Endangered	None	G5T1	S1	
Blasdale's bent grass *Agrostis blasdalei*	PMPOA04060	None	None	G2	S2	1B.2
bluff wallflower *Erysimum concinnum*	PDBRA160E3	None	None	G3	S2	1B.2
Bolander's beach pine *Pinus contorta ssp. bolanderi*	PGPIN04081	None	None	G5T2	S2	1B.2
bunchberry *Cornus canadensis*	PDCOR01040	None	None	G5	S2	2B.2
California sedge *Carex californica*	PMCYP032D0	None	None	G5	S2	2B.3
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
coast lily *Lilium maritimum*	PMLIL1A0C0	None	None	G2	S2	1B.1
Coastal and Valley Freshwater Marsh *Coastal and Valley Freshwater Marsh*	CTT52410CA	None	None	G3	S2.1	
coastal bluff morning-glory *Calystegia purpurata ssp. saxicola*	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
Coastal Brackish Marsh *Coastal Brackish Marsh*	CTT52200CA	None	None	G2	S2.1	
coastal triquetrella *Triquetrella californica*	NBMUS7S010	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	PDAST4R065	None	None	G5T1T2	S1S2	1B.2
dark-eyed gilia *Gilia millefoliata*	PDPLM04130	None	None	G2	S2	1B.2
deceiving sedge *Carex saliniformis*	PMCYP03BY0	None	None	G2	S2	1B.2
dwarf alkali grass *Puccinellia pumila*	PMPOA531L0	None	None	G4?	SH	2B.2
Fen *Fen*	CTT51200CA	None	None	G2	S1.2	
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
globose dune beetle *Coelus globosus*	IICOL4A010	None	None	G1G2	S1S2	
Grand Fir Forest *Grand Fir Forest*	CTT82120CA	None	None	G1	S1.1	
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
great burnet *Sanguisorba officinalis*	PDROS1L060	None	None	G5?	S2	2B.2
green yellow sedge *Carex viridula ssp. viridula*	PMCYP03EM5	None	None	G5T5	S2	2B.3
hair-leaved rush *Juncus supiniformis*	PMJUN012R0	None	None	G5	S1	2B.2
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
Howell's spineflower *Chorizanthe howellii*	PDPGN040C0	Endangered	Threatened	G1	S1	1B.2
Humboldt Bay owl's-clover *Castilleja ambigua var. humboldtiensis*	PDSCR0D402	None	None	G4T2	S2	1B.2
Humboldt milk-vetch *Astragalus agnicidus*	PDFAB0F080	None	Endangered	G2	S2	1B.1
lagoon sedge *Carex lenticularis var. limnophila*	PMCYP037A7	None	None	G5T5	S1	2B.2
leafy-stemmed mitrewort *Mitellastra caulescens*	PDSAX0N020	None	None	G5	S4	4.2
livid sedge *Carex livida*	PMCYP037L0	None	None	G5	SH	2A
lotis blue butterfly *Plebejus idas lotis*	IILEPG5013	Endangered	None	G5TH	SH	

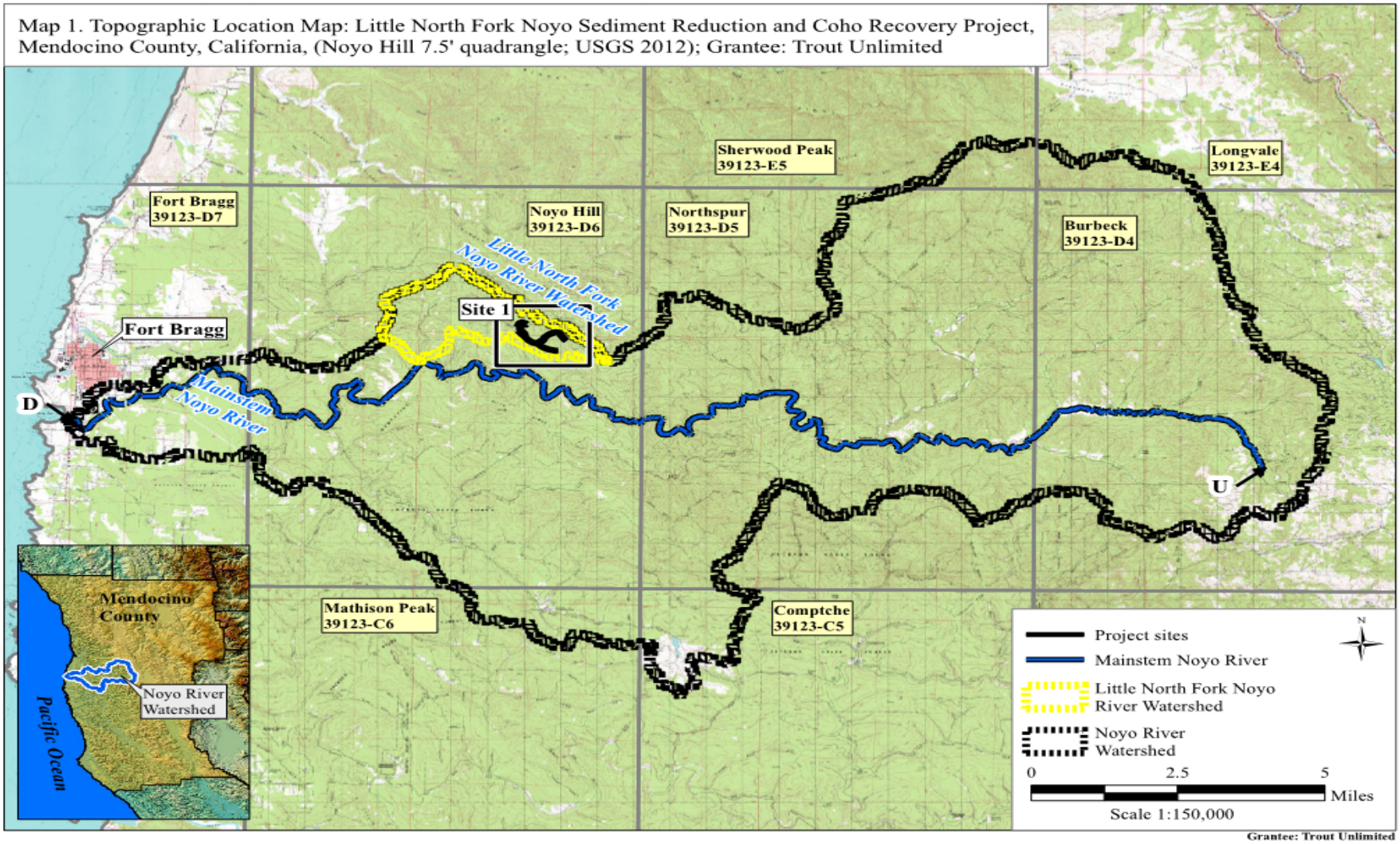
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Lyngbye's sedge *Carex lyngbyei*	PMCYP037Y0	None	None	G5	S3	2B.2
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
marbled murrelet *Brachyramphus marmoratus*	ABNNN06010	Threatened	Endangered	G3G4	S1	
marsh pea *Lathyrus palustris*	PDFAB250P0	None	None	G5	S2	2B.2
Mendocino Coast paintbrush *Castilleja mendocinensis*	PDSCR0D3N0	None	None	G2	S2	1B.2
Mendocino dodder *Cuscuta pacifica var. papillata*	PDCUS011A2	None	None	G5T1	S1	1B.2
Mendocino leptonetid spider *Calileptoneta wapiti*	ILARAU6040	None	None	G1	S1	
Mendocino Pygmy Cypress Forest *Mendocino Pygmy Cypress Forest*	CTT83161CA	None	None	G2	S2.1	
Menzies' wallflower *Erysimum menziesii*	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
Monterey clover *Trifolium trichocalyx*	PDFAB402J0	Endangered	Endangered	G1	S1	1B.1
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
North Coast phacelia *Phacelia insularis var. continentis*	PDHYD0C2B1	None	None	G2T2	S2	1B.2
North Coast semaphore grass *Pleuropogon hooverianus*	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Northern Coastal Salt Marsh *Northern Coastal Salt Marsh*	CTT52110CA	None	None	G3	S3.2	
northern goshawk *Accipiter gentilis*	ABNKC12060	None	None	G5	S3	SSC
northern microseris *Microseris borealis*	PDAST6E030	None	None	G5	S1	2B.1
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon coast paintbrush *Castilleja litoralis*	PDSCR0D012	None	None	G3	S3	2B.2
Oregon goldthread *Coptis laciniata*	PDRAN0A020	None	None	G4	S3	4.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
Pacific lamprey *Entosphenus tridentatus*	AFBAA02100	None	None	G4	S4	SSC
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
perennial goldfields *Lasthenia californica ssp. macrantha*	PDAST5L0C5	None	None	G3T2	S2	1B.2
pink sand-verbena *Abronia umbellata var. breviflora*	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Point Reyes blennosperma *Blennosperma nanum var. robustum*	PDAST1A022	None	Rare	G4T2	S2	1B.2
Point Reyes horkelia *Horkelia marinensis*	PDROS0W0B0	None	None	G2	S2	1B.2
purple martin *Progne subis*	ABPAU01010	None	None	G5	S3	SSC
purple-stemmed checkerbloom *Sidalcea malviflora ssp. purpurea*	PDMAL110FL	None	None	G5T1	S1	1B.2
pygmy cypress *Hesperocyparis pygmaea*	PGCUP04032	None	None	G1	S1	1B.2
pygmy manzanita *Arctostaphylos nummularia ssp. mendocinoensis*	PDERI04280	None	None	G3?T1	S1	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
round-headed Chinese-houses *Collinsia corymbosa*	PDSCR0H060	None	None	G1	S1	1B.2
running-pine *Lycopodium clavatum*	PPLYC01080	None	None	G5	S3	4.1
seacoast ragwort *Packera bolanderi var. bolanderi*	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	PDASTE5011	None	None	G4T3	S2	1B.2
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
Sphagnum Bog *Sphagnum Bog*	CTT51110CA	None	None	G3	S1.2	
steelhead - northern California DPS *Oncorhynchus mykiss irideus*	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
supple daisy *Erigeron supplex*	PDAST3M3Z0	None	None	G2	S2	1B.2
swamp harebell *Campanula californica*	PDCAM02060	None	None	G3	S3	1B.2
Ten Mile shoulderband *Noyo intersessa*	IMGASC5070	None	None	G2	S2	
Thurber's reed grass *Calamagrostis crassiglumis*	PMPOA17070	None	None	G3Q	S2	2B.1
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
tufted puffin *Fratercula cirrhata*	ABNNN12010	None	None	G5	S1S2	SSC
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
white beaked-rush *Rhynchospora alba*	PMCYP0N010	None	None	G5	S2	2B.2
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
Whitney's farewell-to-spring *Clarkia amoena ssp. whitneyi*	PDONA05025	None	None	G5T1	S1	1B.1
Wolf's evening-primrose *Oenothera wolfii*	PDONA0C1K0	None	None	G2	S1	1B.1
northern spotted owl *Stix occidentalis caurina*	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 97

Project Location Topographic Map



Introduction:

Trout Unlimited will install large wood features throughout 1.13 mile project reach of Upper Little North Fork Noyo River tributary to the Noyo River in Mendocino County for improving habitat complexity, frequency and depth of pools, providing refugia for migrating salmon and collecting spawning gravels. While the project stream supports populations of coho salmon and steelhead trout, recent CDFW Stream Inventory Reports (2006 and 2010) indicate that the Little North Fork Noyo is lacking in functional large wood material. Anecdotal information from current and past property owners suggests the Little North Fork Noyo River was particularly degraded following unrestricted logging and road construction practices between the early 1950s and 1980s. The introduction of large wood is expected to enhance the degraded habitat by stimulating scour of pools and sorting of gravels, and increasing the quantity of slow water refugia habitat for juvenile salmonids.

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured.
All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Parts VII, XI, XI and XII (Flosi et al 1998 and 2002).

Objective(s):

The goal of this project is to improve the quality and quantity of spawning and rearing habitat for coho salmon and steelhead. The objectives are to improve habitat complexity, pool frequency, and pool depth within the project reach by installing approximately 100 pieces of large wood and rootwads at 30 sites along a 1.13 mile reach of Upper Little North Fork Noyo River.

Project Description:

Location: The locations of the project boundaries are 39.45580º north latitude, 123.66557º west longitude at the downstream end; and 39.45247º north latitude, 123.65133º west longitude at the upstream end on Upper Little North Fork Noyo River in Mendocino County. The project reach begins 3.9 miles upstream from the confluence of Little NF Noyo R and the mainstem Noyo River and continues upstream 1.13 mi.

Project Set Up:

Administration (Task 1)

The Grantee (Trout Unlimited) Project Manager will provide all contracting oversight and project administration including but not limited to: obtaining permits; securing contracts (grantors, subcontractors, landowner, etc.); scheduling; implementation oversight; invoicing and reporting; and agency and landowner communications. This task will occur throughout the life of the project. In addition to the Grantee Project Manager, the Grantee Conservation Grants Coordinator will assist in processing invoices and vendor payments, grant tracking, and reporting.

Pre-implementation Setup (Task 2)
The subcontracted Consultant, Pacific Watershed Associates (PWA), will complete the Pre-Implementation Set-up. Consultant Project Geologist, Project Scientist, Scientific Technicians, GIS Staff, and Clerical staff will complete this task, The GIS staff will provide base maps for the project set up, while the Project Geologist, Project Scientist, and Technical staff will conduct the required field work. The Clerical Staff will maintain work records and develop invoices.

Implementation and Implementation Monitoring (Task 3)
The Consultant Project Geologist will oversee day to day construction activities. The landowner, Lyme Redwood Forest Company (LRFC), will set up a subcontract with a logging Contractor including a qualified heavy equipment operator and Laborers for the proposed work. The LRFC Contractor will be used for all construction needs throughout the implementation of this project including: transport of heavy equipment to project site with lowboy truck, road opening operations to the proposed stream reach, procurement of large wood, falling trees with a chainsaw, and the installation of large wood features. The Consultant Project Geologist, Project Scientist, and Technicians will be on-site to supervise final placement of the features and conduct pre- and post-project photographic documentation. Consultant technical staff will conduct surveys, construction oversight, pre-, during-, and post-construction monitoring, and data entry.

The project will utilize living riparian trees as anchors by wedging the logs between them, where feasible. Once all of the logs have been placed, the LRFC Contractor Laborers will anchor the structure logs, as needed.

The LRFC Contractor Laborers and heavy equipment will be used to add medium and small woody debris and brush to each large wood feature to increase cover and add roughness elements for capturing more small wood. The Laborers will also re-seed and mulch equipment access routes using tree slash. Tree seedlings will also be planted.

Reporting (Task 4)
The Grantee and the Consultant Subcontractor will develop progress reports to submit with each invoice, Annual Reports, and a Final Report with Final Budget (expenditures and cost share). Consultant GIS Staff will create field and reporting maps. Consultant Clerical Staff will track budgets and create invoices and the Principal Geologist will oversee all Consultant operations.

Materials: Conifer logs and rootwads will be used to build proposed in-stream LWD features. Tree tops and other small tree material will be used for rack material, mulch and erosion control on disturbed areas. Native tree seedlings and appropriate saplings (redwood) will be used to plant along the riparian and at skid

access points to stream reaches that have been disturbed by heavy equipment. The conifer logs, rootwads, and small tree material, as well as, Contractor excavator, bulldozer, and lowboy time will be provided by the Landowner as cost share.

Tools include log tongs, chainsaws, bar oil, blades, shear pins, portable generator, hole hawg (drill for large holes in wood), power tools, drill bits and extensions, threaded rebar and anchoring supplies (nuts, plates, washers). These materials will be used to construct and anchor in-stream LWD features. Rental of log tongs is included in the budget request. The portable generator and hole hawg rental is a landowner cost share.

Straw mulch will be used to protect and promote growth of native seedlings used in replanting that have been disturbed from restoration activities. Straw is also used for erosion control. Seed is also used for erosion control on disturbed areas.

A pressure washer will be used to decontaminate heavy equipment between each use in different waterbodies and watersheds to prevent the spread of invasive species as per the equipment decontamination methods stated in the CDFW decontamination protocol.

Implementation of the proposed project is estimated to require the use of 3,125 gallons of gasoline and 10,500 gallons of diesel for operating pick-up trucks, pumps and heavy equipment that will be used to remove the road system.

Many small field and office supplies will be used to complete the project including: photographic supplies, flagging, wood stakes, field maps, Mylar overlays for field maps, photo duplication for final reports, copying/binding for final reports, report maps, phone, fax, and postage.

Consultant mileage, lodging, and per diem: PWA staff require mileage, lodging ($90 per night) and per diem to accommodate travel needs to visit the site and meet with partners.

Grantee mileage: Project Manager requires mileage reimbursement for five round trips to the project site.

Grantee Field/Office Supplies: Supplies that will be required for Grantee staff members to assist subcontractors with project site monitoring and assessments, as well as materials needed for Grantee to complete grant administration tasks such hosting meetings, scheduling, and managing budgets. These supplies include flagging, measuring tapes, wooden stakes, rite-in-the-rain paper, notebooks, and notepads, writing utensils, charting pads, envelopes, poster board, and fastening supplies.

Grantee Printing/Duplication: Supplies that are required for printing items related to grant and project administration, such as reports, invoices, meeting handouts, and maps. These items may include (but are not limited to): paper, ink, and toner. This item also includes costs associated with external printing or copying services that may be required to produce reporting and meeting materials.

Grantee Postage: This includes supplies and costs for sending or shipping grant administration items such as reports, permit applications, invoices, and contracts.

Tasks:

Task 1: Grant Oversight and Project Administration by Grantee – Grantee Project Manager and Conservation Grants Coordinator will provide all contracting oversight and administration as pursuant to grant and regulatory guidelines. This includes but is not limited to obtaining permits, securing contracts, scheduling Archeological and Botanical surveys, implementation oversight, invoicing, reporting, and agency and landowner communications. Upon final execution of the Grant and prior to receiving a Final Notice to Proceed, Grantee will deliver the landowner access agreements, subcontracts, and assure all permits are finalized. Additionally, the Grantee Conservation Grants Coordinator will be available to assist with invoicing and vendor payment. This task will occur throughout the life of the project.

Task 2: Project preparation and pre-project layout – Consultant will flag trees to be procured, flag sites and access routes, determine biological/archeological restrictions and flag equipment exclusion zones if necessary. Final structure design and placement will be determined by field consultation between the Grantee and the CDFW Engineer/Geologist and Grant Manager. Consultant will also set photo points for LWD feature documentation of before and as-built conditions and future performance monitoring. Pre-construction monitoring will be performed by Consultant in a manner consistent with CDFW guidelines.

Task 3: Large Wood Structure Installation - Activities will involve transport of heavy equipment (excavator and bulldozer) to project site with lowboy truck, road opening operations to the proposed stream reach, procurement of LWD, falling trees with a chainsaw, and the installation of LWD features by LRFC Contractor. The logs and rootwads will be obtained from nearby upslope conifer forests by either digging trees up with their root wads still attached or by felling them with a chainsaw. Inventories show abundant wood near the proposed work sites. Logs will be skidded into selected staging areas using a bulldozer. Once the wood has been staged as close to its installation site as possible with an excavator, either (a) it will be moved into position by hand labor or (b) it will be installed with the heavy equipment.

The majority of the in-channel log and root wad features will be installed in the form of spider jams. The project will utilize living riparian trees as anchors by wedging the logs between them, where feasible. Alternative methods of anchoring without hardware that may be used involve embedding logs into the bank by trenching, or "injecting" sharpened ends of logs horizontally into bank soil. Once all of the logs have been placed, the LRFC Contractor Laborers will anchor the structure logs, as needed. Laborers will use one inch threaded rebar to anchor logs to riparian trees, and each other. Holes will be drilled through the logs and their anchor trees, and rebar will be strung through and secured with nuts and washers. Installation techniques will be consistent with California Salmonid Stream Habitat Restoration Manual, Section VII.

The spider jams will consist of large diameter (12"-30" dia.) logs which will be wedged between existing riparian trees. This type of jam will help collect and retain other large and small woody material that is naturally transported in high flow events. Additional "racked" logs are either wedged or placed loosely in the structure and are expected to be prone to transport and repositioning by high flows.

Once work with heavy equipment is completed, the Contractor will spread small and medium branches, brush, and straw mulch over all wood staging areas, access points, and other disturbed areas. Redwood seedlings will be planted throughout disturbed areas.

Personal field gear and heavy equipment working in or near a stream will be decontaminated according to the Trout Unlimited Aquatic Invasive Species Decontamination Plan. Several methods will be employed to avoid the spread of invasive species during the implementation of the project.

Task 4: Post Implementation Surveys and Reporting - The Consultant will conduct post-implementation documentation on the constructed stream features and reoccupy photo-points to document pre- and post-conditions at all locations and document the as-built conditions of the features. Annual Performance Metrics as indicated in the Final Report Template will be submitted with the Annual Reports. The Grantee and Consultant will develop a report based on CDFW requirements that documents the work completed and the total costs to implement the project. Final Performance Metrics, as listed in the Final Report Template, will be submitted as part of the Final Report.

Deliverables:

Deliverable 1 (Task 1): Project deliverables will include Final Landowner Access Agreements; Notification and payment of LSAA/1600 Agreement Application; Progress Reports submitted with invoices; Annual Reports, and a Final Report, final invoice, and final budget (with expenditures and cost share).

Deliverable 2 (Tasks 2 and 3): Installation of 30 LWD jams over a 1.13 mile stream reach, containing approximately 100 pieces of wood. Wood will be either woven, injected, or trenched, into the existing riparian corridor. Hardware anchors will be used where required.

Deliverable 3 (Tasks 3 and 4): Upon completion of the project Grantee and Consultant will submit a written completion report which contains: (1) general grant information, (2) location of work, (3) project access, (4) participating landowner's name and address, (5) a description and analysis of the restoration and planning person hours expended, (6) a quantified description of the results of the project, including as-built in-stream enhancement feature designs and cross-sections and longitudinal profiles at each site, (7) dates of work and the number of person hours expended, (8) labeled before and after photos of selected restoration activities and techniques, (9) grant dollars spent and contributed and/or in kind services used to complete the project, and (10) GIS generated maps and shape files of the project area. (11) Pre- and post- monitoring results of each of the constructed features.

Timelines:

Task 1: Grant management will begin once award contract is finalized and continue through the life of the project - June 1, 2018, or upon approval, through February 15, 2020.

Task 2: Project layout, final feature design and location approval by CDFW Engineer/Geologist pre-installation photo points, longitudinal profiles, and cross-sections - July 2018-August 2018.

Task 3: Field implementation (tree procurement, finalize structure design, pre-installation photos/monitoring, and LWD jam installation, erosion control) - late summer of 2018 and, if necessary, summer 2019 (depending on Contractor Laborer availability and Northern Spotted Owl work restrictions). All heavy equipment work will be completed during low-flow periods when impacts to water quality can be minimized or avoided. - August 2018 - October 2019.

Task 4: Reporting (annual/final Performance Metrics, follow-up photos, longitudinal profile, and cross sections, data compilation and report preparation) -
Annual Reports will be submitted by November 15, 2018 and 2019
Draft Final Report will be submitted by February 1, 2020
Final Report (with any Grantor comments addressed), Final Invoice, and Final Budget to be submitted by February 15, 2020.

The implementation work window for this project will fall within the July 10 – October 31 timeframe for the years 2018 and 2019, unless surveys indicate no current use of Northern Spotted Owl habitat near the project reach. The actual

time frame also depends on when the grant is executed, permits are finalized, and subcontractor scheduling.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a "notice to proceed" letter has been received from the Grantor Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW. The Grantee should use the largest whole tree material available.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

Seeding and mulching of all exposed soils shall be done for all slopes which may deliver sediment to a stream. Woody debris will be concentrated on finished slopes adjacent to stream crossings. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years. Mulching and seeding will take place as sites are completed to avoid unforeseen erosion. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Noyo Hill (3912346) OR Inglenook (3912357) OR Dutchmans Knoll (3912356) OR Sherwood Peak (3912355) OR Fort Bragg (3912347) OR Northspur (3912345) OR Mendocino (3912337) OR Mathison Peak (3912336) OR Comptche (3912335))

Possible species within the Noyo Hill quadrangle and surrounding quads for 725549 Upper Little North Fork Noyo Coho Habitat Enhancement Project, T19N R16W S32, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
alpine marsh violet *Viola palustris*	PDVIO041G0	None	None	G5	S1S2	2B.2
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
angel's hair lichen *Ramalina thrausta*	NLLEC3S340	None	None	G5	S2?	2B.1
ashy storm-petrel *Oceanodroma homochroa*	ABNDC04030	None	None	G2	S2	SSC
Baker's goldfields *Lasthenia californica ssp. bakeri*	PDAST5L0C4	None	None	G3T1	S1	1B.2
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Behren's silverspot butterfly *Speyeria zerene behrensii*	IILEPJ6088	Endangered	None	G5T1	S1	
Blasdale's bent grass *Agrostis blasdalei*	PMPOA04060	None	None	G2	S2	1B.2
bluff wallflower *Erysimum concinnum*	PDBRA160E3	None	None	G3	S2	1B.2
Bolander's beach pine *Pinus contorta ssp. bolanderi*	PGPIN04081	None	None	G5T2	S2	1B.2
bunchberry *Cornus canadensis*	PDCOR01040	None	None	G5	S2	2B.2
California sedge *Carex californica*	PMCYP032D0	None	None	G5	S2	2B.3
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
coast lily *Lilium maritimum*	PMLIL1A0C0	None	None	G2	S2	1B.1
Coastal and Valley Freshwater Marsh *Coastal and Valley Freshwater Marsh*	CTT52410CA	None	None	G3	S2.1	
coastal bluff morning-glory *Calystegia purpurata ssp. saxicola*	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
Coastal Brackish Marsh *Coastal Brackish Marsh*	CTT52200CA	None	None	G2	S2.1	
coastal triquetrella *Triquetrella californica*	NBMUS7S010	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	PDAST4R065	None	None	G5T1T2	S1S2	1B.2
dark-eyed gilia *Gilia millefoliata*	PDPLM04130	None	None	G2	S2	1B.2
deceiving sedge *Carex saliniformis*	PMCYP03BY0	None	None	G2	S2	1B.2
dwarf alkali grass *Puccinellia pumila*	PMPOA531L0	None	None	G4?	SH	2B.2
Fen *Fen*	CTT51200CA	None	None	G2	S1.2	
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
globose dune beetle *Coelus globosus*	IICOL4A010	None	None	G1G2	S1S2	
Grand Fir Forest *Grand Fir Forest*	CTT82120CA	None	None	G1	S1.1	
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
great burnet *Sanguisorba officinalis*	PDROS1L060	None	None	G5?	S2	2B.2
green yellow sedge *Carex viridula ssp. viridula*	PMCYP03EM5	None	None	G5T5	S2	2B.3
hair-leaved rush *Juncus supiniformis*	PMJUN012R0	None	None	G5	S1	2B.2
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
Howell's spineflower *Chorizanthe howellii*	PDPGN040C0	Endangered	Threatened	G1	S1	1B.2
Humboldt Bay owl's-clover *Castilleja ambigua var. humboldtiensis*	PDSCR0D402	None	None	G4T2	S2	1B.2
Humboldt milk-vetch *Astragalus agnicidus*	PDFAB0F080	None	Endangered	G2	S2	1B.1
lagoon sedge *Carex lenticularis var. limnophila*	PMCYP037A7	None	None	G5T5	S1	2B.2
leafy-stemmed mitrewort *Mitellastra caulescens*	PDSAX0N020	None	None	G5	S4	4.2
livid sedge *Carex livida*	PMCYP037L0	None	None	G5	SH	2A
lotis blue butterfly *Plebejus idas lotis*	IILEPG5013	Endangered	None	G5TH	SH	

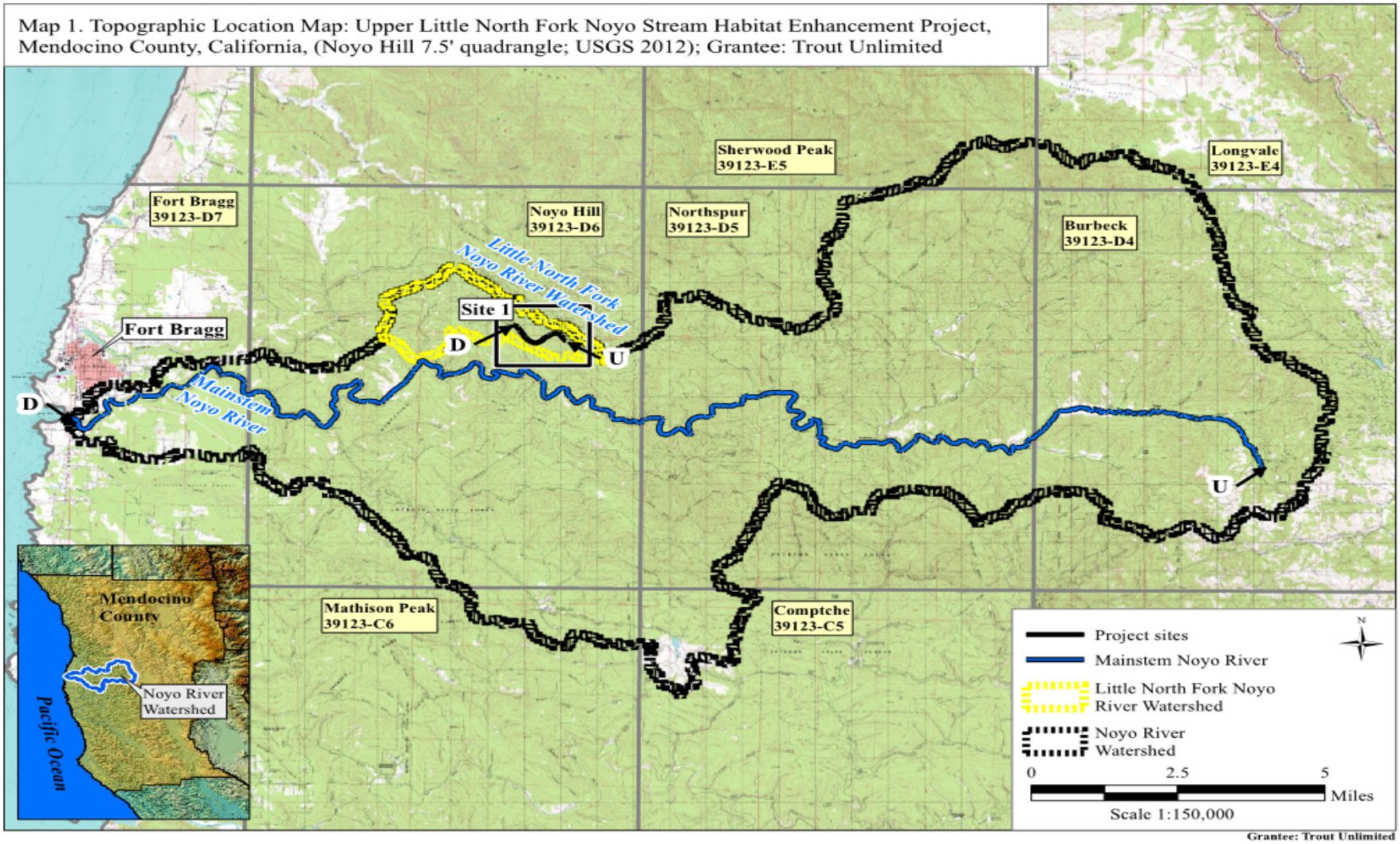
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Lyngbye's sedge *Carex lyngbyei*	PMCYP037Y0	None	None	G5	S3	2B.2
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
marbled murrelet *Brachyramphus marmoratus*	ABNNN06010	Threatened	Endangered	G3G4	S1	
marsh pea *Lathyrus palustris*	PDFAB250P0	None	None	G5	S2	2B.2
Mendocino Coast paintbrush *Castilleja mendocinensis*	PDSCR0D3N0	None	None	G2	S2	1B.2
Mendocino dodder *Cuscuta pacifica var. papillata*	PDCUS011A2	None	None	G5T1	S1	1B.2
Mendocino leptonetid spider *Calileptoneta wapiti*	ILARAU6040	None	None	G1	S1	
Mendocino Pygmy Cypress Forest *Mendocino Pygmy Cypress Forest*	CTT83161CA	None	None	G2	S2.1	
Menzies' wallflower *Erysimum menziesii*	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
Monterey clover *Trifolium trichocalyx*	PDFAB402J0	Endangered	Endangered	G1	S1	1B.1
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
North Coast phacelia *Phacelia insularis var. continentis*	PDHYD0C2B1	None	None	G2T2	S2	1B.2
North Coast semaphore grass *Pleuropogon hooverianus*	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Northern Coastal Salt Marsh *Northern Coastal Salt Marsh*	CTT52110CA	None	None	G3	S3.2	
northern goshawk *Accipiter gentilis*	ABNKC12060	None	None	G5	S3	SSC
northern microseris *Microseris borealis*	PDAST6E030	None	None	G5	S1	2B.1
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon coast paintbrush *Castilleja litoralis*	PDSCR0D012	None	None	G3	S3	2B.2
Oregon goldthread *Coptis laciniata*	PDRAN0A020	None	None	G4	S3	4.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
Pacific lamprey *Entosphenus tridentatus*	AFBAA02100	None	None	G4	S4	SSC
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
perennial goldfields *Lasthenia californica ssp. macrantha*	PDAST5L0C5	None	None	G3T2	S2	1B.2
pink sand-verbena *Abronia umbellata var. breviflora*	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Point Reyes blennosperma *Blennosperma nanum var. robustum*	PDAST1A022	None	Rare	G4T2	S2	1B.2
Point Reyes horkelia *Horkelia marinensis*	PDROS0W0B0	None	None	G2	S2	1B.2
purple martin *Progne subis*	ABPAU01010	None	None	G5	S3	SSC
purple-stemmed checkerbloom *Sidalcea malviflora ssp. purpurea*	PDMAL110FL	None	None	G5T1	S1	1B.2
pygmy cypress *Hesperocyparis pygmaea*	PGCUP04032	None	None	G1	S1	1B.2
pygmy manzanita *Arctostaphylos nummularia ssp. mendocinoensis*	PDERI04280	None	None	G3?T1	S1	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
round-headed Chinese-houses *Collinsia corymbosa*	PDSCR0H060	None	None	G1	S1	1B.2
running-pine *Lycopodium clavatum*	PPLYC01080	None	None	G5	S3	4.1
seacoast ragwort *Packera bolanderi var. bolanderi*	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	PDASTE5011	None	None	G4T3	S2	1B.2
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
Sphagnum Bog *Sphagnum Bog*	CTT51110CA	None	None	G3	S1.2	
steelhead - northern California DPS *Oncorhynchus mykiss irideus*	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
supple daisy *Erigeron supplex*	PDAST3M3Z0	None	None	G2	S2	1B.2
swamp harebell *Campanula californica*	PDCAM02060	None	None	G3	S3	1B.2
Ten Mile shoulderband *Noyo intersessa*	IMGASC5070	None	None	G2	S2	
Thurber's reed grass *Calamagrostis crassiglumis*	PMPOA17070	None	None	G3Q	S2	2B.1
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
tufted puffin *Fratercula cirrhata*	ABNNN12010	None	None	G5	S1S2	SSC
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
white beaked-rush *Rhynchospora alba*	PMCYP0N010	None	None	G5	S2	2B.2
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
Whitney's farewell-to-spring *Clarkia amoena ssp. whitneyi*	PDONA05025	None	None	G5T1	S1	1B.1
Wolf's evening-primrose *Oenothera wolfii*	PDONA0C1K0	None	None	G2	S1	1B.1
northern spotted owl *Strix occidentalis caurina*	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 97

Project Location Topographic Map



Introduction: Mendocino Land Trust (MLT) will implement treatments recommended in the *Noyo-Big River Watershed Management Plan Project Part I: Hare Creek and Little North Fork Big River Watersheds* (Pacific Watershed Associates [PWA], 2008), including 38 features and 2.48 miles roads for upgrading and decommissioning to save 4,890 cubic yards of sediment from delivery Hare Creek and Bunker Gulch.

This project is necessary to improve water quality and reduce excessive sediment yield to salmonid-bearing Hare Creek and Bunker Gulch. The Hare Creek Watershed supports significant populations of anadromous salmonids, including Coho Salmon and steelhead trout. The watershed and its anadromous fish populations have shown resilience in spite of a variety of land use impacts on fish habitat since the 1800's, including heavy logging as well as road and railroad construction. Many of the Hare Creek Watershed tributaries were filled with logging debris and sediment, and were used as skid trails and railroad routes during the first and second cycles of logging, the remnants of which can still be observed today.

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Part X and XI (Flosi et al 2002).

Objectives: The goal of this project is to prevent the delivery of approximately 4,890 cubic yards of fine and course grained sediment to the Bunker Gulch and, ultimately, Hare Creek watersheds:

- Upgrade 6 features and 0.56 miles of upslope road and decommission 32 features and 1.92 miles of riparian inner gorge road.
- Implement treatment prescriptions identified during PWA's 2008 road related sediment source assessment for the *Noyo-Big River Watershed Management Plan Project Part I: Hare Creek and Little North Fork Big River Watersheds* (PWA, 2008).
- Address forest legacy impacts by reducing sediment delivery to tributaries and the main stem of Hare Creek and treating prioritized, high value sediment sources and hydrologically connected road reaches with permanent road decommissioning and storm proofing.

Project Description:

Location: Bunker Gulch is a tributary to Hare Creek tributary to the Pacific Ocean in Mendocino County, California. Hare Creek and its tributaries flow adjacent to, and south of, Highway 20 for approximately 7.75 miles east of Fort Bragg, California. The confluence of Hare Creek and Bunker Gulch is located 7.4 miles upstream from the Pacific Ocean confluence at 39.38774000: -123.73208000.

Project Set Up: Agreement Oversight: MLT will oversee the Agreement. The Program Manager will process invoices from subcontractors, and develop and

submit invoices to the Grantor's Project Manager. The Conservation Project Coordinator will perform periodic reviews of project progress. MLT will ensure adherence of billing practices and project performance. The Director of Conservation and Program Manager will conduct all Grant Oversight. Grant oversight includes but is not limited to Agreement and subcontract oversight and administration; invoicing; scheduling; implementation oversight; landowner communication; and obtaining, developing, and adhering to all permits. Upon final execution of the Agreement, and prior to receiving a Final Notice to Proceed, MLT will deliver the Final Landowner Access Agreements and subcontracts, and finalize all permits. Elements of this task will continue throughout the life of the project.

The Heavy Equipment and Labor Subcontractor will provide all the necessary heavy equipment, experienced operators, and skilled Laborers required to complete the project as designed. This includes the excavation of stream crossing fills, unstable stream banks, road drainage treatments and installation of instream structures using a team of hydraulic excavators, bulldozers, water trucks, dump trucks, and service vehicles. In addition, the Heavy Equipment and Labor Subcontractor will supply Laborers to spread straw and mulch, operate and monitor pumps during any necessary dewatering operations, maintain and monitor equipment, and remove trees. Heavy Equipment and Labor Subcontractor Laborers will also conduct seeding, tree planting, straw delivery and mulching.

The Geologic Subcontractor will be responsible for developing invoice tracking spreadsheets and analysis, maintaining project cost records and developing timely invoices. The Geologic Subcontractor will provide treatment layout, technical oversight and supervision of heavy equipment and labor operations. The Geologic Subcontractor will be responsible for (1) Project permitting, pre-construction layout, and pre-project monitoring; (2) Heavy equipment implementation supervision, technical oversight and field reviews, including pre- and post-construction inspections; and (3) Post-treatment data collection, photographic monitoring, data analysis and reporting. In addition, the Geologic Subcontractor will maintain regular communications between MLT, the Grantor's Project Manager and the Heavy Equipment and Labor Subcontractor. The Geologic Subcontractor will provide both a Project Geologist and Principal.

Materials: The following materials are necessary for this project:

- Culverts: Plastic or galvanized steel culverts including two 24-inch-diameter and 50-foot-long culverts and one 24-inch-diameter and 70-foot-long culvert, and metal coupling bands with neoprene gaskets.
- Trees: 946 native conifer saplings
- Straw: 161 bales of straw mulch
- Seed: 113 pounds of native grass seed
- Debris/Trash Pump
- Pressure washer

- Rock: Approximately 50 cubic yards of rip-rap and 342 cubic yards of road rock
- Miscellaneous field and office supplies: photographic supplies, flagging, wood stakes, field maps, plastic overlays for field maps, photo duplication for final reports, copying/binding for final reports, report maps, phone, fax, email and postage.
- Flex pipe, 6" diameter (200 feet).

Tasks: Control and prevent erosion and sediment delivery, and improve (Coho salmon) habitat, in Hare Creek and Bunker Gulch by implementing the following tasks:

Task A: Agreement and Subcontract Oversight – Agreement and subcontract oversight will be conducted by MLT and the Geologic Subcontractor. All reporting and billing will be pursuant to Agreement and regulatory guidelines. The Program Manager and Geologic Subcontractor will process invoices from subcontractors, and develop and submit invoices to the Grantor's Project Manager. The Geologic Subcontractor Professional Geologists will administer the project in the field to ensure timeliness, completion, and conformance with restoration and land management goals. The Conservation Project Coordinator will perform periodic reviews of project progress. The Geologic Subcontractor will ensure adherence of billing practices and project performance. The Director of Conservation, Program Manager, and Geologic Subcontractor will conduct all Agreement Oversight. Agreement oversight includes Agreement and subcontract oversight and administration, invoicing, obtaining and adhering to permits, scheduling, implementation oversight, and landowner communications. Upon final execution of the grant, and prior to receiving a Final Notice to Proceed, deliver the Final Landowner Access Agreements and subcontracts, and finalize all permits. Elements of this task will continue throughout the life of the project.

Task B: Project Implementation Overview - Implement road upgrading and decommissioning, and complete road-related sediment reduction treatments, included in the Hare Creek and Bunker Gulch erosion control plan developed by the Geologic Subcontractor through a previous Grantor funded upslope sediment source assessment. The Geologic Subcontractor will be in charge of executing the implementation of the project.

Task B-1: Pre-project layout and pre-implementation monitoring – The Geologic Subcontractor, including a Project Geologist, will flag heavy equipment access routes and construction boundaries (layout) as well as spoil disposal areas and equipment exclusion areas for botanical and/or cultural resource protection. They will also set up before-after photo point monitoring stations at selected construction

locations for final reporting. Complete pre-project monitoring prior to implementation. The Geologic Subcontractor's Principal will review and approve the final layout plan.

Task B-2: Heavy equipment mobilization - Move heavy equipment in and out of the project area at the beginning and end of the work season using low bed trucks accompanied by a pilot car to move through the public highway system.

Task B-3: Road opening and erosion control – The Geologic Subcontractor will work with the Heavy Equipment and Labor Subcontractors heavy equipment operators to reopen the roads for equipment access and decommissioning treatments. Exclusionary fencing for salmonids and other aquatic species will be installed upstream and downstream of project work areas in fish bearing stream reaches to prevent migration into the construction area as deemed necessary by the Grantor's Project Manager and the Geologic Subcontractor. Additionally, clean and treat all heavy equipment, vehicles, and materials used to implement this project in accordance with the invasive species protocol. Reopen the roads to be decommissioned using a hydraulic excavator and bulldozer by removing the vegetation and installing temporary crossings at streams. The Heavy Equipment and Labor Subcontractor Laborers will install and manage a trash pump during installation of temporary crossings to protect water quality.

Task B-4: Upslope Implementation Component – The hydraulic excavator, bulldozer, dump trucks, water truck and Heavy Equipment and Labor Subcontractor Laborers will implement upgrading and decommissioning treatments at 38 sediment source features along a total of 2.48 miles of forest road. Upgrading and decommissioning of these 38 sediment source features and 2.5 miles of connected road will result in sediment savings of approximately 2,444 cubic yards from episodic sources and 2,446 cubic yards per decade from hydrologically connected road surfaces. Concurrently working with the hydraulic excavator and bulldozer, the dump truck will deliver rock to specific areas for placement by the excavator.

Task B-5: Sediment source site decommissioning - The hydraulic excavator, bulldozer and dump trucks will be used to remove the anthropogenic fill material from the decommissioned stream crossings and other sediment source features. Similarly, treat all of the road surface drainage from the end of the road segments to the beginning. The Heavy Equipment and Labor Subcontractor Laborer

will install and manage a trash pump to protect water quality during decommissioning of stream crossings. Concurrently working with the hydraulic excavator and bulldozer, the dump truck will deliver rock to specific areas for placement by the excavator and end haul spoil from decommissioned sediment source locations to stable spoil locations. Heavy Equipment and Labor Subcontractors Laborers will spread seed and straw and plant trees at completed implementation features. In accordance with the invasive species protocol, clean all heavy equipment before entering and prior to leaving the project work area.

Task C: Post-implementation monitoring – The Geologic Subcontractor will reoccupy photo points to document pre- and post-implementation conditions at sediment source feature locations. The Geologic Subcontractor will conduct pre- and post-project monitoring to assess upslope and instream restoration project outcomes using Grantor monitoring protocols, guidelines, and data forms.

Task D: Summary Reporting: The Geologic Subcontractor will prepare a final summary report detailing project accomplishments, containing pre- and post-construction photographic documentation, and all summary reporting metrics. The Geologic Subcontractor Principal will be responsible for final editing of the summary report.

Deliverables:

- 0.56 miles of upgraded Bunker Gulch Road and the decommissioning of 1.92 miles of Bunker Gulch and Hare Creek riparian roads preventing the delivery of approximately 4,890 cubic yards of fine and course grained sediment to the Bunker Gulch and, ultimately, Hare Creek watersheds.
- A written and electronic completion report which contains (1) general Agreement information, (2) location of work, (3) project access, (4) participating landowner's name and address, (5) a description and analysis of the restoration and planning personnel hours expended, (6) a quantified description of the results of the project, including as-built road logs, (7) dates of work and the number of personnel hours expended, (8) labeled before and after photos of selected restoration activities and techniques, (9) Agreement dollars spent and contributed and/or in kind services used to complete the project, and (10) geographic information system generated maps and shape files of project area.

Timelines: Implement the project along this timeline:

Task A: Project oversight and coordination will begin once Agreement is finalized and will continue through the life of the project – June 2018, or upon Agreement execution whichever is later, through March 1, 2021.

Task B: The Geologic Subcontractor's project management will begin after the Agreement is finalized and will continue through the life of the project -- June 2018, or upon Agreement execution whichever is later, through March 1, 2021.

Task C: Upland implementation will begin summer 2018 and be completed by fall 2019: Begin on-the-ground implementation (road decommissioning) work during the summer 2018. Because of potential permitting, seasonal and weather limitations, and wildlife limitations on operations it is expected that the full project may take up to two work seasons to complete; therefore Task C may stretch into the summer of 2019. All heavy equipment work will be completed during low-flow periods when impacts to water quality can be minimized or avoided. A Final Report will be submitted by March 1, 2021, or sooner.

Additional Requirements: The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a "notice to proceed" letter has been received from the Grantor's Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the Grantor's Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for CDFW personnel to oversee

the implementation of the water diversion plan and the safe removal and relocation of salmonids and other native aquatic species from the project area. If the project requires dewatering of the site and the relocation of listed aquatic species, the Grantee will implement the following measures to minimize harm and mortality to listed species as well as other native aquatic species:

- Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year.

- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit, NMFS Biological Opinion, and project's Lake and Streambed Alteration Agreement (1600 permit).

- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

- Only qualified fisheries biologist that are approved by USFWS and permitted by CDFW under a California Endangered Species Act (CESA) Memorandum of Understanding (MOU) shall handle and relocate CESA listed species.

- All electrofishing shall be performed by a qualified fisheries biologist under the supervision of CDFW and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

- USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW. .

All road decommissioning will be done in accordance with techniques described in the Handbook for Forest and Ranch Roads, (PWA, 1994c.) and the *California Salmonid Stream Habitat Restoration Manual*, Volume II, Part X. All road upgrade and decommissioning sites and techniques shall be approved by the CDFW Grant Manager before any equipment work takes place.

All crossings treated in fish bearing reaches of streams will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and the criteria for adult and juvenile salmonid fish passage as described in Volume II, Part IX of the *California Salmonid Stream Habitat Restoration Manual*.

Seeding and mulching of all exposed soils shall be done for all slopes which may

deliver sediment to a stream. Woody debris will be concentrated on finished slopes adjacent to stream crossings. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years. Mulching and seeding will take place as sites are completed to avoid unforeseen erosion. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Sites which are expected to erode and deliver sediment to the stream are the only locations where work will be authorized for reimbursement under the terms of this agreement. Reimbursement will not be authorized for work done to improve aesthetics only.

The landowner or responsible party must sign an access agreement stating they agree to maintain the erosion control project for a period of not less than 10 years. Maintenance will consist of repair to the road or stream crossing to a level that will effectively reduce sediment from entering the stream. In the event of an act of nature which results in partial or complete failure of the project, the landowner or applicant will not be held responsible for costs incurred after the act of nature. Acts of nature include, but are not limited to floods, earthquakes, volcanic eruptions, and wind storms.

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Noyo Hill (3912346) OR Inglenook (3912357) OR Dutchmans Knoll (3912356) OR Sherwood Peak (3912355) OR Fort Bragg (3912347) OR Northspur (3912345) OR Mendocino (3912337) OR Mathison Peak (3912336) OR Comptche (3912335))

Possible species within the Noyo Hill quadrangle and surrounding quads for 725572 Hare Creek and Bunker Gulch Road Decommissioning Implementation Project, T18N R17W S26, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
alpine marsh violet *Viola palustris*	PDVIO041G0	None	None	G5	S1S2	2B.2
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
angel's hair lichen *Ramalina thrausta*	NLLEC3S340	None	None	G5	S2?	2B.1
ashy storm-petrel *Oceanodroma homochroa*	ABNDC04030	None	None	G2	S2	SSC
Baker's goldfields *Lasthenia californica ssp. bakeri*	PDAST5L0C4	None	None	G3T1	S1	1B.2
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Behren's silverspot butterfly *Speyeria zerene behrensii*	IILEPJ6088	Endangered	None	G5T1	S1	
Blasdale's bent grass *Agrostis blasdalei*	PMPOA04060	None	None	G2	S2	1B.2
bluff wallflower *Erysimum concinnum*	PDBRA160E3	None	None	G3	S2	1B.2
Bolander's beach pine *Pinus contorta ssp. bolanderi*	PGPIN04081	None	None	G5T2	S2	1B.2
bunchberry *Cornus canadensis*	PDCOR01040	None	None	G5	S2	2B.2
California sedge *Carex californica*	PMCYP032D0	None	None	G5	S2	2B.3
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
coast lily *Lilium maritimum*	PMLIL1A0C0	None	None	G2	S2	1B.1
Coastal and Valley Freshwater Marsh *Coastal and Valley Freshwater Marsh*	CTT52410CA	None	None	G3	S2.1	
coastal bluff morning-glory *Calystegia purpurata ssp. saxicola*	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
Coastal Brackish Marsh *Coastal Brackish Marsh*	CTT52200CA	None	None	G2	S2.1	
coastal triquetrella *Triquetrella californica*	NBMUS7S010	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	PDAST4R065	None	None	G5T1T2	S1S2	1B.2
dark-eyed gilia *Gilia millefoliata*	PDPLM04130	None	None	G2	S2	1B.2
deceiving sedge *Carex saliniformis*	PMCYP03BY0	None	None	G2	S2	1B.2
dwarf alkali grass *Puccinellia pumila*	PMPOA531L0	None	None	G4?	SH	2B.2
Fen *Fen*	CTT51200CA	None	None	G2	S1.2	
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
globose dune beetle *Coelus globosus*	IICOL4A010	None	None	G1G2	S1S2	
Grand Fir Forest *Grand Fir Forest*	CTT82120CA	None	None	G1	S1.1	
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
great burnet *Sanguisorba officinalis*	PDROS1L060	None	None	G5?	S2	2B.2
green yellow sedge *Carex viridula ssp. viridula*	PMCYP03EM5	None	None	G5T5	S2	2B.3
hair-leaved rush *Juncus supiniformis*	PMJUN012R0	None	None	G5	S1	2B.2
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
Howell's spineflower *Chorizanthe howellii*	PDPGN040C0	Endangered	Threatened	G1	S1	1B.2
Humboldt Bay owl's-clover *Castilleja ambigua var. humboldtiensis*	PDSCR0D402	None	None	G4T2	S2	1B.2
Humboldt milk-vetch *Astragalus agnicidus*	PDFAB0F080	None	Endangered	G2	S2	1B.1
lagoon sedge *Carex lenticularis var. limnophila*	PMCYP037A7	None	None	G5T5	S1	2B.2
leafy-stemmed mitrewort *Mitellastra caulescens*	PDSAX0N020	None	None	G5	S4	4.2
livid sedge *Carex livida*	PMCYP037L0	None	None	G5	SH	2A
lotis blue butterfly *Plebejus idas lotis*	IILEPG5013	Endangered	None	G5TH	SH	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Lyngbye's sedge *Carex lyngbyei*	PMCYP037Y0	None	None	G5	S3	2B.2
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
marbled murrelet *Brachyramphus marmoratus*	ABNNN06010	Threatened	Endangered	G3G4	S1	
marsh pea *Lathyrus palustris*	PDFAB250P0	None	None	G5	S2	2B.2
Mendocino Coast paintbrush *Castilleja mendocinensis*	PDSCR0D3N0	None	None	G2	S2	1B.2
Mendocino dodder *Cuscuta pacifica var. papillata*	PDCUS011A2	None	None	G5T1	S1	1B.2
Mendocino leptonetid spider *Calileptoneta wapiti*	ILARAU6040	None	None	G1	S1	
Mendocino Pygmy Cypress Forest *Mendocino Pygmy Cypress Forest*	CTT83161CA	None	None	G2	S2.1	
Menzies' wallflower *Erysimum menziesii*	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
Monterey clover *Trifolium trichocalyx*	PDFAB402J0	Endangered	Endangered	G1	S1	1B.1
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
North Coast phacelia *Phacelia insularis var. continentis*	PDHYD0C2B1	None	None	G2T2	S2	1B.2
North Coast semaphore grass *Pleuropogon hooverianus*	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Northern Coastal Salt Marsh *Northern Coastal Salt Marsh*	CTT52110CA	None	None	G3	S3.2	
northern goshawk *Accipiter gentilis*	ABNKC12060	None	None	G5	S3	SSC
northern microseris *Microseris borealis*	PDAST6E030	None	None	G5	S1	2B.1
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon coast paintbrush *Castilleja litoralis*	PDSCR0D012	None	None	G3	S3	2B.2
Oregon goldthread *Coptis laciniata*	PDRAN0A020	None	None	G4	S3	4.2

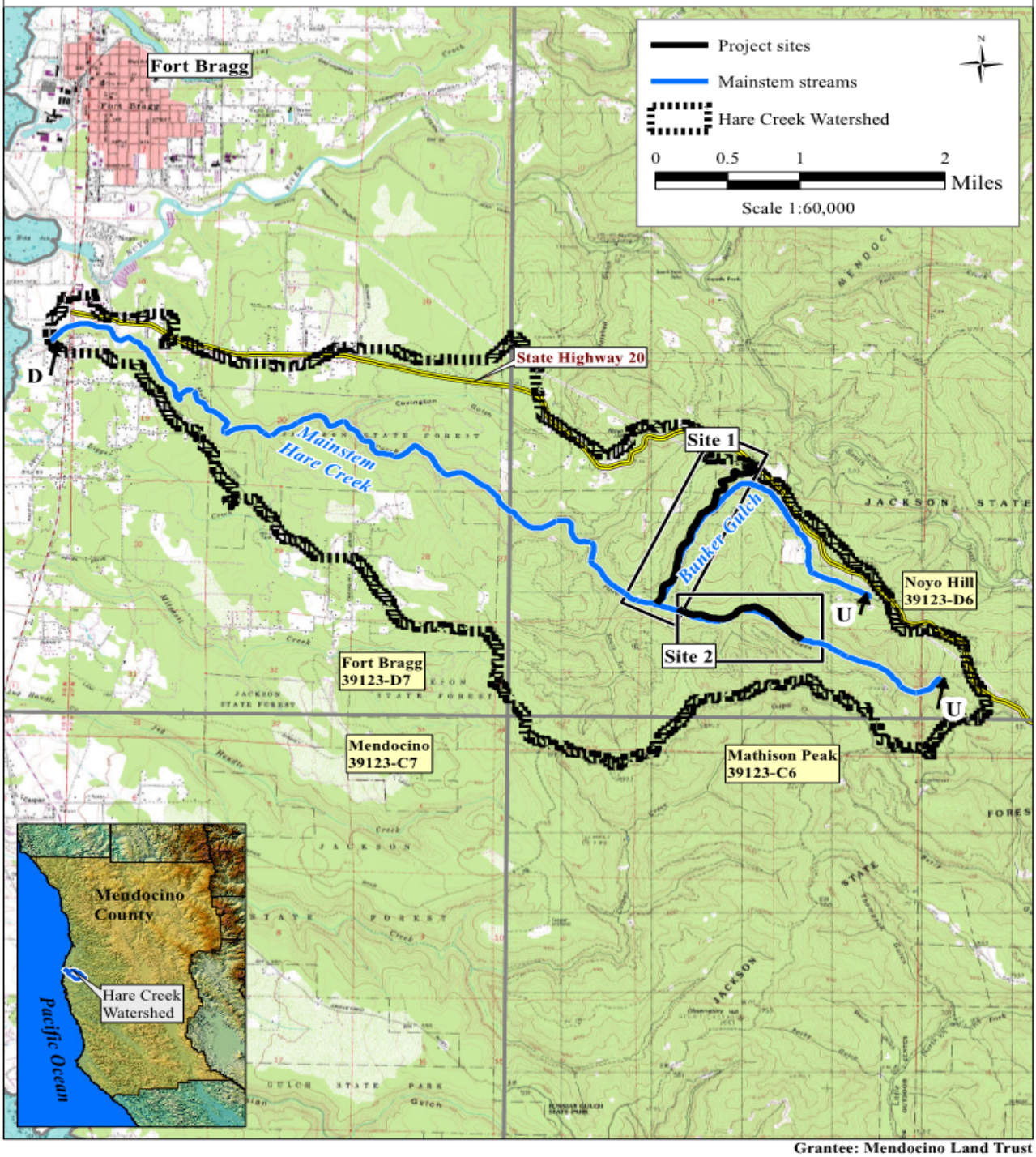
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
Pacific lamprey *Entosphenus tridentatus*	AFBAA02100	None	None	G4	S4	SSC
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
perennial goldfields *Lasthenia californica ssp. macrantha*	PDAST5L0C5	None	None	G3T2	S2	1B.2
pink sand-verbena *Abronia umbellata var. breviflora*	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Point Reyes blennosperma *Blennosperma nanum var. robustum*	PDAST1A022	None	Rare	G4T2	S2	1B.2
Point Reyes horkelia *Horkelia marinensis*	PDROS0W0B0	None	None	G2	S2	1B.2
purple martin *Progne subis*	ABPAU01010	None	None	G5	S3	SSC
purple-stemmed checkerbloom *Sidalcea malviflora ssp. purpurea*	PDMAL110FL	None	None	G5T1	S1	1B.2
pygmy cypress *Hesperocyparis pygmaea*	PGCUP04032	None	None	G1	S1	1B.2
pygmy manzanita *Arctostaphylos nummularia ssp. mendocinoensis*	PDERI04280	None	None	G3?T1	S1	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
round-headed Chinese-houses *Collinsia corymbosa*	PDSCR0H060	None	None	G1	S1	1B.2
running-pine *Lycopodium clavatum*	PPLYC01080	None	None	G5	S3	4.1
seacoast ragwort *Packera bolanderi var. bolanderi*	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	PDASTE5011	None	None	G4T3	S2	1B.2
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
Sphagnum Bog *Sphagnum Bog*	CTT51110CA	None	None	G3	S1.2	
steelhead - northern California DPS *Oncorhynchus mykiss irideus*	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
supple daisy *Erigeron supplex*	PDAST3M3Z0	None	None	G2	S2	1B.2
swamp harebell *Campanula californica*	PDCAM02060	None	None	G3	S3	1B.2
Ten Mile shoulderband *Noyo intersessa*	IMGASC5070	None	None	G2	S2	
Thurber's reed grass *Calamagrostis crassiglumis*	PMPOA17070	None	None	G3Q	S2	2B.1
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
tufted puffin *Fratercula cirrhata*	ABNNN12010	None	None	G5	S1S2	SSC
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
white beaked-rush *Rhynchospora alba*	PMCYP0N010	None	None	G5	S2	2B.2
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
Whitney's farewell-to-spring *Clarkia amoena ssp. whitneyi*	PDONA05025	None	None	G5T1	S1	1B.1
Wolf's evening-primrose *Oenothera wolfii*	PDONA0C1K0	None	None	G2	S1	1B.1
norhtern spotted owl *Strix occidentalis caurina*	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 97

Project Location Topographic Map

Map 1. Project Location Topographic Map, Hare Creek and Bunker Gulch Road Decommissioning Implementation Project, Mendocino County, California. (Noyo Hill USGS 7.5' quadrangle).
Grantee: Mendocino Land Trust



Grantee: Mendocino Land Trust

Introduction:

The California Department of Parks and Recreation will decommission and create a road to trail on legacy logging roads, by removing associated drainage structures, outsloping, and ripping roads on the highest priority restoration site in the Dry Dock subwatershed of Big River. The purpose of the project is to improve salmonid habitat by improving water quality, increasing water quantity, and removing unnatural sedimentation. This project has been identified as the highest priority for the restoration of Big River, because the area has the most culverts within the most failure prone slopes. This project focuses on hydrologically restoring 20 Class II and Class III tributaries by decommissioning 1.36 miles of mid-slope old spur roads (M7.2, M7.4, M7.5, M7.6) and converting 1.3 miles of an old haul road (M7.0) to a multi-use (pedestrian, biking and hiking) trail (See Road Log in Conceptual Plan). The project will prevent a total of 7,232 cubic yards of sediment from entering Dry Dock Gulch and Big River. Together these measures will improve habitat for Coho salmon and steelhead by restoring natural surface hydrology and eliminating stream flow impediments and runoff concentrations that cause gullies and slides that produce substantial sediment loads.

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured.

Objective(s):

Project objectives are to restore 20 Class II and Class III tributaries to the Dry Dock sub-watershed, a tributary to Big River, by decommissioning 1.36 miles of legacy logging spur roads, road to trail conversion along 1.3 miles of legacy logging road, removal of 30 watercourse crossings, restoration of 4 ditch relief culverts, and restoration of natural drainage patterns at 12 sites along these roads.

Project Description:

Location:

5.86 miles upstream of Big River Beach at the confluence with Dry Dock Gulch.

Project Set Up:

State Parks staff working on the project will include: The project will be managed by a Senior Environmental Scientist. Duties for requested funds include scheduling of activities, project inspection, biological and physical oversight during construction, implementation of grant objectives, and BMP installation. Orders material and manages geologist contract. Match responsibilities include, pre-project layout, post-project monitoring, and report writing. An Environmental Scientist will assist the Senior Specialist Environmental Scientist and will be responsible for pre-project biological surveys required for rare plants and breeding birds. Environmental Service Interns will complete pre-project biological surveys under the supervision of the Senior Specialist Environmental Scientist. Approximately three State Park Equipment Operators will work with the Senior Specialist Environmental Scientist to implement the project. Duties will include pre-

project scoping, transportation of equipment to and from project location, minor equipment repairs, daily log sheets, pre-project road brushing, maintenance and fueling of equipment, implementation of project construction work, and post-project cleaning of heavy equipment. A Heavy Equipment Mechanic will be responsible for any repairs required for equipment used on project. Approximately three Park Aids will implement the Best Management Practices for erosion control, such as slash packing, install cofferdams for dewatering activities, and salvage and re-plant vegetation following construction. The Park Aids will be supervised by Senior Specialist Environmental Scientist. An Associate Park and Recreation Specialist will be responsible for ensuring compliance with the grant, including submission of reimbursement requests and other required documentation. The salary for this position will be funded by State Parks as part of the grant's match requirement. Contractors: A geologist, Elias Steinbuck, will be contracted to inspect project locations for geologic stability and provide project and construction guidance in locations deemed to be unstable.

Materials:

State Parks will purchase all materials excluding native materials found on-site that are appropriate for use in restoration tasks.

Grant Requested Materials

Heavy Equipment Rental: State Parks is proposing to use its own equipment for the project as part of the match. (See Budget.) However, a heavy equipment rental fee is included in this grant in case a piece of equipment breaks down or is otherwise unavailable during project implementation. Since FLAR projects must be completed within 1.5 seasons, contingencies to minimize construction delays have been included.

Equipment Repair Parts: Equipment used in the backcountry usually needs minor service of parts during construction.

Fuel: Fuel costs are for heavy equipment and visiting staff vehicles. Fuel for District staff vehicles will be provided by State Parks as part of the match. (See Budget.)

Straw bales and burlap sandbags: Straw bales are needed for erosion control when natural slash from the project is insufficient. Burlap sandbags are needed to build coffer dams for stream dewatering.

Rock: Rock is needed for the fords and road approaches for the road to trail conversion along the M 7.0 road.

Additional rock may be needed as rip rap to armor grade changes and for other erosion control features. Rock will consist of 12-inch minus, 3-inch minus, and road base.

1600 Permit: Funding is needed for a Lake and Streambed Agreement to modify the stream's bed, bank, and channel.

DPR water pump and hoses: Are needed for stream de-watering.

DPR Pole saw and chainsaw: Are needed to trim vegetation for additional slash creation for erosion control.

DPR excavator(s): Mid-size (120) and small (80) excavators will be used.

Excavators will removal fill from crossings and road bench and finish slopes for bed, bank, and channel of watercourses.
DPR dozer: A dozer will be used for initial fill material along roads, compaction of fill material, finished grades for trails, installation of water bars, and ripping of decommission roadbed.
DPR backhoe: Backhoe will be needed to load rock required for ford crossings.
DPR dump truck: A dump truck is needed to transport spoil material, rock for ford crossings, and remove culverts from the project site.
DPR transport truck: Transport trucks will be needed to transport the heavy equipment from the Facilities District in Sacramento.

Tasks:
Summer/Fall 2018- Timeline dependent on approved contracts and spending authority.
1. Conduct pre-construction environmental compliance biological surveys for rare plants, Northern spotted owls, and marbled murrelets. Protocol-level Northern spotted owl surveys were completed in 2015, 2016, and 2017 (with no detections in the Dry Dock area) and are expected to continue through 2019. There was marbled murrelet habitat delineated by consulting firm Mad River Biologist across the river in 2005. State Parks will initiate marbled murrelet protocol-level survey efforts in 2017 and finish surveys prior to July 10, 2018. Absent of surveys, DPR will consult with trustee agencies for seasonal disturbance measures associated with listed species.
2. Prepare and execute geologist contract and purchase materials listed above under (3).
3. Brush road network using excavators.
4. Work season permitting, start road decommissioning for the 1.36 miles of mid-slope old spur roads (M7.2, M7.4, M7.5, M7.6). June 15- October 31, 2019
5. Preform protocol recommended spot checks for Northern spotted owls and surveys for breeding birds.
6. All construction work will follow State Parks' "Standard Specifications & Best Management Practices for Disturbed Lands Remediation" from the 2005 Big River Initial Study Mitigated Negative Declaration. Decommissioning Road Work (M7.2, M7.4, M7.5, M7.6). (See Road and Culvert Logs in Conceptual Plan.)
7. Salvage ferns prior to or during construction activities.
8. Excavate and remove 17 stream crossing at 1.5 to 2 times average channel width and prepare approaches at 2:1 or native ground slope pursuant to California Salmonid Stream Habitat Manual Figure X-12. Equipment to be used are a DPR dozer and excavator and dump truck for transportation when local spoil locations are not present.
9. When surface flow is present, install cofferdams to divert water around project site.
10. Install cross-drains in accordance with California Salmonid Stream Habitat Manual Figure X-10. Equipment to be used are a DPR dozer and excavator.

11. Rip compacted road surfaces using DPR dozer to aerate the soil and promote regrowth of native vegetation.
12. Apply slash or straw for erosion control using a DPR excavator and hand labor provided by Park Aids. Hand labor will involve the use of a pole saw, chain saws, and loppers, all provided by State Parks. Perform road to trail conversion on 1.3 miles of the M7.0 road. (See Road and Culvert Log)
13. Salvage ferns prior to or during construction activities.
14. Remove a portion of the road fill to reduce road width to a minimum of six feet using heavy machinery. Place road fill at the base of the cut bank and along the road to outslope the trail sufficiently to prevent trail erosion (>10%) in accordance with California Salmonid Stream Habitat Manual Figure X-11. Equipment to be used are a DPR dozer and excavator.
15. Install by hand and using heavy equipment rolling dips as needed and prior to stream approaches to prevent erosion along the trail surface and to hydrologically disconnect the trail from the watercourse in accordance with California Salmonid Stream Habitat Manual Figure X-10. Equipment to be used are a DPR dozer and excavator.
16. Drain landings, springs, and road point locations by either crowning, outsloping, or installing crossdrains. Equipment to be used are a DPR dozer and excavator. The specific treatment to be used will be decided by the Senior Environmental Scientist in the field based on current conditions.
17. At 10 water crossings along the M7.0 road, excavate culverts, exhume channel widths to 1.5- 2 times average, and create approaches at 2:1 or native ground slope pursuant to California Salmonid Stream Habitat Manual Figure X-12. Equipment to be used are a DPR dozer and excavator and a dump truck for transportation when a local spoil location is not present.
18. Fords for crossings will be placed near the upstream edge of each excavation to minimize the steepness of the trail approach. All approaches will be rocked with road base in accordance with California Salmonid Stream Habitat Manual Figure X-15. The fords will be sized appropriately to the stream flow with angular boulders and cobbles. Rock will be moved and transported from the staging location using the DPR backhoe and dump truck.
19. Due to the steepness of the approach at two watercourse crossings along the M7.0 road, rock armored fill crossings will be installed. The rocked channel bottom will be dipped below culvert grade in accordance with California Salmonid Stream Habitat Manual Figure X-15 using heavy machinery.
20. Along the M7.0 road, four armored cross-drains will be installed at ditch relief culverts and one nonculverted stream crossing will be maintained in an existing ditch by hand and using heavy machinery as necessary.
21. All exposed soils will be adequately compacted and slash packed or straw mulched using heavy equipment and hand labor. Fall and Winter October 15-December 31, 2019
22. Collect and plant native grass seeds by hand. Apply grass seed when significant rainfall is expected.

23. Revegetate stream areas and landings with redwood saplings.
24. Monitor the re-establishment of vegetation for cover, survival of native species, and infestation by exotics.
25. Take representative post-project instream, photos, longitudinal and cross-sectional measurements using a hand level, stadia rod, and tape.
26. Remedial actions will be implemented where necessary as directed by State Park Environmental Scientists or designated staff and may include removal of non-native plants, replanting native species, and replacing erosion control measures.
27. Prepare reports as required by the grant.
28. Prepare and submit reimbursement requests and compliance documents as required by the grant.
29. Monitor post-project erosion and sediment reduction measures for effectiveness.

Deliverables:
The following is a list of deliverables that will result from the project.

1. Physical improvements to the watershed will include:
• 1.36 miles of mid-slope old spur roads decommissioned
• 1.3 miles of an old haul road converted to a multi-use (pedestrian, biking and hiking) trail.
• A total sediment savings of 4,631 cubic yards for watercourses and drainage features
• A total sediment savings of 2,600 cubic yards for roads.
• Removal of 30 culverts.
• Restoration of 12 road sites.
• Restoration of 4 ditch relief culverts.

2. Documents submitted to CDFW will include:
• Periodic and annual reports that address work performed to date for each of the specified task items,
including a written description of how the work was completed, and the outcome and any modifications that
might have been required.
• Photo documentation of each work location as listed in the Project Description showing before, during,
and after construction.
• The results of pre- and post- construction longitudinal and cross sectional surveys at represented
locations to characterize changes in streambed elevation.
• A final report that details the work performed, including a written description of how the work was
completed, the outcome, any modifications, and the final budget. The report will include a complete

accounting of the actual performance measures (e.g., cubic yards of sediment removed and miles of road
decommissioned).

Timelines:

Timeline is dependent on the finalization of grant agreement.
July - October 31, 2018: Pre-project biological surveys, pre-project planning, and road brushing. Time allowing, some road decommissioning work may occur on the upslope spurs.
June 15 - October 31, 2019: Implementation of road decommissioning and road to trail conversion. Anticipated start date is June 15th per the 1600 Agreement conditions.
November 2019 - January 2020: Site monitoring, final invoicing, and final report development and submittal.

Additional Requirements: The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a notice to proceed letter has been received from the Grantor's Project Grant Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the Grantor's Project Manager a minimum of five

working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for CDFW personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other native aquatic species from the project area. If the project requires dewatering of the site and the relocation of listed aquatic species, the Grantee will implement the following measures to minimize harm and mortality to listed species as well as other native aquatic species:

- Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year.

- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit, NMFS Biological Opinion, and project's Lake and Streambed Alteration Agreement (1600 permit).

- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

- Only qualified fisheries biologist that are approved by USFWS and permitted by CDFW under a California Endangered Species Act (CESA) Memorandum of Understanding (MOU) shall handle and relocate CESA listed species.

- All electrofishing shall be performed by a qualified fisheries biologist under the supervision of CDFW and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

- USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the Grantor's Project Manager on a form provided by CDFW. .

All road decommissioning will be done in accordance with techniques described in the Handbook for Forest and Ranch Roads, (PWA, 1994c.) and the *California Salmonid Stream Habitat Restoration Manual*, Volume II, Part X. All road upgrade and decommissioning sites and techniques shall be approved by the CDFW Grant Manager before any equipment work takes place.

All crossings treated in fish bearing reaches of streams will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and the criteria for adult and juvenile salmonid fish passage as described in Volume II, Part IX of the *California Salmonid Stream Habitat*

Restoration Manual.

Seeding and mulching of all exposed soils shall be done for all slopes which may deliver sediment to a stream. Woody debris will be concentrated on finished slopes adjacent to stream crossings. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years. Mulching and seeding will take place as sites are completed to avoid unforeseen erosion. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Sites which are expected to erode and deliver sediment to the stream are the only locations where work will be authorized for reimbursement under the terms of this agreement. Reimbursement will not be authorized for work done to improve aesthetics only.

The landowner or responsible party must sign an access agreement stating they agree to maintain the erosion control project for a period of not less than 10 years. Maintenance will consist of repair to the road or stream crossing to a level that will effectively reduce sediment from entering the stream. In the event of an act of nature which results in partial or complete failure of the project, the landowner or applicant will not be held responsible for costs incurred after the act of nature. Acts of nature include, but are not limited to floods, earthquakes, volcanic eruptions, and wind storms.

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to ensure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Mathison Peak (3912336) OR Fort Bragg (3912347) OR Noyo Hill (3912346) OR Northspur (3912345) OR Mendocino (3912337) OR Comptche (3912335) OR Albion (3912327) OR Elk (3912326) OR Navarro (3912325))

Possible species within the Mathison Peak quadrangle and surrounding quads for 725607 Dry Dock Restoration Road Decommissioning and Road to Trail Project, T17N R17W S26, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
alpine marsh violet *Viola palustris*	PDVIO041G0	None	None	G5	S1S2	2B.2
angel's hair lichen *Ramalina thrausta*	NLLEC3S340	None	None	G5	S2?	2B.1
ashy storm-petrel *Oceanodroma homochroa*	ABNDC04030	None	None	G2	S2	SSC
Baker's goldfields *Lasthenia californica ssp. bakeri*	PDAST5L0C4	None	None	G3T1	S1	1B.2
Behren's silverspot butterfly *Speyeria zerene behrensii*	IILEPJ6088	Endangered	None	G5T1	S1	
Blasdale's bent grass *Agrostis blasdalei*	PMPOA04060	None	None	G2	S2	1B.2
bluff wallflower *Erysimum concinnum*	PDBRA160E3	None	None	G3	S2	1B.2
Bolander's beach pine *Pinus contorta ssp. bolanderi*	PGPIN04081	None	None	G5T2	S2	1B.2
bunchberry *Cornus canadensis*	PDCOR01040	None	None	G5	S2	2B.2
California sedge *Carex californica*	PMCYP032D0	None	None	G5	S2	2B.3
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
coast lily *Lilium maritimum*	PMLIL1A0C0	None	None	G2	S2	1B.1
Coastal and Valley Freshwater Marsh *Coastal and Valley Freshwater Marsh*	CTT52410CA	None	None	G3	S2.1	
coastal bluff morning-glory *Calystegia purpurata ssp. saxicola*	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
Coastal Brackish Marsh *Coastal Brackish Marsh*	CTT52200CA	None	None	G2	S2.1	
coastal triquetrella *Triquetrella californica*	NBMUS7S010	None	None	G2	S2	1B.2
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	PDAST4R065	None	None	G5T1T2	S1S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
dark-eyed gilia *Gilia millefoliata*	PDPLM04130	None	None	G2	S2	1B.2
deceiving sedge *Carex saliniformis*	PMCYP03BY0	None	None	G2	S2	1B.2
dwarf alkali grass *Puccinellia pumila*	PMPOA531L0	None	None	G4?	SH	2B.2
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
globose dune beetle *Coelus globosus*	IICOL4A010	None	None	G1G2	S1S2	
Grand Fir Forest *Grand Fir Forest*	CTT82120CA	None	None	G1	S1.1	
great burnet *Sanguisorba officinalis*	PDROS1L060	None	None	G5?	S2	2B.2
hair-leaved rush *Juncus supiniformis*	PMJUN012R0	None	None	G5	S1	2B.2
Howell's spineflower *Chorizanthe howellii*	PDPGN040C0	Endangered	Threatened	G1	S1	1B.2
Humboldt Bay owl's-clover *Castilleja ambigua var. humboldtiensis*	PDSCR0D402	None	None	G4T2	S2	1B.2
Humboldt milk-vetch *Astragalus agnicidus*	PDFAB0F080	None	Endangered	G2	S2	1B.1
lagoon sedge *Carex lenticularis var. limnophila*	PMCYP037A7	None	None	G5T5	S1	2B.2
leafy-stemmed mitrewort *Mitellastra caulescens*	PDSAX0N020	None	None	G5	S4	4.2
livid sedge *Carex livida*	PMCYP037L0	None	None	G5	SH	2A
lotis blue butterfly *Plebejus idas lotis*	IILEPG5013	Endangered	None	G5TH	SH	
Lyngbye's sedge *Carex lyngbyei*	PMCYP037Y0	None	None	G5	S3	2B.2
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
marbled murrelet *Brachyramphus marmoratus*	ABNNN06010	Threatened	Endangered	G3G4	S1	
marsh pea *Lathyrus palustris*	PDFAB250P0	None	None	G5	S2	2B.2
Mendocino Coast paintbrush *Castilleja mendocinensis*	PDSCR0D3N0	None	None	G2	S2	1B.2
Mendocino dodder *Cuscuta pacifica var. papillata*	PDCUS011A2	None	None	G5T1	S1	1B.2

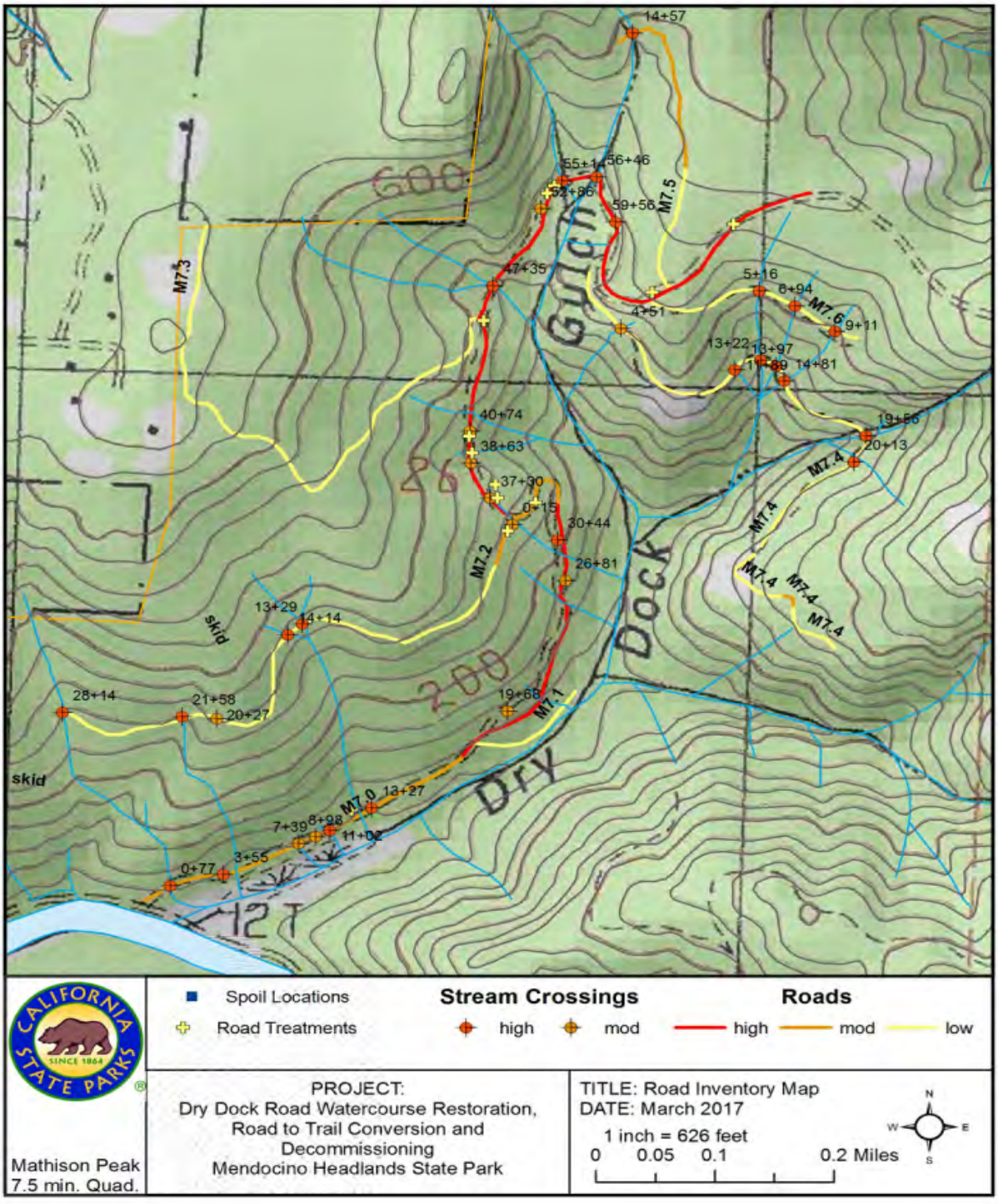
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Mendocino leptonetid spider *Calileptoneta wapiti*	ILARAU6040	None	None	G1	S1	
Mendocino Pygmy Cypress Forest *Mendocino Pygmy Cypress Forest*	CTT83161CA	None	None	G2	S2.1	
Menzies' wallflower *Erysimum menziesii*	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
Monterey clover *Trifolium trichocalyx*	PDFAB402J0	Endangered	Endangered	G1	S1	1B.1
Navarro roach *Lavinia symmetricus navarroensis*	AFCJB19023	None	None	G4T1T2	S2S3	SSC
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
North Coast phacelia *Phacelia insularis var. continentis*	PDHYD0C2B1	None	None	G2T2	S2	1B.2
North Coast semaphore grass *Pleuropogon hooverianus*	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Northern Coastal Salt Marsh *Northern Coastal Salt Marsh*	CTT52110CA	None	None	G3	S3.2	
northern goshawk *Accipiter gentilis*	ABNKC12060	None	None	G5	S3	SSC
northern microseris *Microseris borealis*	PDAST6E030	None	None	G5	S1	2B.1
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon coast paintbrush *Castilleja litoralis*	PDSCR0D012	None	None	G3	S3	2B.2
Oregon goldthread *Coptis laciniata*	PDRAN0A020	None	None	G4	S3	4.2
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
perennial goldfields *Lasthenia californica ssp. macrantha*	PDAST5L0C5	None	None	G3T2	S2	1B.2
pink sand-verbena *Abronia umbellata var. breviflora*	PDNYC010N4	None	None	G4G5T2	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Point Reyes blennosperma *Blennosperma nanum var. robustum*	PDAST1A022	None	Rare	G4T2	S2	1B.2
Point Reyes checkerbloom *Sidalcea calycosa ssp. rhizomata*	PDMAL11012	None	None	G5T2	S2	1B.2
Point Reyes horkelia *Horkelia marinensis*	PDROS0W0B0	None	None	G2	S2	1B.2
Pomo bronze shoulderband *Helminthoglypta arrosa pomoensis*	IMGASC2033	None	None	G2G3T1	S1	
purple martin *Progne subis*	ABPAU01010	None	None	G5	S3	SSC
purple-stemmed checkerbloom *Sidalcea malviflora ssp. purpurea*	PDMAL110FL	None	None	G5T1	S1	1B.2
pygmy cypress *Hesperocyparis pygmaea*	PGCUP04032	None	None	G1	S1	1B.2
pygmy manzanita *Arctostaphylos nummularia ssp. mendocinoensis*	PDERI04280	None	None	G3?T1	S1	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
round-headed Chinese-houses *Collinsia corymbosa*	PDSCR0H060	None	None	G1	S1	1B.2
running-pine *Lycopodium clavatum*	PPLYC01080	None	None	G5	S3	4.1
seacoast ragwort *Packera bolanderi var. bolanderi*	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	PDASTE5011	None	None	G4T3	S2	1B.2
Siskiyou checkerbloom *Sidalcea malviflora ssp. patula*	PDMAL110F9	None	None	G5T2	S2	1B.2
small groundcone *Kopsiopsis hookeri*	PDORO01010	None	None	G4?	S1S2	2B.3
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
Sphagnum Bog *Sphagnum Bog*	CTT51110CA	None	None	G3	S1.2	
steelhead - northern California DPS *Oncorhynchus mykiss irideus*	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
supple daisy *Erigeron supplex*	PDAST3M3Z0	None	None	G2	S2	1B.2
swamp harebell *Campanula californica*	PDCAM02060	None	None	G3	S3	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Ten Mile shoulderband *Noyo intersessa*	IMGASC5070	None	None	G2	S2	
Thurber's reed grass *Calamagrostis crassiglumis*	PMPOA17070	None	None	G3Q	S2	2B.1
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
tufted puffin *Fratercula cirrhata*	ABNNN12010	None	None	G5	S1S2	SSC
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
white beaked-rush *Rhynchospora alba*	PMCYP0N010	None	None	G5	S2	2B.2
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
white-tailed kite *Elanus leucurus*	ABNKC06010	None	None	G5	S3S4	FP
Whitney's farewell-to-spring *Clarkia amoena ssp. whitneyi*	PDONA05025	None	None	G5T1	S1	1B.1
northern spotted owl *Strix occidentalis caurina*	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 95

Project Location Topographic Map



Introduction:

Trout Unlimited, Inc. (TU) will implement the Cachagua Creek Fish Passage Restoration Project – Valley Creek Park. The purpose of this project is to remove the most downstream automobile ford in Cachagua creek and replace it with a vented ford to allow fish passage upstream while insuring continued access to the Valley Creek Park. Project design was funded by a previous FRGP grant.

The Cachagua Creek watershed is an important steelhead spawning and rearing tributary of the Carmel River. For nearly 100 years, migratory access to Cachagua Creek has been limited because of severe over allocation of Carmel River surface flows, as well as by two dams (San Clemente and Old Carmel River) and their associated antiquated fish ladders. Those dams have been removed (San Clemente Dam and Carmel River Re-Route Project completed in 2016) and by court order, a dramatic reduction of diversions will be enforced within several years. Soon Cachagua Creek and the associated tributaries in this sub-watershed (Finch and James creeks) will be more readily accessible to steehead and will become an even more important steelhead recovery reach in the Carmel River. Although Cachagua Creek is currently utilized by steelhead, there are four known concrete automobile fords in the Cachagua Creek watershed, in the area of anadromy that slow or halt migration in most flows.

When completed, this project will improve conditions for steelhead migration and satisfy the access needs of the landowner. A secondary goal of the project is to deomonstrate to the Cachagua Creek residents that solutions are available which work for the fish and work for the landowner without causing undue stress, expense, or regulatory enforcement. The project will achiever Federal, State, and Local steelhead recovery goals and priorities.

The Grantee shall not proceed with on-the-ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secure.

Objective(s):

The objective of this project is to improve one stream crossing, to open up fish passage for 10.4 miles, and to treat 0.1 mile of stream. To achieve this objective, the existing structure will be removed and replaced with a vented ford at the existing location. The vented ford will consist of three pre-fabricated concrete box culverts, each having a span of 24 feet long by 12 feet high, and provide a 20 foot roadway. The box culvert inverts would be embedded below the proposed channel grade and backfilled with native streambed material to maintain a natural channel bottom that provides passage opportunities similar to adjoining reaches of the channel.

Project Description:

Location:

The project is located on Cachagua Creek, tributary to Carmel River, tributary to the Pacific Ocean, in the County of Monterey, State of California; -36.39877800 north latitude, 1121.6525100 west longitude at the project site; Township 8 South, Range 3 East, and Section 4, of the Carmel Valley, Ca 7.5 Minute U.S. Geological Survey (USGS) Quadrangle map as depicted in the Project Location Map, Attachment 1, which is attached hereto and made a part of this agreement by this reference.

Project Set Up: Grantee personnel and the subcontractors roles and responsibilities are as follows:
TASKS: 1, 2, 3, and 4: The Grantee staff members will act as the Project Manager and Grant Administrator. TU will hire and oversee subcontractors (Waterways, Alnus Ecological, and Resource Conservation District of Monterey County), will select and contract with the construction contractor and a qualified Third Party Labor Compliance Program contractor and will coordinate grant reporting, invoicing and communications between landowner, CDFW, and subcontractors. TU will additionally conduct photo monitoring and follow up post-project monitoring. Tim Frahm, TU Central Coast Steelhead Coordinator will act as Project Manager and Jennelle Root Martell TU Conservation Grants Coordinator will act as the TU Grant Administrator, Matt Clifford TU Staff Attorney will review all sub-contracts and compliance documents and TU Project Coordinator Ben Cook will provide on-site monitoring of construction activities.

Grantee staff will be involved with the following task activities:

- Project Manager: This position will coordinate grant reporting including Project Progress Reports, Invoices, Draft Final Report, and Final Report; coordinate with all project funders including CDFW (FRGP funding) and California Coastal Conservancy (match funds); coordinate site visits; coordinate construction bid process and hire contractors; communicate with landowner and Valley Creek Park manager and CDFW Grant Manager; provide construction site management to ensure consistency with all permit terms; and conduct photo monitoring and coordinate post-project monitoring.
- Project Coordinator: This position will review and pay contractor invoices, review and submit invoices to CDFW Grant Manager, and review all Progress Reports and grant accounting.
- Conservation Grants Coordinator: This position will assist Project Manager with construction oversight including bid process, assist with de-watering and re-watering, and daily construction site review for consistency with permit conditions and post-project monitoring.
- Staff Attorney: This position will review all bid documents, review all sub-contractor contracts, and review Labor Compliance Program documents.

Task 2: The Resource Conservation District of Monterey County will

secure local and state permits as needed.

Tasks 2, 3, and 4: Waterways Consulting Inc. and their sub-contractor team of Streeter Group, and CMAG (registered civil engineers, structural and geotechnical engineer, and the project design team) will be sub-contracted for construction staking, construction site management, and As-Built Drawings.

Tasks 2 and 3: Alnus Ecological will be subcontracted to conduct and oversee biological services such as site de-watering and diversion (if needed) and re-watering of the stream. In addition, Alnus Ecological staff will conduct contractor education regarding sensitive/listed species and provide avoidance measures, and will rescue and relocate fish prior to dewatering activities.

Tasks 3 and 4: A qualified contractor with experience working on stream and stream restoration projects will be selected. The sub-contractor will be responsible for all construction related items including removal of the existing ford, construction of the box culvert ford, and all associated activities pertaining to the approved design plans, including riparian restoration. In addition, a qualified Third Party Labor Compliance Program contractor will be selected and sub-contracted for all Labor Compliance Program services, including prevailing wage, and Labor Law Compliance issues.

Materials:
The Grantee will purchase the pre-cast concrete culverts. The selected construction subcontractor will supply additional materials, including but not limited to concrete, base rock, structural rebar, rock slope projection, erosion fabric, structural, as required for implementation of the construction of the project, and seeds and plants for riparian revegetation after construction is complete.

Tasks: The Grantee will complete the following tasks:
Task 1: Project Management and Administration
The Grantee will provide project management, which includes prepare and submit invoices, progress reports, annual reports, develop and manage subcontracts, meet reporting and performance requirements, convene project team meetings, develop project information, coordinate funders and partners, coordinate with landowners during the project, disseminate project materials and results, and coordinate with Prevailing Wage Compliance Contractor. The Grantee shall submit a final landowner access agreement and a copy of secured permits prior to the commencement of work. In addition, the Grantee will prepare and submit the draft Final Report, Final Report, and all data generated from the project.

Task 2: Project Pre-construction Activities and Surveys Permit Acquisition:

- The Grantee will ensure all necessary permits, not provided by FRGP, such as CDFW 1600 Lake and Streambed Alteration Agreement (LSAA), County, or local permits and any other permit or authorization required for capturing and handling steelhead and California red-legged frogs. A hard copy of all permits and resolution obtained for the project will be submitted to the Grant Manager prior to the commencement of construction.
- Submission of Plans and Work Schedule: A hard copy and electronic copy of Final Engineered Plans and specification for the project will be submitted within two (2) weeks after execution of the grant to the Grant Manager and Grantor Engineer.
- California red-legged frogs and Steelhead Trout Surveys: Pre-construction surveys will be conducted following U.S. Fish and Wildlife guidance protocols (2005). Surveys will be conducted by a qualified biologist, holding appropriate permits, at least two weeks but before the onset of construction activities. If needed, CRLF and steelhead trout will be moved from the construction area and relocated to appropriate habitat. In addition, monitoring of the channel will be conducted by a qualified biologist, permitted to handle that species, during the installation of coffer dams (or other dewatering structures) and during construction.
- Staging and Mobilization: Site preparation surveys will be conducted to inform on-site operations, for the safe movement of personnel, equipment, supplies, and incidentals to the work site, for the establishment of all offices and other facilities necessary for work on the project, and for all other work and operation which must be performed to complete tasks.
- Photo Monitoring: Photo points will be established and used throughout the project to document work site conditions.

Task 3: Construction

All construction will be done according to the accepted project specifications and accepted Final Engineering Plan. The Grantee will hold a pre-construction meeting with the Grant Manager, Grantor Engineer, and sub-contractor representatives to establish roles and responsibilities and set expectations for record keeping, scheduling, monitoring, safety, sensitive species, and invasive species protocols. The Grantee will notify the Grant Manager a minimum of two weeks prior to the start of construction to enable the Grant Manager to begin monitoring of the project. Once each week during construction, the Grantee shall electronically submit to the Grant Manager and the Grantor Engineer a construction progress report and required photos.

The Grantee shall provide a dewatering plan, at least one month before the commencement of dewatering, to the Grant Manager for review and acceptance. All materials used for dewatering, shall be removed and disposed of appropriately off site at the completion of the project.

The sub-contractors will de-water and relocate fish (it is expected that the stream will be dry during construction which will eliminate the need for fish relocation). Clearing and grubbing of vegetation and removal of debris from the construction site will be done. All material removed shall be disposed of in accordance with all local regulations. Vegetation located beyond the limits for the clearing and grubbing shall be protected from damage.

The existing concrete vented ford will be demolished which will be conducted in accordance with all local regulations. Material removed shall be disposed of in accordance with all local regulations. Upon removal of the existing ford, soil excavation and sub-grade preparation shall be completed. Concrete foundations for the new ford will be cast in place, and culvert installation and road approaches will be constructed. Channel will be restored and rock slope protection will be installed to stabilize the banks and provide protection for the newly installed box culverts.

Upon completion of the ford, an existing water line will be re-located, and any stream diversion (if needed) will be removed and the stream will be re-watered.

At the end of construction, all Labor Compliance Program documents and reports will be completed.

Task 4: Post-construction Riparian Restoration and Monitoring

Upon completion of construction during the following fall and winter, restoration of disturbed riparian habitat (e.g. stream banks in the vicinity of the disturbed area) will include installation of erosion control fabric, and revegetation with native seeding, plants and live stakes (per Revegetation Plan prepared under the design grant #P1540401), and will be maintained to a minimum of 85% coverage of the seeded area three years after the revegetation is complete.

Photo points established during pre-construction activities will be used throughout the project to document work site conditions. Visual inspection of site and stability of the project will be conducted after storm events.

Deliverables: One hard copy and/or one electronic copy of the following will be provided:

Task 1: Project Management

Invoices, progress reports, annual progress reports, and copies of subcontractor contracts
Final landowner access agreements prior to the commencement of work
Completed Labor Compliance Program documents
Draft Final Report
Final Report and any data generated from the project.

Task 2: Project Pre-construction Activities and Surveys
Copies of all permits secured by the Grantee
Final 100% complete construction plans and specifications
Copies of steelhead and California red-legged frog survey reports
Pre-project photo documentation

Task 3: Construction
Notification of construction start date
Construction inspection checklist and weekly monitoring photo documentation
Completed construction and final report of permits condition compliance
As-Built surveys and plans
Completed Labor Compliance Program documents and reports

Task 4: Post Construction Riparian Restoration and Monitoring
Re-vegetation plan
Re-vegetation of construction site and staging area
Reports of visual inspections after storm events and final photo monitoring documentation

Timelines:
Task 1: Project Management (June 15, 2018 to October 30, 2020)
Invoices, Progress Reports - June 15, 2018 to October 30, 2020
Annual reports due December 1, 2018 and 2019
Final landowner access agreements due July 31, 2018
Draft Final Report due September 1, 2020
Final Report and data generated from the project due October 15, 2020

Task 2: Project Pre-construction Activities and Surveys (June 30, 2018 to June 15, 2019)
Final 100% complete construction plans and specifications (prepared under FRGP grant P1540401) due June 15, 2018
Pre-project photo documentation due September 30, 2018
Copies of permits secured for the project due June 1, 2019
Copies of steelhead and California red-legged frog survey reports due June 15, 2019

Task 3: Construction (June 15 to October 30, 2019)
Construction notification start date due two weeks prior to start date (as early as June 15, 2019)
Construction inspection checklist and weekly monitoring photo documentation construction due during construction June 15 to October 30, 2019
Completed construction and final report of permits condition compliance due December 31, 2019

As-Built Surveys and Plans due December 31, 2019

Task 4: Post Construction Riparian Restoration and Monitoring (June 15, 2018 to June 1, 2020
Re-vegetation plan (prepared under FRGP grant P1540401) due June 15, 2018
Re-vegetation of construction site and staging area due November 1, 2019 through early winter 2020
Visual inspection reporting after storm events and final photo monitoring documentation due November 1, 2019 to June 1, 2020.

Additional Requirements:

1. The Grantee will implement this project Cachagua Ford Replacement and Fish Passage Improvement Project, 100% Design Submittal, dated October 26, 2017

2. The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

3. No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

4. All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

5. During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

6. The bridge (culvert) design and installation will meet flow carrying capacity required for a 100-year flood event as identified by specifications

determined by National Oceanic and Atmospheric Administration (NOAA) Fisheries and the California Department of Fish and Wildlife (CDFW), for adult and juvenile salmonid fish passage. The project will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and criteria for fish passage as described in Volume II, Part IX, of the *California Salmonid Stream Habitat Restoration Manual*. The engineered plans for the bridge (culvert) installation shall be visually reviewed and authorized by NOAA Fisheries or California Department of Fish and Wildlife engineers prior to commencement of work.

7. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*, Volume I, and Volume II Part XI and Part XII. The Grantee/landowner will maintain the new crossing, inspect the crossing in a timely manner and remove debris as necessary during the storm season.

8. The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

    a) Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.

    b) Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the California Salmonid Stream Habitat Restoration Manual.

    c) The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.

    d) All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

e) USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Carmel Valley (3612146) OR Seaside (3612157) OR Spreckels (3612156) OR Chualar (3612155) OR Mt. Carmel (3612147) OR Rana Creek (3612145) OR Big Sur (3612137) OR Ventana Cones (3612136) OR Chews Ridge (3612135))

Possible species within Carmel Valley Quad and surrounding quads for 725514 Cachagua Creek Fish Passage Restoration Project - Valley Creek Park, T18S R03E S4, Monterey County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
adobe sanicle	PDAPI1Z0D0	None	Rare	G2	S2	1B.1
Sanicula maritima						
American badger	AMAJF04010	None	None	G5	S3	SSC
Taxidea taxus						
Arroyo Seco bush-mallow	PDMAL0Q0B2	None	None	G3T1Q	S1	1B.2
Malacothamnus palmeri var. lucianus						
Bay checkerspot butterfly	IILEPK4055	Threatened	None	G5T1	S1	
Euphydryas editha bayensis						
black swift	ABNUA01010	None	None	G4	S2	SSC
Cypseloides niger						
bristlecone fir	PGPIN01030	None	None	G2G3	S2S3	1B.3
Abies bracteata						
burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Athene cunicularia						
California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Linderiella occidentalis						
California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Rana draytonii						
California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Ambystoma californiense						
Carmel Valley bush-mallow	PDMAL0Q0B1	None	None	G3T2Q	S2	1B.2
Malacothamnus palmeri var. involucratus						
Carmel Valley malacothrix	PDAST660C2	None	None	G5T2	S2	1B.2
Malacothrix saxatilis var. arachnoidea						
Central Maritime Chaparral	CTT37C20CA	None	None	G2	S2.2	
Central Maritime Chaparral						
coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Phrynosoma blainvillii						
Coast Range newt	AAAAF02032	None	None	G4	S4	SSC
Taricha torosa						
compact cobwebby thistle	PDAST2E1Z1	None	None	G3G4T2	S2	1B.2
Cirsium occidentale var. compactum						
Cone Peak bedstraw	PDRUB0N0E3	None	None	G5T3	S3	1B.3
Galium californicum ssp. luciense						
Congdon's tarplant	PDAST4R0P1	None	None	G3T2	S2	1B.1
Centromadia parryi ssp. congdonii						

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Contra Costa goldfields *Lasthenia conjugens*	PDAST5L040	Endangered	None	G1	S1	1B.1
Dolloff Cave spider *Meta dolloff*	ILARA17010	None	None	G1	S1	
Dudley's lousewort *Pedicularis dudleyi*	PDSCR1K0D0	None	Rare	G2	S2	1B.2
Eastwood's goldenbush *Ericameria fasciculata*	PDAST3L080	None	None	G2	S2	1B.1
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Fort Ord spineflower *Chorizanthe minutiflora*	PDPGN04100	None	None	G1	S1	1B.2
fragrant fritillary *Fritillaria liliacea*	PMLIL0V0C0	None	None	G2	S2	1B.2
globose dune beetle *Coelus globosus*	IICOL4A010	None	None	G1G2	S1S2	
Hickman's onion *Allium hickmanii*	PMLIL02140	None	None	G2	S2	1B.2
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
hooked popcornflower *Plagiobothrys uncinatus*	PDBOR0V170	None	None	G2	S2	1B.2
Hooker's manzanita *Arctostaphylos hookeri ssp. hookeri*	PDERI040J1	None	None	G3T2	S2	1B.2
Hospital Canyon larkspur *Delphinium californicum ssp. interius*	PDRAN0B0A2	None	None	G3T3	S3	1B.2
Hutchinson's larkspur *Delphinium hutchinsoniae*	PDRAN0B0V0	None	None	G2	S2	1B.2
Jolon clarkia *Clarkia jolonensis*	PDONA050L0	None	None	G2	S2	1B.2
Kellogg's horkelia *Horkelia cuneata var. sericea*	PDROS0W043	None	None	G4T1?	S1?	1B.1
Little Sur manzanita *Arctostaphylos edmundsii*	PDERI04260	None	None	G2	S2	1B.2
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
marsh microseris *Microseris paludosa*	PDAST6E0D0	None	None	G2	S2	1B.2
monarch - California overwintering population *Danaus plexippus pop. 1*	IILEPP2012	None	None	G4T2T3	S2S3	
Monterey dusky-footed woodrat *Neotoma macrotis luciana*	AMAFF08083	None	None	G5T3	S3	SSC

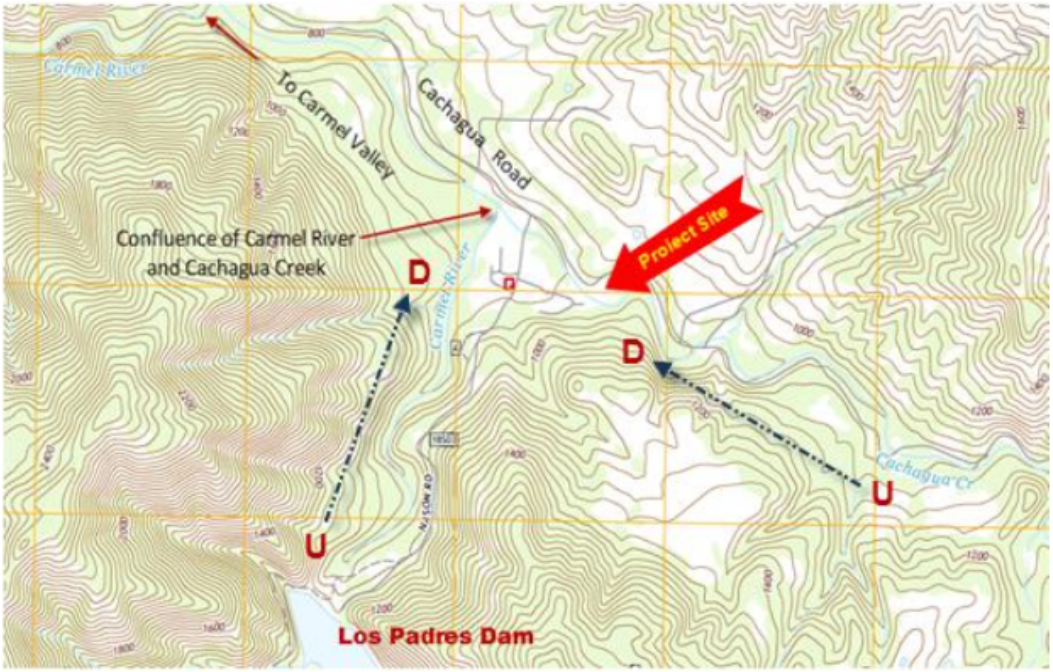
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Monterey gilia *Gilia tenuiflora ssp. arenaria*	PDPLM041P2	Endangered	Threatened	G3G4T2	S2	1B.2
Monterey pine *Pinus radiata*	PGPIN040V0	None	None	G1	S1	1B.1
Monterey Pine Forest *Monterey Pine Forest*	CTT83130CA	None	None	G1	S1.1	
Monterey spineflower *Chorizanthe pungens var. pungens*	PDPGN040M2	Threatened	None	G2T2	S2	1B.2
Muir's tarplant *Carlquistia muirii*	PDASTDU010	None	None	G2	S2	1B.3
North Central Coast Fall-Run Steelhead Stream *North Central Coast Fall-Run Steelhead Stream*	CARA2631CA	None	None	GNR	SNR	
northern California legless lizard *Anniella pulchra*	ARACC01020	None	None	G3	S3	SSC
northern curly-leaved monardella *Monardella sinuata ssp. nigrescens*	PDLAM18162	None	None	G3T2	S2	1B.2
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon meconella *Meconella oregana*	PDPAP0G030	None	None	G2G3	S2	1B.1
Pacific Grove clover *Trifolium polyodon*	PDFAB402H0	None	Rare	G1	S1	1B.1
Pajaro manzanita *Arctostaphylos pajaroensis*	PDERI04100	None	None	G1	S1	1B.1
pine rose *Rosa pinetorum*	PDROS1J0W0	None	None	G2	S2	1B.2
Pinnacles buckwheat *Eriogonum nortonii*	PDPGN08470	None	None	G2	S2	1B.3
Pinnacles optioservus riffle beetle *Optioservus canus*	IICOL5E020	None	None	G1	S1	
prairie falcon *Falco mexicanus*	ABNKD06090	None	None	G5	S4	WL
round-leaved filaree *California macrophylla*	PDGER01070	None	None	G4	S4	1B.2
Salinas harvest mouse *Reithrodontomys megalotis distichlis*	AMAFF02032	None	None	G5T1	S1	
San Luis Obispo sedge *Carex obispoensis*	PMCYP039J0	None	None	G3?	S3?	1B.2
sand-loving wallflower *Erysimum ammophilum*	PDBRA16010	None	None	G2	S2	1B.2
sandmat manzanita *Arctostaphylos pumila*	PDERI04180	None	None	G1	S1	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Santa Cruz clover *Trifolium buckwestiorum*	PDFAB402W0	None	None	G2	S2	1B.1
Santa Cruz microseris *Stebbinsoseris decipiens*	PDAST6E050	None	None	G2	S2	1B.2
Santa Cruz Mountains pussypaws *Calyptridium parryi var. hesseae*	PDPOR09052	None	None	G3G4T2	S2	1B.1
Santa Lucia bedstraw *Galium clementis*	PDRUB0N0H0	None	None	G3	S3	1B.3
seaside bird's-beak *Cordylanthus rigidus ssp. littoralis*	PDSCR0J0P2	None	Endangered	G5T2	S2	1B.1
Smith's blue butterfly *Euphilotes enoptes smithi*	IILEPG2026	Endangered	None	G5T1T2	S1S2	
steelhead - south-central California coast DPS *Oncorhynchus mykiss irideus*	AFCHA0209H	Threatened	None	G5T2Q	S2	
Swainson's hawk *Buteo swainsoni*	ABNKC19070	None	Threatened	G5	S3	
talus fritillary *Fritillaria falcata*	PMLIL0V070	None	None	G2	S2	1B.2
tear drop moss *Dacryophyllum falcifolium*	NBMUS8Z010	None	None	G2	S2	1B.3
Toro manzanita *Arctostaphylos montereyensis*	PDERI040R0	None	None	G2?	S2?	1B.2
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
two-striped gartersnake *Thamnophis hammondii*	ARADB36160	None	None	G4	S3S4	SSC
umbrella larkspur *Delphinium umbraculorum*	PDRAN0B1W0	None	None	G3	S3	1B.3
Valley Needlegrass Grassland *Valley Needlegrass Grassland*	CTT42110CA	None	None	G3	S3.1	
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western red bat *Lasiurus blossevillii*	AMACC05060	None	None	G5	S3	SSC
western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
Yadon's rein orchid *Piperia yadonii*	PMORC1X070	Endangered	None	G1	S1	1B.1

Record Count: 81

Project Location Topographic Map

Cachagua Creek Fish Passage Restoration Project –
Valley Creek Park
Supplemental Information
Topographic Survey



taken from the USGS 7.5 minute Carmel Valley, Ca 2015 quad

Introduction:

The Morro Bay National Estuary Program (MBNEP) is working with the Grantor to implement a restoration project on the 320-acre Chorro Creek Ecological Reserve (CCER) in Morro Bay, CA. The overall purpose of the Chorro Creek Ecological Reserve Floodplain Restoration Project is to restore and enhance floodplain connectivity and riparian vegetation on Chorro Creek for steelhead and other wildlife/aquatic species, while reducing sediment loading to the Morro Bay estuary.

Two secondary (avulsion) channels on the adjacent floodplain have developed which are a significant source of sediment and connect to a relatively unvegetated floodplain. The project will address degraded floodplain conditions at the site through: 1) expanding a levee breach to route flow to secondary channels, 2) grading a lower floodplain adjacent to the two secondary (avulsion) channels, 3) planting and seeding of riparian vegetation, and 4) re-sloping of a creek road crossing to maintain improved access across the creek. The first two actions will enhance floodplain connectivity, increase groundwater, and provide moisture for vegetation colonization. Channel grading along the secondary Channel B will create a starter channel with a sinuous planform, with the understanding that over time, the channel could move into the secondary channel or create a two-thread channel. Grading of the secondary channel floodplains will also help to stabilize future excessive erosion. Riparian plantings will aid in vegetation establishment on the floodplain. Finally, the road crossing channel banks will be re-sloped to allow for a more gradual approach across the creek, reducing unnecessarily sediment to the stream.

The Grantee shall not proceed with on-the-ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secure. Work in the flowing stream is restricted to June 15 through October 31. All habitat restoration improvements will follow techniques in the California Salmonid Stream Habitat Restoration Manual, Part VII and XI.

The Grantee shall not proceed with on-the-ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secure.

Objective(s):

The specific objective of this project is to address degraded floodplain conditions on Chorro Creek at the site through: 1) expanding a levee breach to route flow to secondary channels, 2) grading a lower floodplain adjacent to the two secondary (avulsion) channels, 3) planting and seeding of riparian vegetation, and 4) re-sloping of a creek road crossing to maintain improved access across the creek.

The objective will be met at follows:

- Planting 2.5 acres [0.88 miles (both banks)] of riparian vegetation;
- Installing/modifying 36 instream features;
- Creating off-channel stream, treating for channel reconfiguration/connectivity, and treating for channel structure placement in 0.44 miles of the project site;
- Creating a total of 10 pools through channel structure placement; and channel reconfiguration/connectivity.

Project Description:

Location:

The project is located on Chorro Creek, Tributary to Morro Bay, tributary to the Pacific Ocean, in the County of San Luis Obispo, State of California; - 35.35196 north latitude, -120.78138 west longitude at the downstream end; and 35.34743 north latitude, -120.77294 west latitude at the upstream end; Township 30 South, Range 11 East, and Sections 2 and 3, of the Morro Bay South 7.5 Minute U.S. Geological Survey (USGS) Quadrangle map as depicted in the Project Location Map, Attachment 1, which is attached hereto and made a part of this agreement by this reference.

The project site at CCER is on the mainstem of Chorro Creek approximately four miles upstream from the creek mouth that drains into Morro Bay estuary. The project site is approximately one mile upstream from the confluence of San Luisito Creek, a major tributary to Chorro Creek. The specific floodplain restoration work will occur along 0.5 miles of Chorro Creek.

Project Set Up: Grantee personnel and the subcontractors roles and responsibilities are as follows:

Task 1: Project Administration

Key staff from MBNEP who will be involved with project administration are as follows:

- Executive Director: This staff member will be involved in the overall review process of project reports and deliverables. This position will provide signatory authorization on project-related contracts and sub-contracts. The Executive Director will also act as liaison for the MBNEP as an organization and will support the Project Manager as needed.
- Assistant Director: This position holds the responsibility of reviewing all new contracts and performs periodic budget audits to ensure accurate accounting. This position will also provide signatory authorization on project related contracts and sub-contracts. This position will provide reviews of project reports and deliverables in addition to and/or in the absence of the Executive Director. The Assistant Director will support the Project Manager in contract development and will assist in tracking matching funds.

- Project Manager: This position will oversee all project-related activities in support of Task 1, including evaluating and choosing experienced contractors, contract development, review of deliverables from contractors, project reporting, budget tracking and invoicing, ensuring the project stays on task and remains on schedule, coordinating site visits, and holding conference calls and meetings as needed. This position will ensure desired project components in the designs are included in the final implementation of the project and perform quality control checks on all project documentation. The Project Manager will also facilitate cooperation and collaboration with CDFW and ensure open communication among project stakeholders throughout the implementation process. The Project Manager will prepare for and attend meetings, and will maintain and circulate meeting minutes as needed.
- Project Assistant: This position will support the Project Manager throughout the project and will be utilized as needed for Project Administration. The Project Assistant may attend site visits and meetings and will assist with minor reporting tasks.
- Office Manager: The Office Manager is responsible for organizing and retaining project-related paperwork and accounting. This position will act as the administrative assistant for this project.

Task 2: Biological Monitoring and Construction Oversight

Qualified Biological Monitors (Task 2.1) will be vetted and chosen to monitor the site during construction and relocate any sensitive species (e.g., California red legged frogs, steelhead) at the CCER project site and ensure no wildlife are impacted by project actions (e.g., short-term dewatering). The Biological Monitors for the project have yet to be chosen but we will ensure the biologist is approved by relevant permitting agencies and familiar with local conditions and relevant sensitive species.

An Environmental Science Associates (ESA) Engineer will be responsible for providing engineering construction oversight (Task 2.2) during key periods of project construction to ensure project design specifications are met.

Task 3: Project Implementation

A General Engineering Contractor for completing on the ground construction of the project has not yet been chosen. Project 100% designs were recently completed in April 2017 and thus, the General Engineering Contractor will be determined closer to implementation date. MBNEP is the in process of preparing construction documents and contract with assistance from ESA. These include bid and contract requirements from the Engineers Joint Contract Documents Committee (EJCDC). MBNEP will post the final RFP to a wide audience and select the most experienced and appropriate contractor for the project. MBNEP

will solicit partner input from local partners (e.g., RCD, Land Conservancy) who do similar types of projects. MBNEP board members who have extensive experience in project implementation will also lend their expertise in contractor selection and ensure that all relevant criteria are met. The General Engineering Contractor will be responsible for the following: construction mobilization and demobilization (Task 3.1), temporary diversion/crossing (Task 3.2), site preparation (Task 3.3), channel grading (Task 3.4), floodplain grading (Task 3.5), soil placement (Task 3.6), large wood habitat (Task 3.7), biotechnical stabilization elements (Task 3.8), upgrade creek crossing (Task 3.9), erosion control (3.10), and seeding (Task 3.11).

A Revegetation Contractor (separate from the General Engineering Contractor), the California Conservation Corps (CCC), will be hired to assist with aspects of the large wood habitat (Task 3.7) and biotechnical stabilization elements (Tasks 3.8). The Revegetation Contractor will also complete limited invasive species removal (Task 3.3) and planting of container plants (Task 3.11). The Revegetation Contractor will include CCC members and supervisor.

Task 5: Post-Project Support and Monitoring
The California Conservation Corps with oversight from Meredith Hardy will be responsible for plant maintenance. MBNEP project staff (e.g., Project Manager, Project Assistant) will be responsible for project monitoring.

NOTE: Prior to FRGP funding, MBNEP with possible assistance from a qualified environmental planner or scientist will be chosen to assist in permitting preparation, coordination, and submittal. Permitting work is being funded by an EPA Climate Ready grant and therefore a task number is not included here for permitting related tasks.

Materials: Materials used for the project are as follows:
Task 1: Administration
Materials such as paper and pens will be used for coordination, report writing, etc.

Task 2: Biological Monitoring and Construction Oversight
Monitoring and construction oversight will use paper and pens for this task.

Task 3: Project Implementation
Task 3.1: Construction Mobilization and Demobilization
No specific materials will be used for Task 3.1.

Task 3.2: Temporary Diversion/Crossing
Depending on the final option selected by the General Engineering Contractor for construction access at the road creek crossing, the materials needed will be

slightly adjusted. If Option 1 is chosen (see Section 4: Description of Actives by Task), crane mats, nonwoven filter fabric (Caltrans Class A), and silt fence will be used. If Option 2 is chosen, it is expected that five 12-inch culverts would be in place of the crane mats. The bypass and dewatering system will need pumping equipment (powered by diesel-powered electric generator), coffer dams materials (sand bags wrapped with polysheeting), and bypass piping. Woven wire mesh screen will be used to exclude small invertebrates from piping and will be supported by metal t-posts. An energy dissipation device will also be constructed at the discharge point of the bypass piping and will include gravel bags, filter fabric, and silt fence or wattles. If necessary, a sediment barrier of filter fabric attached to wire fencing will be installed to reduce turbidity.

Task 3.3: Site Preparation
No specific materials will be used for removing invasive species, removing the existing fence, and preparing the site (e.g., grubbing). If needed, exclusion fencing to temporarily keep CRLF from accessing the work site will be installed. (The current presence of CRLF surveys in the vicinity is unknown. A protocol level CRLF survey will be conducted before project work begins to better understand the need for temporary exclusion fencing.)

Task 3.4: Channel Grading
No specific materials will be used for channel grading.

Task 3.5: Floodplain Grading
No specific materials will be used for floodplain grading.

Task 3.6: Soil Placement
No specific materials will be used for soil placement.

Task 3.7: Large Wood Habitat
Approximately 20 trees are expected to be generated from the project and will be used for creating large wood structures. One ton boulders and will be used to secure the logs. A one foot steel threaded rod will also be placed through both the log and the boulder.

Task 3.8: Biotechnical Stabilization Elements
Willow stakes will be harvested nearby to construct willow baffles. Willow baffles will also have three inches of gravel and woven coir fabric placed on top of willow stakes. A planted cobble transition (willows and cobble) will also be placed at the upstream connection of the secondary Channel B to add stability after the mainstem streambank levee is lowered to allow for increased floodplain connection.

Task 3.9: Upgrade Creek Crossing

Due to recent erosion, larger boulders with an under aggregate base will be placed along the left side of the creek crossing bank.

Task 3.10: Erosion Control
Temporary erosion control materials will be used along disturbed areas to limit sediment delivery to the creek during and after project construction. Materials include erosion control fabric, straw wattles, and coir fiber rolls. Uncut straw mulch will also be applied over cover crop seed. All materials will be biodegradable and free of any weed sources.

Task 3.11: Seeding and Riparian Planting
Extensive seeds and riparian plants will be used for plant establishment at the project site. See Section 4: Description of Activities by Task for more details. Caging around individual plantings will be needed to reduce any disturbance or grazing (e.g., limited feral pigs, deer) until plantings are more established. Materials will include aviary wire (1/2inch mesh, 2 feet high) around each container plant, held in place with two 36 inch wooden stakes.

Task 4: Post-Project Support and Monitoring
While there is an existing well at the project site, there are some materials that will be used to allow for a more functioning irrigation system. It is still in discussion whether power for the well pump will be obtained through an existing PG&E power line or if a solar panel system will be installed to provide power. If a solar panel is installed, a solar panel and water holding tank will be needed. Hoses and irrigation lines will also be used for delivering water to planted plants.

All materials will be purchased by sub-contractors (e.g., General Engineering Contractor or Revegetation Contractor).

Tasks: The Grantee will complete the following tasks four primary tasks including: 1) project administration, 2) biological monitoring and construction oversight, 3) implementation and 4) post-project support and monitoring. The tasks include the following:

Task 1: Project Administration
Task 1 encompasses all work relating to project administration, management, and coordination. Work under this task will include project reporting, contracting, budgeting, invoicing, and coordination/conference calls. MBNEP will be closely coordinated with CDFW's grant manager and land manager. This task will also include developing request for proposals, negotiating project work with contractors, and consultations with permitting agencies. Meetings and site visits may include key staff from MBNEP, CDFW, ESA, and selected contractors at various project milestones in order to identify desired outcomes. Additionally, project administration will include preparation for and attendance of meetings.

Task 2: Biological Monitoring and Construction Oversight

Biological monitoring will be required to relocate any sensitive species at the CCER project site and ensure no wildlife are impacted by project actions. When upgrading the creek crossing (Task 3.9), fish may need to be relocated from a short reach of Chorro Creek for a brief period. The majority of the restoration work will be conducted in the secondary channels, which will not have flow during the construction period. Therefore, we don't expect presence of sensitive species in the secondary channels during the construction period, but will have a biologist on site to assist, if needed. Special attention will be taken to ensure no sensitive species (e.g., California red-legged frogs, steelhead) are adversely impacted. Only qualified biologist approved by USFWS will relocate sensitive species. Any electrofishing needed would be performed by a qualified biologist and conducted according to the National Marine Fisheries Service Guidelines.

An ESA engineer and/or Geomorphologist will be present at the project site during periods of construction to ensure project elements meet specific designs specifications. While onsite, the engineer will complete a pre-determined 'engineering checklist' relevant to daily project work . For example, the engineer/geomorphologist will monitor that project elements are installed correctly, measure/assess channel and floodplain grading elevations, and help manage heavy equipment operations.

Task 3: Project Implementation

Task 3.1: Construction Mobilization and Demobilization

Heavy equipment (e.g., backhoe) will need to access the project site. Existing roads will be used to access work sites as much as practicable. For access to the staging area, construction equipment will enter from Gilardi Road, pass the streambed crossing, and drive along an upland area. Staging and storage areas for equipment, materials, etc. will be located outside of the stream's high water channel and associated riparian area where it cannot enter the stream channel. The staging area is currently dominated by upland weeds. Work area limits will be flagged for clear identification. Best management practices including decontamination of equipment, parking away from the channel, among other relevant BMP's will be followed to minimize impact of heavy equipment use on site. When equipment crosses the stream, an individual on foot will displace any wildlife in the crossing area. Our invasive species prevention protocol (included as supplemental information) will also be followed during mobilization, demobilization, and other times during construction.

Task 3.2 Temporary Diversion/Crossing

Chorro Creek is a perennial system and thus it will be necessary to control water during construction activities. It is anticipated that the summer base flow will

need to be bypassed around the active construction area at two locations: 1) construction access at the creek crossing and 2) at the upstream connection of the secondary (avulsion) Channel B. The creek crossing will involve dewatering, while the work at the secondary channel connections will only need to be by-passed around areas to be graded.

Construction equipment access across Chorro Creek will require installing a temporary flow bypass system for construction vehicles to be able to cross the creek on an elevated roadway above the channel. The creek crossing is located at an existing riffle where flow depth is at a minimum. The best means to bypass flow around the work area and minimize disturbance to the channel and avoid harm to fish and other aquatic species will be determined closer to implementation in case any localized changes occur in the channel between now and the date of implementation. It is anticipated that the General Engineering Contractor will use one of the two following methods (described below) to cross the channel without adversely impacting the channel bed or existing habitat. The General Engineering Contractor will be required to propose their specific methods, which will be reviewed and approved by an ESA engineer.

Option 1: The contractor may lay crane mats across the channel, maintaining clearance above the water level. The crane mats would be expected to provide a travel way at least 15 feet wide and be covered with a nonwoven filter fabric (Caltrans Class A) to reduce the risk of sediment falling off vehicles and into the channel. In addition, a silt fence or similar barrier would be expected to be erected at the edge of the crane mats to prevent falling soil or debris from entering the channel.

Option 2: A second option would be for the contractor to install several culverts on the channel bed and construct a temporary road, made of imported gravel, on top of the culverts. The ground below culverts and gravel would be expected to be protected with a nonwoven geotextile fabric (Caltrans Type A) to facilitate removal of all imported material at the end of the project. The minimum road width would still be expected to be 15 feet. A silt fence or similar barrier would be expected to be erected at the edge of the gravel to prevent falling soil or debris from entering the channel. If this option is selected by the contractor, then temporary flow control and dewatering will be required for the installation of a flow bypass system. It is expected that five 12-inch culverts will be sufficient to pass base flow under the temporary road crossing.

If the General Engineering Contractor elects to place materials in the channel to facilitate construction access, then the creek crossing would be temporarily dewatered and flow diverted during the placement operation. The dewatering location would be located at approximate river station 55+20 and return flow will be delivered at approximately station 54+70 as shown on the Water Control Plan

in the supplemental information provided. The channel will be completely dewatered during the installation of the temporary creek crossing, which is anticipated to last up to five days. The dewatering and flow bypass system will collect all of the river flow from a pool upstream of the crossing location and deliver it to the creek just downstream of the crossing. The anticipated length of channel dewatering is approximately 50 linear feet but may vary depending on actual site conditions.

Dewatering will be coordinated with a qualified fisheries biologist (Task 2) to perform fish and wildlife relocation activities. Fish will be excluded from the dewatering area by blocking the stream channel above and below the work area with fine-mesh net or screen. The bottom of the screen will be secured to the channel bed. Screens will be regularly checked and cleaned of debris to permit free flow of water. MBNEP will also notify CDFW Project Manager a minimum of ten working days before the project site is dewatered.

The primary water bypass and dewatering system for the creek crossing location will include: pump intake, pumping equipment, coffer dams, bypass piping, and point of discharge. The submersible pump will have a built-in coarse screen at the inlet chamber. In addition, a smaller mesh screen will be placed around the intake zone to exclude small invertebrates. The screen mesh openings will be approximately 3/32 inch (2.38 mm) and will consist of woven wire screen (or a perforated plate screen) with a minimum of 27% open area. The mesh screen will be affixed to metal t-posts and 12-gauge wire or other appropriate support. At the upstream cofferdam location, the pump intake fish screen will be installed as one of the first steps. Close coordination with the project's Biological Monitor (Task 2) will be maintained at all times. The intake screen will be selected and installed in accordance with the National Marine Fisheries Service (NMFS) Fish Screening Criteria for Anadromous Salmonids (http://swr.nmfs.noaa.gov/hcd/fishscrn.pdf) and the Addendum for Juvenile Fish Screen Criteria for Pump Intakes (http://swr.nmfs.noaa.gov/hcd/pumpcrit.pdf). Upstream of the intake zone, the blocknet screen will then be placed across the channel and keyed into the bed and banks prior to installation of the coffer dam. Handling of fish may occur during the dewatering activity by the project biologist. The pump will then be used to draw down the flow of the creek via the bypass pipe. Once the flow is drawn down to a sufficient level the upper cofferdam will be installed followed by the downstream cofferdam, if needed depending on backwater conditions.

Electric submersible pump(s) will be placed in an area upstream of the cofferdam location. This pump will operate continuously for the duration of the work within a given area to ensure a continuous flow of the creek at the rate of the existing flow at the time the pump is installed. The pump will likely be powered by a diesel-powered electric generator set (e.g., a genset).

Depending on the conditions encountered, the General Engineering Contractor may use various coffer dam materials. The default coffer dam will consist of sand bags wrapped with 10-mil polysheeting. The coffer dam will be installed at the upstream limit of each diversion zone. A secondary cofferdam will be installed downstream limit of the diversion zone if needed to prevent back flow into the work area. The cofferdams will be approximately 2 to 4 feet wide (at base) by 2 to 3 feet high and run from bank to bank on the existing channel. Depending on flow conditions present at the time of dewatering, two coffer dams may be required (i.e., upstream and downstream). To prevent turbidity during the cofferdam installation a very detailed work sequence will be applied as discussed below. Prior to the installation of the cofferdam all the necessary bypass piping will be assembled and placed along the edge of the river bank outside of the grading limits and along the low flow channel to the downstream cofferdam (if needed) or diversion limit location.

Cofferdam installation will follow these steps:

1. Mobilization of the pump, mini excavator, materials, and personnel along the river bank (low flow channel edge).
2. Coordinate with fisheries biologist.
3. Stage materials including pipe along bank, filled sandbags at upstream and downstream locations.
4. Prepare pump and install pump and connect to pipe.
5. Haze aquatic species from cofferdam location.
6. Install fish exclusion screening and relocate any fish within the screening.
7. Begin pumping into bypass.
8. Install sandbags incrementally from one side of the channel toward the other so that the diversion increases 50% to 100% diverted.
9. Install the last sections of sand bags in the active channel after at least four hours passes.
10. Use plastic sheet to seal the cofferdams if needed.
11. When finished, cofferdam materials will be removed from the stream.

Cofferdams will be at least 2 feet high and run from bank to bank on the existing channel. The water will be pumped from the upstream of the cofferdam to the discharge point through a solid 6-8” bypass pipe. This bypass pipe will be secured at mid bank or higher of the low flow channel (outside of grading footprint and in-stream structures) using metal t-posts or wood stakes. When work on the channel bank takes place the bypass pipe will temporarily be relocated. The pipe will carry channel water directly from the electric pump to a dissipation device placed at the downstream limit of the dewatered channel segment. The piping will be primarily located on the side of the river where there is the least impact.

An energy dissipation device will be constructed at the discharge point of the bypass piping. The basin will consist of a combination of gravel bags, filter fabric (non-woven geotextile), and silt fence or wattles. The fabric will be laid across the bypass pipe opening to a 5 foot width and extended 5 feet downstream. The dissipation device will reduce the velocity of the clean water exiting from the bypass pipe. A sediment barrier consisting of filter fabric attached to wire fencing will be installed just downstream of this basin to reduce turbidity, if necessary. Silt curtains can be deployed to assist with turbidity control but only if the water depth is 4 feet or deeper.

After construction is complete, the elevated crossing will be removed including any creek bed protection. The crossing will continue to be used by maintenance crews, CDFW, and PG&E staff to access infrastructure.

The secondary channel connections will not require dewatering of the channel, since work will not be occurring directly in the wetted portion of the creek. Enclosures or silt fences will be placed to divert flow around the active grading areas. These enclosures would be kept close to the bank and have a minimal impact on the natural flow in the creek and limit the release of turbid water from the site. A water control plan is also provided in ESA's 100% Basis of Design Report (ESA, 2017b).

Task 3.3 Site Preparation

After the road crossing is built, the site will be prepped for construction. Site preparation will include invasive species removal, brush clearing, and fence removal. Cape ivy and fennel are known to be on site and will be removed at localized areas (<1 acre/0.05 stream miles) where present (e.g., road creek crossing) to prevent spread of these species. Sections of a defunct riparian fence will also be removed by hand (e.g. pull out loose wires, t-post) to ensure safety of equipment operations. If needed, exclusion fencing for CRLF may be used around portions of the project site temporarily to keep CRLF from accessing the work site. (It is unknown if CRFL surveys have been conducted at the project site. A protocol level survey will be conducted before project work begins to better understand the need for temporary exclusion fencing.)

Task 3.4 Channel Grading

The floodplain restoration approach balances bringing the two secondary channels to a stable equilibrium, while not triggering avulsions to occur before new riparian vegetation is established. Secondary Channel A is nearly in equilibrium (elevation and slope) with the mainstem bed profile. However, for a short distance close to the upstream connection (approximately 500 ft.), the bed of secondary Channel A is 3 feet higher than the channel and the bed is an average 2 feet higher than the mainstem from station 0+00 to 5+00. The existing secondary Channel A is consistently lined with cobbles and gravels, and as much

as possible the project will preserve the existing bed material and alignment. The upstream breach location and elevation will be maintained in an effort to preserve the main channel riparian corridor and to give the new floodplain time to revegetate before it becomes inundated by more frequent flow events. The designs utilize channel widening (by excavating floodplain) to reduce velocities within the secondary channels.

The secondary Channel B is in an early stage of development, in comparison with the secondary Channel A. Excavating the secondary Channel B bed completely down to the mainstem channel invert, as well as the associated floodplain lowering, would be economically infeasible and potentially trigger an avulsion prematurely. Instead, the design approach for the secondary Channel B is to accelerate channel equilibration by lowering and creating a "starter channel" that is within 2-3 feet of the equilibrium depth. Over time, we expect the starter channel to reach the main channel invert, but this process may occur over years or decades. The starter channel width will be sized for the final equilibrium condition, and the floodplain will be designed to remain connected to the starter channel as it evolves.

The proposed design for the secondary Channel B consists of grading a new low-flow channel along a sinuous alignment and grading a two-stage floodplain that inundates at various flows. The new starter channel planform varies laterally to induce riffle-pool unit formation and is sized to accommodate bed incision as the starter channel reaches equilibrium with the mainstem. A levee breach will be expanded and lowered to increase the activation frequency of the secondary Channel B.

Additionally, the existing secondary Channel B follows a remnant dirt road feature, resulting in an unnaturally straight alignment (see photo 9, 10). The starter channel will be graded along a new alignment with sinuosity mimicking natural conditions. Available aerial imagery is too recent to show Chorro Creek before the agricultural berms cut off the floodplain. A new alignment for the starter channel is designed to roughly follow the valley axis, as well as synchronize planform variability to riffle-pool variability (pools commonly occur on the outside of bends and riffles at their inflection, which "links" the bed profile and planform variability). The channel design alignment is drawn keeping in consideration that riffle crests are located at cross over points, and pools are located on the outside of each bend. The spacing between pools is therefore consistent with 6 to 7 times the average bankfull channel width (Thompson, 2001) seen in the lower avulsion, or between 90 and 140 feet.

To avoid triggering an early avulsion, the design will preserve the upstream gradient of the secondary Channel B at the existing 0.5 percent slope. An intermediate steeper reach at 1.5 percent slope for 100 feet will then flatten to

approximately 0.8 percent slope for the majority of the new secondary Channel B profile to connect downstream with the secondary Channel A at the thalweg elevation. In comparison, the Chorro Creek mainstem gradient is 0.5 percent along this reach. The upstream confluence of the secondary channel B to the mainstem will be lowered by 2 feet to create a hydraulic connection at the 2-year flow event. The existing connection is 7 feet above the mainstem invert (ESA, 2017b). Because further bed incision is expected with the starter channel design, the profile will not include the riffle-pool vertical variation seen in the secondary Channel A. The engineered designs expect the channel to create its own riffles and pools based on incoming flows and horizontal width forcing.

Channel dimensions are derived from the existing channel geometry of the lower avulsion channel. Based on the existing conditions 2-year hydraulic model, the average bankfull width varies from 15 to 20 feet and the average bankfull depth is approximately 2.5 feet. The relative elevation difference between riffle crests and pool troughs in the lower avulsion profile is approximately 2 feet.

Based on these geomorphic and hydraulic processes, the secondary channels may adjust somewhat overtime but will maintain quality habitat without need for on-going maintenance. The designs also anticipate that overtime the two secondary channels could become the mainstem channel or create a two-thread channel.

Tasks 3.5: Floodplain Grading

Floodplain grading will be completed along both the secondary channels A and B. Channel and floodplain grading will include a total of approximately 24,300 CY of material. The secondary Channel A floodplain will be constructed to inundate at approximately a 2-year flow event (floodplains tend to form under stable conditions at 1.2- to 2.0-year return periods). A vertical variability of 1 foot in the construction will be used to introduce habitat complexity within the floodplain as well as vary the activation times of different areas. The secondary Channel B floodplain requires significantly more excavation to reach the Q2 inundation target. As a tradeoff to minimize excavation quantity-driven costs, the secondary channel B floodplain is targeted to inundate at the 5-year event, with an inset floodplain constructed that inundates at the 2-year event. The floodplain design should also allow for flow velocities to be lower than 2 feet/second during modeled Q2 flow to encourage sediment deposition.

The maximum top width of the new floodplain is 320 feet, based on the widest measurements of the riparian corridor supported by Upper Chorro Creek (ESA, 2017b). At pool sections, the floodplain width is 10 to 20 feet, with a floodplain cross slope of 10:1 and a bank daylight slope of 3:1. At riffle sections, the floodplain is 30 to 50 feet, with a floodplain cross slope of 100:1 and a bank daylight slope of 8:1. These values are adjusted as-needed at curves and

constrictions to fit within planform constraints. Additional information on valley wide and riffle-pool locations can be found in ESA's 100% Basis of Design Report (ESA, 2017b). Under this floodplain construction, a total of five acres of floodplain will be accessible during modeled Q2 flows.

Project implementation tasks will not impact any existing infrastructure (e.g., PG&E) or impact downstream landowners due to change in flows from the floodplain restoration. As the site is managed as a reserve, there is adequate area adjacent to the channel for implementing floodplain restoration actions.

Tasks 3.6: Soil Placement

To avoid soil off-haul (which typically increases the unit handling price for a cubic yard of soil by at least a factor of five, soil generated from the excavation will be placed onsite. The in-place fill volume is approximately 24,300 yards. Fill will be placed against the existing toe of Hollister Peak, along the edge of the southern floodplain. This will include two fill placement areas to avoid a drainage swale coming off of Hollister Peak. The fill area is currently dominated by upland weeds. The existing Hollister Peak side slopes will be excavated and benched to create a stable surface for additional material to rest against. Fill placement slopes are 3:1 or flatter and the maximum fill placement height is 6 feet. The fill placement is designed so as to avoid raising the water surface elevation associated with the 100-year flow event. Fill areas have been designed to avoid overland flow paths that originate on the sides of Hollister Peak and flow toward the Chorro Creek floodplain. Existing concrete rip-rap/rubble (~230 CY) along the channels banks of secondary Channel A (see supplemental photo 22) will be hauled off site to a nearby concrete recycling facility in Cayucos, CA.

Task 3.7: Large Wood Habitat

Trees within the grading footprint will be salvaged for use in large wood structures. Approximately 20 trees are expected to be generated by the project. The habitat log structures consist of two logs embedded horizontally into the bank, while the low-profile log structure includes one smaller diameter log embedded in the bank. These two structure types will be placed and oriented to create more complex structure arrangements within the site. These large wood structures will provide a structural component to the creek system by wracking debris and inducing bar and pool formation as well as important cover and foraging areas for fish. The large wood structures help to create local scour holes for riffle and pool enhancement, flow deflection, and cover and edge complexity.

The structures will be constructed using rootwads, small diameter logs, live wood, and boulders. It is anticipated that much of the wood salvaged from clearing during construction can be salvaged and reused for habitat structures. The wood structures placed on site are intended to create habitat complexity

rather than provide structural bank stabilization, and a decay life of 10 years was selected for the project.

Stability of the wood structures was evaluated by ESA in accordance with the approach outlined in the U.S. Bureau of Reclamation (USBR) guidance (USBR 2014). The structures are designed to achieve minimum factors of safety for sliding, flotation, rotation, and overturning, as calculated from the driving and resisting forces on each individual log member. Evaluated forces include buoyancy, lift, ballast weight, drag, passive earth pressure, and bed friction. The stability of each isolated member was calculated from the vertical and horizontal forces acting upon that log, according to the equations and coefficients in the USBR guidance, site-specific hydraulic analysis, and empirical geotechnical data. Log stability analysis results are included in Appendix D of ESA 100% Basis of Design Report (ESA, 2017b). For calculating lift and drag, ESA used a design velocity from the hydraulic model for the 100-year event. All structures are designed to exceed a minimum factor of safety of 1.5.

Branch bundles will be placed within the large wood structures (composed of 6-8 branches with 2'-3' bundle diameter and 8' length). A boulder will also be placed directly on the large wood to aid in placement. A one foot steel threaded rod will be placed through both the log and the boulder. Large wood excavated areas will be backfilled with a rock and soil mix.

Task 3.8: Biotechnical Stabilization Elements

To determine where bank stabilization is needed at CCER, flow velocities were compared to mobilization thresholds for sediment and vegetation. A total of 24 willow baffles will be constructed along the two secondary channel floodplains. Willow baffles are included in the design to provide floodplain roughness elements and encourage sediment deposition on the floodplain. The willow baffles are also specifically located on the floodplain to discourage the development of preferential flow paths across the floodplain that could result in meander cutoffs. The willows will be harvested near the project site with similar willow species, comparable site conditions, and abundant, vigorous willow stands. Selected willows will have "green" wood in their cross section, relatively straight, covered in smooth bark, and free of insect/pathogen damage. Stems will range in size from ½ to 1¼ inches in diameter. Careful attention to stem size, site hydrology, depth of willow stake installation, and good soil to stem contact will be taken.

The hydraulic modeling completed by ESA indicates high sediment transport at the upstream entrances to both secondary channels A and B. Secondary Channel A is lined with a 0.5- to 1-foot layer of cobbles and gravels, and the project grading preserves the existing channel bed and the existing upstream invert. Some additional incision is expected at this location, as the topographic

mound in the secondary Channel A profile will be kept in place and will act as an upstream control against triggering an avulsion prematurely. Based on the existing riparian vegetation at the secondary Channel A breakout, project engineers do not think this area poses a significant fine sediment risk and therefore, the designs do not include further stabilization at the lower secondary Channel A connection point.

The hydraulic modeling showed a few areas within the secondary channel B where additional stabilization would be beneficial. For example, the upstream connection of the secondary Channel B with mainstem Chorro Creek will be breached to increase flows to the floodplain. The design involves widening the breach and lowering the channel invert by a maximum of 2 feet. Because bare-earth will be exposed during this grading, the project includes light armoring of the bed profile with cobbles. At the upstream entrance of the secondary channel B, a layer of cobbles will stretch across the levee breach and extend downstream to the extent of high grain-size transport capacity (see design sheet C-10). Cobbles will be sized to equal the maximum mobility threshold predicted by the design conditions hydraulic model. Willow stakes will be planted within the cobble transition for additional bank stability and to mitigate for any willows removed during grading. This method is less intensive than a planted rock toe, which typically uses boulder-size materials. A less armored approach is more appropriate to stabilize the secondary Channel B, as the goal is not to stop the channel from forming completely, but instead to slow down erosion until the new floodplain vegetation is established.

Task 3.9: Upgrade Creek Crossing

The existing informal Choro Creek road crossing will remain an at-grade crossing. Per input from CDFW, the crossing will not be hardened in the mainstem due to concerns that a hardened below-grade structure may create a fish passage barrier if downstream scour occurs. Instead, the design preserves the existing natural channel bed and grades back the approaching banks to reduce erosion and sedimentation, and provide a more resilient road approach. The crossing is typically used by CDFW no more than once a month in the dry season. PG&E also uses the crossing for access to their infrastructure. Road profile grades will be 10:1 or flatter to allow passage by a light duty truck (e.g. 4-wheel drive pickup truck). It is recognized that there is a tradeoff between hardening the crossing (longer design life and less need to repair the crossing after high flows, but higher risk of creating a fish passage barrier) and adopting a softer approach (less durable crossing that may need more frequent repair but less risk of creating a fish passage barrier). The design approach has erred on the ‘soft’ design approach, given the infrequent use of the road crossing and the land use as a wildlife preserve. It is expected that some future grading may be needed to maintain the crossing after high flows.

Following storm events in January and February 2017, the mainstem Chorro Creek eroded a small side channel on the left bank of the road crossing, incising nearly 3 feet. The existing conditions hydraulic modeling results show high velocities along the entire left bank of the mainstem channel near the road crossing. Road crossing designs include a base layer of larger boulders underneath the aggregate base on the left bank for stabilization at the crossing. The larger stone will function as rock slope protection against the high velocities generated by the main channel meander. Based on the average D50 from the results, a 200-pound stone was selected for the base layer of rock.

Additional erosion along the left bank of the main channel may occur prior to construction. For permitting purposes, we have included two road alternatives in the 100% design plans. The first alternative follows the existing road crossing alignment, while the second alternative moves the left bank approach further upstream. The second alternative moves the road away from the side channel flow path on the left bank, while maintaining a minimum turning radius for construction vehicles and minimizing impacts to the existing riparian vegetation along the mainstem. A minimum turning radius of 50 feet was selected based on the minimum turning radii for an intermediate size semitrailer, defined as a design vehicle with a 48-foot long trailer. The preferred road crossing alternative will be determined at the pre-bid construction meeting as there may be channel changes between now and the time of implementation.

Task 3.10: Erosion Control

Temporary erosion controls for the project will include cover crops (i.e. temporary seeding), erosion control fabric, straw wattles, and coir fiber rolls. All materials will be biodegradable materials. All disturbed areas will receive temporary seeding. The temporary erosion control seed will include a sterile seed as the temporary cover crop. Uncut straw mulch will be applied by hand over cover crop seed after the seed has been worked into the soil. Erosion control fabric may also be placed over the mulch.

Erosion control fabric and rolls will be installed so runoff is directed away from sensitive habitats, directing flow into existing drainages or dispersing water across vegetated areas to avoid concentrating water. Erosion control fabrics will be used on areas with slopes steeper than 4:1, with the exception of the low-flow channel. Additional areas with velocities exceeding the thresholds listed below may also require erosion control fabric. All erosion control fabric shall be constructed of natural material to prevent wildlife entrapment. The use of plastic, monofilament, or similar erosion control materials that could entangle wildlife will be prohibited. All erosion control material shall be free from noxious weed seed.

To prevent erosion of loose soil into the newly graded channels, a series of straw wattles will be installed on the bank slopes along both the secondary channels A

and B banks. Straw wattles will be placed in shallow trenches along the channel top of bank and secured with live willow pole cuttings.

Coir (coconut fiber) logs will be used on erodible slopes not covered with erosion control fabric. Coir logs, also called coir fiber rolls, will consist of coconut fiber mattresses inserted into a tube of coconut fiber twine netting. Fiber rolls will be placed on the face of slopes at regular intervals and/or at the toe of slopes to intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide some removal of sediment from the runoff. Fiber rolls will be used along the top, face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.

Vertical spacing of coir logs is dependent on the surface gradient:

- 10 feet apart for slopes steeper than 2:1
- 15 feet apart for slopes between 2:1 and 4:1
- 20 feet apart for slopes between 4:1 and 10:1
- 50 feet apart for slopes flatter than 10:1

Task 3.11: Seeding and Riparian Plantings

To enhance vegetation establishment on the project site, a mix of riparian and upland species will be planted and seeds dispersed. The design includes three planting zones: 1) Willow Riparian (0.5 acres), 2) Riparian Woodland (2 acres), and 3) Upland Woodland (1.9 acres Willow Riparian would be established in a band along the graded channels, at the lowest elevations of the floodplain, and along the open water bank line. The area will be dominated by shrubbier willow (primarily arroyo willow) and also include scattered cottonwoods and additional understory species. For Willow Riparian areas, the project planting plan includes arroyo willows (1,430 cuttings) and cottonwoods (430 cuttings).

Riparian Woodland will occur at higher elevations adjacent to the Willow Riparian. Large trees, primarily Coast live oak, box elder, and California sycamore, require adequate rooting depth (i.e., higher elevations) to lessen the risk of windthrow during high wind conditions. These larger trees are currently often found growing adjacent to and shading open water along channel slopes. Riparian woodland plant species (mix of treepot and depot containers) will also be planted including: box elder (111), coyote brush (77), California sycamore (112), coast live oak (226), coffeeberry (77), California rose (112), and blue elderberry (35).

Upland Woodland vegetation will occur in areas along the perimeter of newly created Riparian Woodland, on the soil disposal area, and in locations inaccessible to groundwater. Revegetation palette will include shrubby species that can tolerate seasonally dry soils. Along Upland Woodland areas container plant species will include: California sagebrush (71), Coast live oak (216),

California rose (71), black sage (72), blue elderberry (48).

A riparian seed mix of perennial grasses (2.2 acres) will be used which includes: mugwort, mulefat, blue wild rye, creeping wild rye, small fescue, meadow barley, and purple needlegrass. An upland seed mix will include grasses, legumes and forbs (6.7 acres) including: California brome, blue wild rye, California poppy, arroyo lupine, purple needlegrass, and three weeks fescue. The grassland seeding is advantageous from a cost standpoint as irrigation would be avoidable depending on which season the seeding occurred. Native grasses will be planted on all graded slopes and leveled areas in the Upland Woodland to minimize erosion, provide cover for wildlife and to discourage weeds. These grassland areas will be seeded with a mix of native grasses (see design sheet EC-1 and EC-2), and managed to minimize colonization by ruderal annual grasses and broad-leaf weeds. This grassland will provide moderate-quality foraging habitat. All disturbed soil within the floodplain will be drill seeded with a native seed mix.

Species selected are locally native, are likely to be commercially available and/or have potential to be propagated from on-site salvage or cuttings, and are adapted to the range of moisture, soil, and sun exposure conditions expected to be present after construction. Emphasis has been placed on species that provide important fish and wildlife habitat elements and species that are robust and likely to thrive with minimal maintenance. As the site matures, the palette is designed to evolve into a resilient, diverse habitat that regenerates naturally. Species will be grouped according to suitable position or zone relative to the stream Channel And level of sun exposure, with some overlap built in to support changing plant composition over time.

Caging around individual plantings will be used to reduce any disturbance or grazing (e.g., limited feral pigs, deer) until plantings are more established. Plant caging will include aviary wire (1/2inch mesh, 2 feet high) around each container plant, held in place with two 36 inch wooden stakes.

An existing well is available on site (see photo 28 of supplemental information) to allow for temporary irrigation of the plantings. It is still in discussion with CDFW whether power for the well pump will be obtained through a nearby PG&E power line or if a solar panel will be installed to provide power. If a solar panel is installed, a solar panel and water holding tank will also be installed. Hoses and irrigation lines will also be used for irrigating planted plants.

Task 4: Post-Project Support and Monitoring

Post-project support will include maintenance of the plantings including plant irrigation and irrigation system maintenance, weed control (hand pulling, string trimming, mowing), periodic tree pruning, browse guard maintenance, debris

removal, and remedial activities such as replanting and reseeding. Irrigation will be applied in a way that will promote deep root growth and allow for the "weaning off" of plants after the third year of establishment maintenance. This work will be coordinated with the CDFW land manager for site access and other decisions related to project maintenance that arise.

A range of monitoring will also take place to measure performance of the restoration project. Post-project monitoring will be conducted for a minimum of three years to ensure project objectives are met. The California Conservation Corps will be responsible for maintaining plants and possible plant replacement while the MBNEP will be responsible for monitoring and reporting of findings of planting survival. Monitoring of plant survival will be conducted at least four times per year. Photo monitoring will take place prior to project implementation, immediately post-construction, and annually post-project for three years following construction. Photo points will be established to capture riparian plant establishment, channel geomorphology, road crossing, and other primary project elements. Baseline surveys of the post-project channel topography will also be performed by establishing representative cross sections and longitudinal profile within the secondary channel and floodplain. Channel surveys will be repeated to assess channel and bed stability, lateral and longitudinal channel migration, and ensure establishment of dynamically stable channels. The secondary channels will be added to any existing fisheries monitoring taking place to tract species use of the project site. The project site will also be monitored during higher flows to capture the extent and duration of floodplain inundation at the site. Water quality monitoring is already monitored extensively in the watershed by MBNEP and will be continued to be monitored after project implementation.

NOTE: MBNEP has received funding from the EPA to assist with development and direct project permitting costs. Required permits are listed below but are not included as tasks here or in the budget as funding has already been secured. This list does not include other environmental review (e.g., CEQA) that if funded would be completed through CDFW's FRGP grant process.

CDFW 1602 Lake and Streambed Alteration Agreement (LSAA)
Consultants will assist in preparing and applying for CDFW's 1602 LSAA permit. Any potential impacts on waters of the U.S. and State and sensitive wildlife species will be disclosed. Measures to reduce impacts to water quality will also be identified.

State Coastal Commission- Coastal Development Permit
The project is located in the Coastal Zone managed by San Luis Obispo County under their Local Coastal Plan and Coastal Zone Land Use Ordinance. Because the project will involve grading an area greater than 3 acres, a "Development Plan" approval will be required. A Coastal Development Permit will be completed

and submitted to the State Coastal Commission.

San Luis Obispo County Permitting

The MBNEP will work with the San Luis Obispo County to complete any required permitting related to grading or development permits.

Deliverables: One hard copy and one electronic copy of the following will be provided:

Task 1: Project Administration
Invoices
Progress Reports
Annual Reports
Draft Project Report
Final Project Report (including performance measures)
Final Budget

Task 2: Biological Monitoring and Construction Oversight
Engineering Construction Oversight Check-list

Task 3: Project Implementation
As-built Construction Drawings (including cross-sections and longitudinal profiles, sizes and quantity of material added, and structure placement)

Task 4: Post-Project Support and Monitoring
Riparian Vegetation Establishment Memo
Channel Geomorphology Change Memo
Photo-monitoring Comparisons
Hydrology, Water Quality, and Species Response Memo

Timelines:
Task 1: Project Administration (June 1, 2018 to March 31, 2021)
Invoices (June 1, 2018 to March 31, 2021)
Progress Reports (June 1, 2018 to March 31, 2021)
Annual Reports (December 1, 2018/2019/2020)
Draft Final Report (February 1 to February 28, 2021)
Final Report (February 28 to March 14, 2021)

Task 2: Biological Monitoring and Construction Oversight (June 15, 2019 to January 30, 2020)
Task 2 activities will occur during the same time as project implementation activities.

Task 3: Project Implementation (June 15, 2019 to January 30, 2020)
Tasks 3.1 to 3.10, and 3.11 (for seeding only): June 15, 2019 to November 1, 2019. It is recognized that work around streams needs to be conducted during June 15 through November 1 or until the first significant rainfall. The work window will also be further constrained if it is deemed necessary for nesting or breeding. Additionally, dewatering will only occur between June 15 and October 31 to abide by regulations.

Task 3.11 for riparian planting: After December 1, 2019, or when sufficient rainfall has occurred to ensure the best chance of survival of the plantings.

Task 4: Post-Project Support and Monitoring (September 1, 2019 to March 31, 2021)

Post-project support will commence once the main project elements are implemented. Monitoring will continue past March 31, 2021 to complete at least three years of post-project monitoring.

NOTE: Non-FRGP funds have been secured for permitting costs not associated with FRGP. As permitting costs have not be requested through FRGP, we have not listed a timeline for obtaining permitting but will ensure that all necessary permits (e.g., 1602 Lake and Streambed Alternation Agreement) will be completed and approved before on the ground implementation work is executed. We will begin to seek permits in summer 2017.

Additional Requirements:

1. The Grantee will implement this project according to the Chorro Creek Ecological Reserve Floodplain Restoration – Final 100% Design submittal, dated April 20, 2017.

2. The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

3. No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

4. All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

5. During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

6. Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Managers. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

7. The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

    a) Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.

    b) Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

    c) The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.

    d) All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 200

e) USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW.


USGS
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY
USTopo
MORRO BAY SOUTH QUADRANGLE
CALIFORHIA-SAN LUIS OBISPO CO.
7.5-MINUTE SERIES
MORRO BAY
Project Site:
Chorro Creek Ec ological Reserve
Baywood Park
Los Osos
SCALE 1:24 000
MORRO BAY SOUTH, CA
2015

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Morro Bay South (3512037) OR Cayucos (3512048) OR Morro Bay North (3512047) OR Atascadero (3512046) OR San Luis Obispo (3512036) OR Port San Luis (3512027) OR Pismo Beach (3512026))

Possible species within the Morro Bay South quadrangle and surrounding quads for 725547 Chorro Creek Ecological Reserve Floodplain Restoration Project, T30S R11E S3, San Luis Obispo County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
adobe sanicle *Sanicula maritima*	PDAPI1Z0D0	None	Rare	G2	S2	1B.1
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
Atascadero June beetle *Polyphylla nubila*	IICOL68040	None	None	G1	S1	
beach spectaclepod *Dithyrea maritima*	PDBRA10020	None	Threatened	G1	S1	1B.1
Betty's dudleya *Dudleya abramsii ssp. bettinae*	PDCRA04011	None	None	G4T2	S2	1B.2
big free-tailed bat *Nyctinomops macrotis*	AMACD04020	None	None	G5	S3	SSC
black-flowered figwort *Scrophularia atrata*	PDSCR1S010	None	None	G2?	S2?	1B.2
Blochman's dudleya *Dudleya blochmaniae ssp. blochmaniae*	PDCRA04051	None	None	G3T2	S2	1B.1
Blochman's leafy daisy *Erigeron blochmaniae*	PDAST3M5J0	None	None	G2	S2	1B.2
Brewer's spineflower *Chorizanthe breweri*	PDPGN04050	None	None	G3	S3	1B.3
burrowing owl *Athene cunicularia*	ABNSB10010	None	None	G4	S3	SSC
California black rail *Laterallus jamaicensis coturniculus*	ABNME03041	None	Threatened	G3G4T1	S1	FP
California horned lark *Eremophila alpestris actia*	ABPAT02011	None	None	G5T4Q	S4	WL
California linderiella *Linderiella occidentalis*	ICBRA06010	None	None	G2G3	S2S3	
California red-legged frog *Rana draytonii*	AAABH01022	Threatened	None	G2G3	S2S3	SSC
California Ridgway's rail *Rallus obsoletus obsoletus*	ABNME05016	Endangered	Endangered	G5T1	S1	FP
California seablite *Suaeda californica*	PDCHE0P020	Endangered	None	G1	S1	1B.1
Cambria morning-glory *Calystegia subacaulis ssp. episcopalis*	PDCON040J1	None	None	G3T2	S2	4.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Central Dune Scrub *Central Dune Scrub*	CTT21320CA	None	None	G2	S2.2	
Central Foredunes *Central Foredunes*	CTT21220CA	None	None	G1	S1.2	
Central Maritime Chaparral *Central Maritime Chaparral*	CTT37C20CA	None	None	G2	S2.2	
chaparral ragwort *Senecio aphanactis*	PDAST8H060	None	None	G3	S2	2B.2
coast horned lizard *Phrynosoma blainvillii*	ARACF12100	None	None	G3G4	S3S4	SSC
Coast Range newt *Taricha torosa*	AAAAF02032	None	None	G4	S4	SSC
coast woolly-heads *Nemacaulis denudata var. denudata*	PDPGN0G011	None	None	G3G4T2	S2	1B.2
Coastal and Valley Freshwater Marsh *Coastal and Valley Freshwater Marsh*	CTT52410CA	None	None	G3	S2.1	
Coastal Brackish Marsh *Coastal Brackish Marsh*	CTT52200CA	None	None	G2	S2.1	
coastal goosefoot *Chenopodium littoreum*	PDCHE091Z0	None	None	G2	S2	1B.2
compact cobwebby thistle *Cirsium occidentale var. compactum*	PDAST2E1Z1	None	None	G3G4T2	S2	1B.2
Congdon's tarplant *Centromadia parryi ssp. congdonii*	PDAST4R0P1	None	None	G3T2	S2	1B.1
Cooper's hawk *Accipiter cooperii*	ABNKC12040	None	None	G5	S4	WL
Coulter's goldfields *Lasthenia glabrata ssp. coulteri*	PDAST5L0A1	None	None	G4T2	S2	1B.1
Coulter's saltbush *Atriplex coulteri*	PDCHE040E0	None	None	G3	S1S2	1B.2
Crotch bumble bee *Bombus crotchii*	IIHYM24480	None	None	G3G4	S1S2	
Cuesta Pass checkerbloom *Sidalcea hickmanii ssp. anomala*	PDMAL110A1	None	Rare	G3T1	S1	1B.2
Cuesta Ridge thistle *Cirsium occidentale var. lucianum*	PDAST2E1Z6	None	None	G3G4T2	S2	1B.2
dacite manzanita *Arctostaphylos tomentosa ssp. daciticola*	PDERI041HD	None	None	G4T1	S1	1B.1
Diablo Canyon blue grass *Poa diaboli*	PMPOA4Z390	None	None	G2	S2	1B.2
dune larkspur *Delphinium parryi ssp. blochmaniae*	PDRAN0B1B1	None	None	G4T2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
dwarf soaproot *Chlorogalum pomeridianum var. minus*	PMLIL0G042	None	None	G5T3	S3	1B.2
Eastwood's larkspur *Delphinium parryi ssp. eastwoodiae*	PDRAN0B1B2	None	None	G4T2	S2	1B.2
ferruginous hawk *Buteo regalis*	ABNKC19120	None	None	G4	S3S4	WL
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
globose dune beetle *Coelus globosus*	IICOL4A010	None	None	G1G2	S1S2	
golden eagle *Aquila chrysaetos*	ABNKC22010	None	None	G5	S3	FP
Hardham's evening-primrose *Camissoniopsis hardhamiae*	PDONA030N0	None	None	G2	S2	1B.2
hooked popcornflower *Plagiobothrys uncinatus*	PDBOR0V170	None	None	G2	S2	1B.2
Hoover's bent grass *Agrostis hooveri*	PMPOA040M0	None	None	G2	S2	1B.2
Hoover's button-celery *Eryngium aristulatum var. hooveri*	PDAPI0Z043	None	None	G5T1	S1	1B.1
Indian Knob mountainbalm *Eriodictyon altissimum*	PDHYD04010	Endangered	Endangered	G1	S1	1B.1
Jones' layia *Layia jonesii*	PDAST5N090	None	None	G2	S2	1B.2
Kellogg's horkelia *Horkelia cuneata var. sericea*	PDROS0W043	None	None	G4T1?	S1?	1B.1
La Panza mariposa-lily *Calochortus simulans*	PMLIL0D170	None	None	G2	S2	1B.3
lesser slender salamander *Batrachoseps minor*	AAAAD02170	None	None	G1	S1	SSC
loggerhead shrike *Lanius ludovicianus*	ABPBR01030	None	None	G4	S4	SSC
marsh sandwort *Arenaria paludicola*	PDCAR040L0	Endangered	Endangered	G1	S1	1B.1
mesa horkelia *Horkelia cuneata var. puberula*	PDROS0W045	None	None	G4T1	S1	1B.1
Miles' milk-vetch *Astragalus didymocarpus var. milesianus*	PDFAB0F2X3	None	None	G5T2	S2	1B.2
mimic tryonia (=California brackishwater snail) *Tryonia imitator*	IMGASJ7040	None	None	G2	S2	
monarch - California overwintering population *Danaus plexippus pop. 1*	IILEPP2012	None	None	G4T2T3	S2S3	

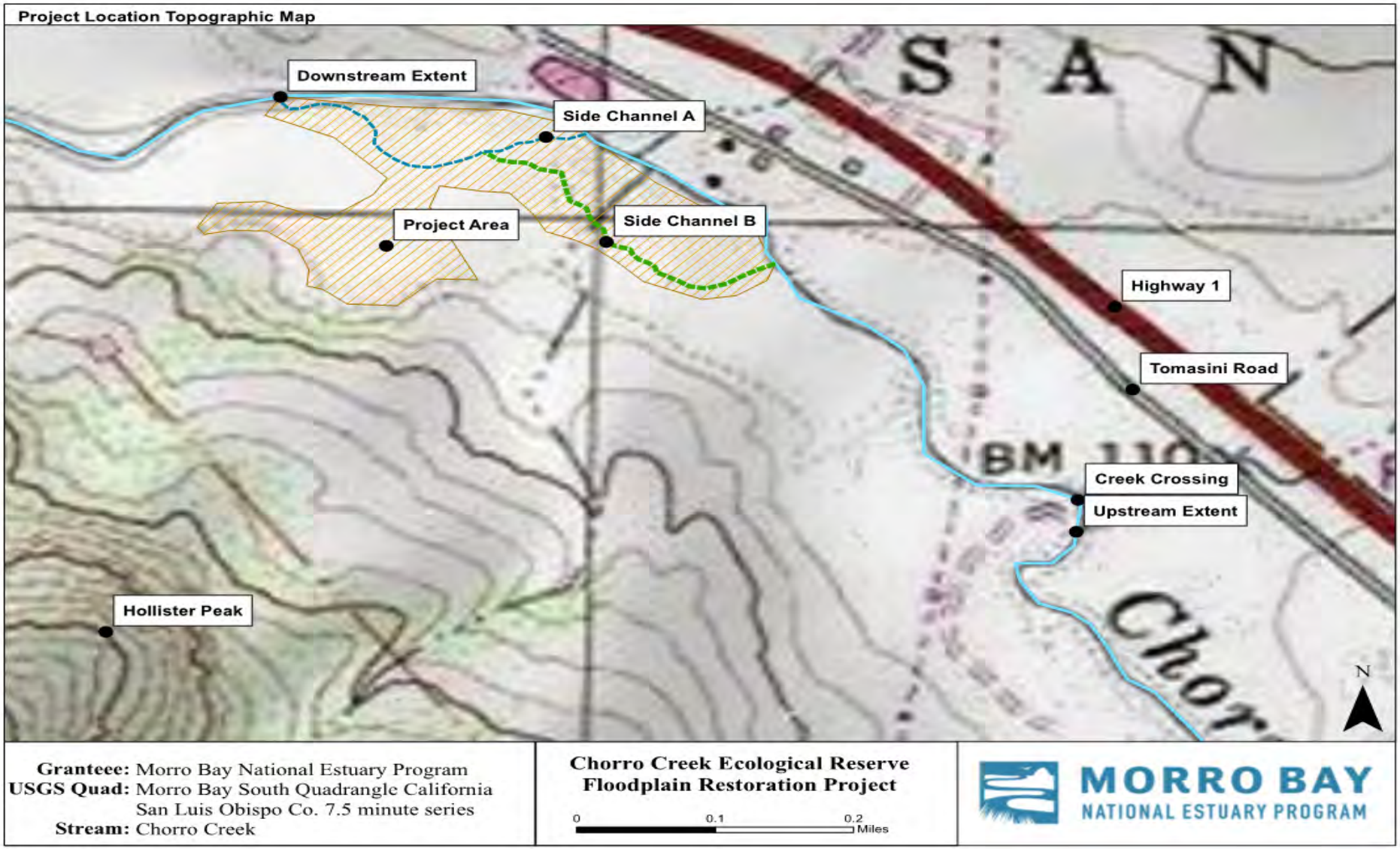
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Morro Bay blue butterfly *Plebejus icarioides moroensis*	IILEPG801B	None	None	G5T2	S2	
Morro Bay kangaroo rat *Dipodomys heermanni morroensis*	AMAFD03063	Endangered	Endangered	G3G4TH	SH	FP
Morro manzanita *Arctostaphylos morroensis*	PDERI040S0	Threatened	None	G1	S1	1B.1
Morro shoulderband (=banded dune) snail *Helminthoglypta walkeriana*	IMGASC2510	Endangered	None	G1	S1S2	
most beautiful jewelflower *Streptanthus albidus ssp. peramoenus*	PDBRA2G012	None	None	G2T2	S2	1B.2
mouse-gray dudleya *Dudleya abramsii ssp. murina*	PDCRA04012	None	None	G4T2	S2	1B.3
northern California legless lizard *Anniella pulchra*	ARACC01020	None	None	G3	S3	SSC
Northern Coastal Salt Marsh *Northern Coastal Salt Marsh*	CTT52110CA	None	None	G3	S3.2	
northern harrier *Circus cyaneus*	ABNKC11010	None	None	G5	S3	SSC
Northern Interior Cypress Forest *Northern Interior Cypress Forest*	CTT83220CA	None	None	G2	S2.2	
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Ojai fritillary *Fritillaria ojaiensis*	PMLIL0V0N0	None	None	G2?	S2?	1B.2
Oso manzanita *Arctostaphylos osoensis*	PDERI042S0	None	None	G1	S1	1B.2
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
Palmer's monardella *Monardella palmeri*	PDLAM180H0	None	None	G2	S2	1B.2
Pecho manzanita *Arctostaphylos pechoensis*	PDERI04140	None	None	G2	S2	1B.2
perennial goldfields *Lasthenia californica ssp. macrantha*	PDAST5L0C5	None	None	G3T2	S2	1B.2
Pismo clarkia *Clarkia speciosa ssp. immaculata*	PDONA05111	Endangered	Rare	G4T1	S1	1B.1
popcorn lichen *Cladonia firma*	NLT0008460	None	None	G4	S1	2B.1
purple martin *Progne subis*	ABPAU01010	None	None	G5	S3	SSC
round-leaved filaree *California macrophylla*	PDGER01070	None	None	G4	S4	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
saline clover *Trifolium hydrophilum*	PDFAB400R5	None	None	G2	S2	1B.2
salt marsh bird's-beak *Chloropyron maritimum ssp. maritimum*	PDSCR0J0C2	Endangered	Endangered	G4?T1	S1	1B.2
San Benito fritillary *Fritillaria viridea*	PMLIL0V0L0	None	None	G2	S2	1B.2
San Diego desert woodrat *Neotoma lepida intermedia*	AMAFF08041	None	None	G5T3T4	S3S4	SSC
San Joaquin spearscale *Extriplex joaquinana*	PDCHE041F3	None	None	G2	S2	1B.2
San Luis mariposa-lily *Calochortus obispoensis*	PMLIL0D110	None	None	G2	S2	1B.2
San Luis Obispo County lupine *Lupinus ludovicianus*	PDFAB2B2G0	None	None	G1	S1	1B.2
San Luis Obispo fountain thistle *Cirsium fontinale var. obispoense*	PDAST2E162	Endangered	Endangered	G2T2	S2	1B.2
San Luis Obispo owl's-clover *Castilleja densiflora var. obispoensis*	PDSCR0D453	None	None	G5T2	S2	1B.2
San Luis Obispo pyrg *Pyrgulopsis taylori*	IMGASJ0A50	None	None	G1	S1	
San Luis Obispo sedge *Carex obispoensis*	PMCYP039J0	None	None	G3?	S3?	1B.2
sand mesa manzanita *Arctostaphylos rudis*	PDERI041E0	None	None	G2	S2	1B.2
sandy beach tiger beetle *Cicindela hirticollis gravida*	IICOL02101	None	None	G5T2	S2	
Santa Lucia bush-mallow *Malacothamnus palmeri var. palmeri*	PDMAL0Q0B5	None	None	G3T2Q	S2	1B.2
Santa Lucia manzanita *Arctostaphylos luciana*	PDERI040N0	None	None	G3	S3	1B.2
Santa Margarita manzanita *Arctostaphylos pilosula*	PDERI042Z0	None	None	G2?	S2?	1B.2
Serpentine Bunchgrass *Serpentine Bunchgrass*	CTT42130CA	None	None	G2	S2.2	
southern curly-leaved monardella *Monardella sinuata ssp. sinuata*	PDLAM18161	None	None	G3T2	S2	1B.2
splitting yarn lichen *Sulcaria isidiifera*	NLTEST0020	None	None	G1	S1	1B.1
steelhead - south-central California coast DPS *Oncorhynchus mykiss irideus*	AFCHA0209H	Threatened	None	G5T2Q	S2	
steelhead - southern California DPS *Oncorhynchus mykiss irideus*	AFCHA0209J	Endangered	None	G5T1Q	S1	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
straight-awned spineflower *Chorizanthe rectispina*	PDPGN040N0	None	None	G2	S2	1B.3
surf thistle *Cirsium rhothophilum*	PDAST2E2J0	None	Threatened	G1	S1	1B.2
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
twisted horsehair lichen *Bryoria spiralifera*	NLTEST5460	None	None	G3	S1S2	1B.1
umbrella larkspur *Delphinium umbraculorum*	PDRAN0B1W0	None	None	G3	S3	1B.3
Valley Needlegrass Grassland *Valley Needlegrass Grassland*	CTT42110CA	None	None	G3	S3.1	
vernal pool fairy shrimp *Branchinecta lynchi*	ICBRA03030	Threatened	None	G3	S3	
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western mastiff bat *Eumops perotis californicus*	AMACD02011	None	None	G5T4	S3S4	SSC
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
white-tailed kite *Elanus leucurus*	ABNKC06010	None	None	G5	S3S4	FP
woodland woollythreads *Monolopia gracilens*	PDAST6G010	None	None	G3	S3	1B.2
yellow-flowered eriastrum *Eriastrum luteum*	PDPLM03080	None	None	G2	S2	1B.2

Record Count: 119

Project Location Topographic Map



Introduction:

San Mateo County Resource Conservation District (RCD) is the Grantee for the proposed Alpine Creek Fish Passage Project (FP 127). The project is an instream fish passage project that will provide access for salmonids to an additional >1mile of perennial habitat above a road crossing with a failing fish ladder on Alpine Creek in coastal San Mateo County. The existing road-crossing culvert is to be modified, and existing Denil fish ladder with failed boulder weirs are to be removed. Passage will be achieved by reconstructing 300 feet of downstream channel with a roughened 4% rock ramp grade. The project is necessary to increase spawner distribution and overall production in the watershed by supplying additional habitat usage previously unavailable in upper Alpine Creek. NMFS Final recovery Plan for CCC coho salmon ESU (2012) identifies Adult Passage Flows in the San Gregorio Creek Watershed as "Poor". Access to the upper watershed is limited for migrating salmonids due to the flashy hydrology; therefore reducing passage constraints increases the likelihood of adult fish seeding upper tributaries in turn increasing recruitment. The project will follow established techniques outline in the California Salmonid Stream Habitat Restoration Manual (Part VII Project Implementation and Part XII Fish Passage Design and Implementation). The Grantee shall not proceed with on the ground implementation until all necessary permits, consultation, and/or Notice to Proceed are secured.

Objective:

The main goal of the project is to restore fish passage at an established sever impediment. Passage will be achieved as designed by lowering the channel invert through the existing arch culvert, demolishing the existing non-functional Denil fish ladder and grouted rock weirs just downstream, and reconstructing approximately 300 linear feet of channel at an approximate 4% grade downstream of the culvert to enable unfettered access to upstream habitat. Successful project completion will allow access for both adult and juvenile salmonid passage to more than one mile of quality upstream spawning and rearing habitat over the full range of fish passage design flows.

Project Description:

Location: The project site is entirely within coastal San Mateo County near the unincorporated community of La Honda. The project site is located where Pescadero Creek Road crosses Alpine Creek and includes the existing road culvert, culvert apron, fish ladder, and rock weirs. The site is located adjacent to the intersection of Pescadero Creek Road and Alpine Road, approximately 1.7 miles southeast of the community of La Honda in San Mateo County. The left bank of the project site is located within the boundary of San McDonald County Park, which is publicly owned and managed by San Mateo County. The right bank is lined by private residences. The project site is approximately 7.75 miles upstream of the mouth of San Gregorio Creek and approximately 1.00 mile upstream of La Honda Creek the nearest confluence. The approximate upstream end of the project is 37.29945000, -122.26530000; and the approximate downstream end of

the project is 37.30040000, -122.26620000 (Decimal Degrees, Geographic, NAD83).

Project Set Up: Task 1 will be performed by the RCD and Jim Robins of Alnus Ecological. RCD personnel involved will be the Executive Director, Finance Director, Natural Resource Specialist, Conservation Assistant and Program Assistant. Jim Robins of Alnus Ecological will provide support to the Natural Resource Specialist. Task 2 will be performed by the Natural Resource Specialist with assistance from the Conservation Assistant, the Executive Director and subcontractors. Task 3 will be accomplished by subcontractors Jim Robins and Mike Podlech of Alnus Ecological with support from RCD Natural Resource Specialist. Task 4 will be accomplished by yet to be determined licensed constructing contractor with assistance from the RCD, Alnus Ecological, San Mateo County and Waterways Consulting Inc.

Materials:

- Concrete to construct the rectangular channel between the existing footings including 9 concrete baffles and a concrete cutoff wall at the downstream end of the culvert
- Rebar
- Engineered Streambed Material (ESM)
- Weir Boulders
- Rock Slope Protection
- Plastic Piping
- Sandbags and/or gravel bags
- Plastic sheeting
- Pumps, filters, hoses
- Erosion Control Materials: Materials include but are not limited to silt fencing, weed/seed free straw waddles, erosion control mesh netting (e.g. coconut fiber),and weed free straw mulch.
- Construction Supplies: Including but not limited to framing boards, nails, bolts, batteries.

• Native Grass Seed
• Willow/Alder Stakes
• Exclusionary Fencing
• Dip nets

Tasks:

Task 1: Project Management

The RCD will take the lead in overall project management, including fiscal management. The RCD will develop and manage all contracts and subcontracts. In addition, the RCD will provide project support in terms of finalizing the work plan; leading interagency communications and coordination; convening project team meetings among consultants, partners, and stakeholders; interim and/or progress reporting to funders and regulatory agencies, budgeting and invoicing.

Task 2: Permitting, Bidding, and Contractor Selection

Work with the FRGP Grant Manager to develop and finalize a Lake and Streambed Alteration Agreement (LSAA), and prepare any other necessary local permits or environmental compliance documents. This project is expected to be covered under FRGP's California Environmental Quality Act (CEQA) document and the Regional General Permit (RGP). The engineer staff with Waterways Consulting, Inc. will advise and assist in developing and reviewing the LSAA and other necessary permits to ensure consistency with project designs. The RGP provides compliance for Section 404 of the Clean Water Act, 401 certification from the Regional Water Quality Control Board, and all necessary compliance for the Federal Endangered Species Act (ESA). In addition to the necessary agency permits the RCD will obtain an encroachment permit or Memorandum of Understanding from San Mateo County to enable the RCD to construct the project on San Mateo County property. San Mateo County has committed to working with the RCD to facilitate this process. The RCD will obtain a Grading Permit Exemption from the San Mateo County Planning and Building Department. The RCD, with assistance from Jim Robins (Alnus Ecological) and Waterways, will coordinate with San Mateo County, the downstream landowners (David and Kathleen Bevin), and CDFW to develop a bid package and award a construction contract to the most competitive bidder for the project. The RCD will work with the selected contractor, San Mateo County, and CDFW to develop a construction schedule, review access and temporary closure needs, and review permit conditions.

Task 3: Biological Monitoring and Physical Surveys

Work under this task includes monitoring for listed species, supporting the construction team on dewatering activities, performing fish relocation, conducting contractor training related to species protection, and general project oversight. Prior to the start of construction, the area will be monitored for the presence of listed species including California red-legged frog (CRLF), dusty footed woodrat, and western pond turtle. Any active woodrat nests will be clearly flagged with a construction buffer as per discussions with CDFW staff. Exclusion fencing will be placed around staging areas and stockpiles to avoid impacts to CRLF and terrestrial species. Sweeps of the staging area and equipment will be conducted prior to moving equipment or supplies in or out of the staging area. All fish will be relocated as per CDFW and NOAA standard protocols from the instream work zone prior to dewatering. Biologists Jim Robins and Mike Podlech will identify locations for cofferdams and work with contractors to locate the best areas for block nets as well as address any other dewatering related issues or concerns that may arise. Block nets will be installed using t-posts to ensure fish cannot access the site during construction using mesh smaller than 3/8" to prevent fish from entering the work area once relocation efforts are complete. Fish monitoring will also be conducted during dewatering to relocate any stranded fish that were not removed during pre-dewatering relocation efforts. Monitoring will continue during construction until project completion and the removal of cofferdams and block nets. This project will assume presence of marbled Murrelet (MAMU) as well as CLRF

and monitors will be on-site during construction to avoid impacts to this species. The RCD will be conduct MAMU surveys to determine presence or absence during 2016 and 2017. This would allow for an earlier project start date rather than September 16th if MAMU are present. Pre-construction survey protocols will be developed with the FRGP grant manager. The contractor staff will be trained in listed species concerns and protocols to help avoid any impacts of equipment or construction related activities. Post Construction Monitoring to be performed by Waterways and the RCD will take place in the spring/summer following construction and include the following: 1) Survey the long profile of the stream with a total station, beginning 200 feet upstream of the project and extending 300 feet downstream of the project, recording grades and water surface elevation. 2) Survey 5 cross sections within the project area at pre-determined locations to be monumented immediately post construction. 3) Photo monitor and prepare written evaluation of substrate gradation characteristics throughout the project area to evaluate trends. 4) Test project post construction at two life stage design flows (i.e. fall/winter flows for adult salmonids and summer base flows for juveniles) 5) Prepare report presenting results and overlaying them on design and asbuilt conditions

Task 4: Construction

This task includes all the restoration elements and implementation methods for the Alpine Fish Passage Project Site. Construction components described below include the following: A) preconstruction; B) water pollution control; C) dewatering; D) fish relocation; E) clearing and grubbing; F) downstream channel demolition; G) downstream channel construction; H) culvert excavation and demolition; I) culvert construction; J) site restoration; K) revegetation and erosion control; L) construction monitoring; and M) post-construction.. These subtasks are described in further detail below. This project is anticipated to take two years due to the complex nature of the project design and work window restrictions from sensitive species.

A. Preconstruction. A staging area will be established nearby the construction site where equipment and materials will be mobilized. Construction staking and layout will be performed by the selected construction contractor and inspected by the consulting engineers (Waterways). A pre-construction meeting will be held with RCD, consulting engineers (Waterways), Jim Robins (Alnus Ecological), San Mateo County and CDFW to walk through the construction schedule and finalize roles and responsibilities.

B. Water Pollution Control. To protect water quality, the contractor will be required to adhere to the erosion control measures included in the designs and specifications. A dewatering plan will be prepared by the contractor and approved by the RCD, consulting engineers (Waterways), and CDFW. Pollution control techniques are anticipated to include temporary silt fencing around the access route, stockpiles and other highly disturbed areas. Any additional measures

provided by CDFW through the Regional General Permit and CEQA. Construction will be implemented during the summer and early fall when the stream flows are at a minimum.

C. Dewatering. A water diversion structure is required to dewater the project site, facilitate in-stream construction, and reduce potential impacts to water quality downstream of the project site. Placement of the diversion structure, fish and other sensitive species relocation will be carried out by qualified biologists with Alnus Ecological. Discharge of water from the dewatered construction site, either by gravity or pumping, will be performed in a manner that will prevent excessively turbid water from discharging back into the creek. Pumped water will be pre-filtered with a sand/gravel pack around the pump for subsurface flows and a silt fence or hay bales around the pump for surface flows. Pumped water will be discharged into isolated depressions, filter bags, settling (Baker) tanks, or temporary sediment basins, as necessary to meet water quality requirements.

D. Fish Relocation. Fish relocation will be conducted by Alnus Ecological (Jim Robins and Mike Podlech) with assistance from the RCD staff (Natural Resource Specialist, Conservation Assistant) as per CDFW and NMFS guidelines. We expect to electrofish the site until zero salmonids are observed and conduct site inspections to ensure that if fish have not reentered the site. A fish screen meeting CDFW/NMFS standards will be required to avoid fish entering any the pumps.

E. Clearing and Grubbing. The area around the existing structure where a temporary access road will be installed will be cleared and grubbed.

F. Downstream Channel Demolition: Prior to constructing the downstream channel, the three failing boulder weirs, a portion of the fish ladder and a portion of the concrete sacked wall will be demolished.

G. Downstream Channel Construction. The channel downstream of the arch culvert will be composed of ESM and constructed as a series of rock ramps interrupted by resting pools. A boulder weir is included at the upstream end of each resting pool to provide grade control and to promote pool scour. Rock slope protection will be placed along the right bank immediately downstream of the bridge at Alpine Road to arrest existing erosion occurring along the bank.

H. Culvert floor excavation and demolition. The existing structure will be excavated. Approximately 130cy of existing Portland cement concrete will be removed and off-hauled. The project geotechnical engineer (CMAG) has evaluated the site, local geologic maps, and the original culvert designs. Based on the findings from the geotechnical investigation, the geotechnical engineer has determined that the site is suitable for the purposed project and has provided a recommended construction phasing plan, as outlined in section 7.3.2 of the geotechnical. The phasing is recommended to minimize the effects of caving during excavation with the culvert. Excavation length along the footings is limited

to 6 feet at time within the alluvial/colluvial soils and 12 feet within bedrock, requiring that the concrete work be performed in sections. All excavation should be performed under the observation of the geotechnical engineer.

I. Culvert construction. Structural modifications to the existing culvert will include constructing a new concrete rectangular channel between the existing concrete footings and a concrete cutoff wall at the downstream end of the culvert. The concrete channel will be overlain with an Engineered Streambed Material (ESM) at a 4% longitudinal profile grade. Concrete baffles will be installed to help lock in the substrate.

J. Site restoration. These construction activities will result in the disturbance of soils and vegetation estimated at approximately 16,775 square feet (this includes all areas of disturbance except for the stockpile/staging area located on Alpine Road). Erosion control and revegetation are included in the restoration elements to stabilize soils and revegetate the site with native plants immediately following construction. Potential species to be planted include arroyo willow (*Salix lasiolepis*), red alder (*Alnus rubra*), coltsfoot (*Petasites frigidus*), and sedge (*Carex sp.*). Any bare soil or disturbed areas within the access and staging areas will also be restored to their pre-construction condition through surface re-grading, planting, material replacement, and any other means necessary.

K. Revegetation and Erosion Control. The majority of the project footprint is located in the entrenched stream channel bounded by bedrock on both banks. Riparian vegetation is limited in this area because there is limited planting substrate and low light penetration due to a high canopy of redwood trees. Revegetation of the site will mostly be limited to installing an erosion control seed mix and straw mulch on disturbed slope areas not receiving rock. Live alder or willow poles will be installed in the rock and the rehabilitated access road between the two culverts.

L. Construction Monitoring. Due to the variability of materials and sensitive site conditions, this project will require regular construction observation by consultant engineers and biological handlers and/or monitors with Alnus Ecological and the RCD. Observations by the engineers will help to ensure that the pattern of the channel thalweg, cross section geometry, pool dimensions, jetting operations, concrete forming, and other tasks are completed to satisfy the intent of the designs.
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Deliverables:

Task 1: Project Management
•Signed grant agreement
•Progress and final reports including measurable performance measurements in the QA/QC checklist to be developed by the RCD, Alnus Ecological, Waterways and CDFW. 28

•Invoices
•Post project information on the Clearinghouse for Dam Removal

Task 2: Permitting, Bidding, and Contractor Selection
•Authorization from FRGP that the project is covered under FRGP's programmatic permit
•San Mateo County Encroachment permit
•Section 1600 permit
•Final construction specifications
•Bid package, if requested
•Construction award and contract, if requested

Task 3: Biological Monitoring and Physical Surveys
•Protocols for frog and woodrat monitoring
•Reports from subcontractors on survey results
•Copies of training materials, if requested
•Post project photo monitoring reports and physical surveys for a minimum of two years Task 4: Construction
•Meeting notes from construction manager
•QA/QC completed checklist •Interagency correspondence, if required •Pre and during construction photo documentation
•Red-lined drawings and/or as-builts including post project longitudinal profile.

Timelines:
Project Start Date: June 1, 2019

Task 1: Project Management June 1, 2018 to March 31, 2021
•Signed grant agreement – June 1, 2018
•Progress and final reports – March 31, 2021
•Invoices – March 31, 2021
•Post project information on the Clearinghouse for Dam Removal - March, 31 2020

Task 2: Permitting, Bidding, and Contractor Selection: June 1, 2019 to June 30, 2020
•Authorization from FRGP that the project is covered under FRGP's programmatic permit – March 31, 2018
•San Mateo County Encroachment permit – June 30, 2018
•Section 1600 permit – June 30, 2018
•Final construction specifications – Included in this proposal
•Bid package – December 31, 2018
•Construction award and contract – August 31, 2019

Task 3.Biological Monitoring and Physical Surveys June 1, 2017 to March 31, 2018
•Protocols for frog and woodrat monitoring – March 31, 2018

•Reports from subcontractors on fish relocation and biological survey results – December 31, 2019 and 2020
•Copies of training materials March 31, 2018
•Post project photo monitoring reports and physical surveys for a minimum of two years - March 31, 2019 and 2020

Task 4. Construction Two year construction timeframe: September 16, 2019 to October 31, 2019 and September 16, 2020 to October 31, 2020
•QA/QC completed checklist – March 31, 2018
•Interagency correspondence, if required - March 31, 2018
•Pre and during construction photo documentation - December 31, 2019 and 2020
•Red-lined drawings and/or as-builts - December 31, 2020

Additional Requirements: The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

a. Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.
b. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.
c. The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.
d. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
e. USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW.

The bridge (culvert) design and installation will meet flow carrying capacity required for a 100-year flood event as identified by specifications determined by National Oceanic and Atmospheric Administration (NOAA) Fisheries and the California Department of Fish and Wildlife (CDFW), for adult and juvenile salmonid fish passage. The project will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and criteria for fish passage as described in Volume II, Part IX, of the *California Salmonid Stream Habitat Restoration Manual*. The engineered plans for the bridge (culvert) installation shall be visually reviewed and authorized by NOAA Fisheries or California Department of Fish and Wildlife engineers prior to commencement of work.

All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*, Volume I, and Volume II Part XI and Part XII. The Grantee/landowner will maintain the new crossing, inspect the crossing in a timely manner and remove debris as necessary during the storm season.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (La Honda (3712233) OR Half Moon Bay (3712244) OR Woodside (3712243) OR Palo Alto (3712242) OR San Gregorio (3712234) OR Mindego Hill (3712232) OR Pigeon Point (3712224) OR Franklin Point (3712223) OR Big Basin (3712222))

Possible species within the La Honda quadrangle and surrounding quads for 725597 Alpine Creek Fish Passage Project, T07S R04W S26, San Mateo County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Alameda song sparrow *Melospiza melodia pusillula*	ABPBXA301S	None	None	G5T2?	S2S3	SSC
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
American peregrine falcon *Falco peregrinus anatum*	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
Anderson's manzanita *Arctostaphylos andersonii*	PDERI04030	None	None	G2	S2	1B.2
arcuate bush-mallow *Malacothamnus arcuatus*	PDMAL0Q0E0	None	None	G2Q	S2	1B.2
bald eagle *Haliaeetus leucocephalus*	ABNKC10010	Delisted	Endangered	G5	S3	FP
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S2	
Bay checkerspot butterfly *Euphydryas editha bayensis*	IILEPK4055	Threatened	None	G5T1	S1	
Ben Lomond spineflower *Chorizanthe pungens var. hartwegiana*	PDPGN040M1	Endangered	None	G2T1	S1	1B.1
black swift *Cypseloides niger*	ABNUA01010	None	None	G4	S2	SSC
Blasdale's bent grass *Agrostis blasdalei*	PMPOA04060	None	None	G2	S2	1B.2
Bonny Doon manzanita *Arctostaphylos silvicola*	PDERI041F0	None	None	G1	S1	1B.2
Butano Ridge cypress *Hesperocyparis abramsiana var. butanoensis*	PGCUP04082	Threatened	Endangered	G1T1	S1	1B.2
California black rail *Laterallus jamaicensis coturniculus*	ABNME03041	None	Threatened	G3G4T1	S1	FP
California giant salamander *Dicamptodon ensatus*	AAAAH01020	None	None	G3	S2S3	SSC
California least tern *Sternula antillarum browni*	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
California red-legged frog *Rana draytonii*	AAABH01022	Threatened	None	G2G3	S2S3	SSC
California Ridgway's rail *Rallus obsoletus obsoletus*	ABNME05016	Endangered	Endangered	G5T1	S1	FP

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
California tiger salamander *Ambystoma californiense*	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
chaparral ragwort *Senecio aphanactis*	PDAST8H060	None	None	G3	S2	2B.2
Choris' popcornflower *Plagiobothrys chorisianus var. chorisianus*	PDBOR0V061	None	None	G3T2Q	S2	1B.2
coastal marsh milk-vetch *Astragalus pycnostachyus var. pycnostachyus*	PDFAB0F7B2	None	None	G2T2	S2	1B.2
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
Congdon's tarplant *Centromadia parryi ssp. congdonii*	PDAST4R0P1	None	None	G3T2	S2	1B.1
Crotch bumble bee *Bombus crotchii*	IIHYM24480	None	None	G3G4	S1S2	
Crystal Springs fountain thistle *Cirsium fontinale var. fontinale*	PDAST2E161	Endangered	Endangered	G2T1	S1	1B.1
Crystal Springs lessingia *Lessingia arachnoidea*	PDAST5S0C0	None	None	G2	S2	1B.2
Dudley's lousewort *Pedicularis dudleyi*	PDSCR1K0D0	None	Rare	G2	S2	1B.2
Edgewood blind harvestman *Calicina minor*	ILARA13020	None	None	G1	S1	
Edgewood Park micro-blind harvestman *Microcina edgewoodensis*	ILARA47010	None	None	G1	S1	
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
fragrant fritillary *Fritillaria liliacea*	PMLIL0V0C0	None	None	G2	S2	1B.2
Franciscan onion *Allium peninsulare var. franciscanum*	PMLIL021R1	None	None	G5T1	S1	1B.2
Franciscan thistle *Cirsium andrewsii*	PDAST2E050	None	None	G3	S3	1B.2
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
Hoover's button-celery *Eryngium aristulatum var. hooveri*	PDAPI0Z043	None	None	G5T1	S1	1B.1
Jepson's coyote-thistle *Eryngium jepsonii*	PDAPI0Z130	None	None	G2	S2	1B.2
Kellman's bristle moss *Orthotrichum kellmanii*	NBMUS56190	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Kellogg's horkelia *Horkelia cuneata var. sericea*	PDROS0W043	None	None	G4T1?	S1?	1B.1
Kings Mountain manzanita *Arctostaphylos regismontana*	PDERI041C0	None	None	G2	S2	1B.2
legenere *Legenere limosa*	PDCAM0C010	None	None	G2	S2	1B.1
long-eared owl *Asio otus*	ABNSB13010	None	None	G5	S3?	SSC
longfin smelt *Spirinchus thaleichthys*	AFCHB03010	Candidate	Threatened	G5	S1	SSC
lost thistle *Cirsium praeteriens*	PDAST2E2B0	None	None	GX	SX	1A
marbled murrelet *Brachyramphus marmoratus*	ABNNN06010	Threatened	Endangered	G3G4	S1	
Marin western flax *Hesperolinon congestum*	PDLIN01060	Threatened	Threatened	G1	S1	1B.1
marsh microseris *Microseris paludosa*	PDAST6E0D0	None	None	G2	S2	1B.2
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
mimic tryonia (=California brackishwater snail) *Tryonia imitator*	IMGASJ7040	None	None	G2	S2	
minute pocket moss *Fissidens pauperculus*	NBMUS2W0U0	None	None	G3?	S2	1B.2
monarch - California overwintering population *Danaus plexippus pop. 1*	IILEPP2012	None	None	G4T2T3	S2S3	
Monterey pine *Pinus radiata*	PGPIN040V0	None	None	G1	S1	1B.1
Monterey Pine Forest *Monterey Pine Forest*	CTT83130CA	None	None	G1	S1.1	
Myrtle's silverspot butterfly *Speyeria zerene myrtleae*	IILEPJ608C	Endangered	None	G5T1	S1	
N. Central Coast Calif. Roach/Stickleback/Steelhead Stream *N. Central Coast Calif. Roach/Stickleback/Steelhead Stream*	CARA2633CA	None	None	GNR	SNR	
North Central Coast Drainage Sacramento Sucker/Roach River *North Central Coast Drainage Sacramento Sucker/Roach River*	CARA2623CA	None	None	GNR	SNR	
North Central Coast Short-Run Coho Stream *North Central Coast Short-Run Coho Stream*	CARA2632CA	None	None	GNR	SNR	
North Central Coast Steelhead/Sculpin Stream *North Central Coast Steelhead/Sculpin Stream*	CARA2637CA	None	None	GNR	SNR	

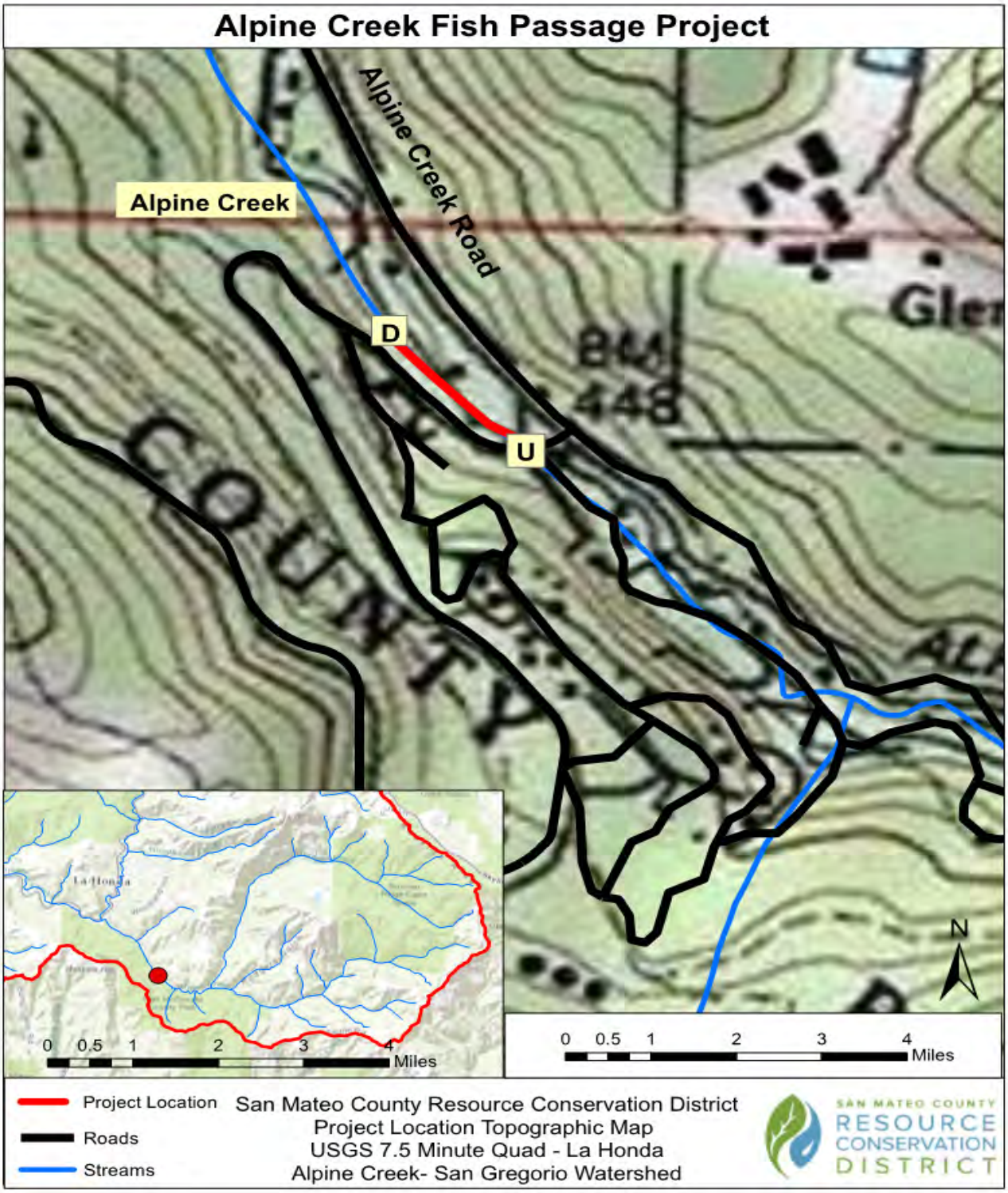
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Northern Coastal Salt Marsh *Northern Coastal Salt Marsh*	CTT52110CA	None	None	G3	S3.2	
Northern Interior Cypress Forest *Northern Interior Cypress Forest*	CTT83220CA	None	None	G2	S2.2	
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Ohlone manzanita *Arctostaphylos ohloneana*	PDERI042Y0	None	None	G1	S1	1B.1
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
perennial goldfields *Lasthenia californica ssp. macrantha*	PDAST5L0C5	None	None	G3T2	S2	1B.2
Point Reyes meadowfoam *Limnanthes douglasii ssp. sulphurea*	PDLIM02038	None	Endangered	G4T1	S1	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
Ricksecker's water scavenger beetle *Hydrochara ricksecker*i	IICOL5V010	None	None	G2?	S2?	
rose leptosiphon *Leptosiphon rosaceus*	PDPLM09180	None	None	G1	S1	1B.1
round-headed Chinese-houses *Collinsia corymbosa*	PDSCR0H060	None	None	G1	S1	1B.2
round-leaved filaree *California macrophylla*	PDGER01070	None	None	G4	S4	1B.2
Sacramento-San Joaquin Coastal Lagoon *Sacramento-San Joaquin Coastal Lagoon*	CALA1360CA	None	None	GNR	SNR	
saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	ABPBX1201A	None	None	G5T3	S3	SSC
salt-marsh harvest mouse *Reithrodontomys raviventris*	AMAFF02040	Endangered	Endangered	G1G2	S1S2	FP
salt-marsh wandering shrew *Sorex vagrans halicoetes*	AMABA01071	None	None	G5T1	S1	SSC
San Francisco campion *Silene verecunda ssp. verecunda*	PDCAR0U213	None	None	G5T1	S1	1B.2
San Francisco collinsia *Collinsia multicolor*	PDSCR0H0B0	None	None	G2	S2	1B.2
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	AMAFF08082	None	None	G5T2T3	S2S3	SSC
San Francisco gartersnake *Thamnophis sirtalis tetrataenia*	ARADB3613B	Endangered	Endangered	G5T2Q	S2	FP
San Francisco popcornflower *Plagiobothrys diffusus*	PDBOR0V080	None	Endangered	G1Q	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
San Mateo thorn-mint *Acanthomintha duttonii*	PDLAM01040	Endangered	Endangered	G1	S1	1B.1
San Mateo woolly sunflower *Eriophyllum latilobum*	PDAST3N060	Endangered	Endangered	G1	S1	1B.1
sand-loving wallflower *Erysimum ammophilum*	PDBRA16010	None	None	G2	S2	1B.2
Santa Clara red ribbons *Clarkia concinna ssp. automixa*	PDONA050A1	None	None	G5?T3	S3	4.3
Santa Cruz black salamander *Aneides niger*	AAAAD01070	None	None	G3	S3	SSC
Santa Cruz cypress *Hesperocyparis abramsiana var. abramsiana*	PGCUP04081	Threatened	Endangered	G1T1	S1	1B.2
Santa Cruz kangaroo rat *Dipodomys venustus venustus*	AMAFD03042	None	None	G4T1	S1	
Santa Cruz microseris *Stebbinsoseris decipiens*	PDAST6E050	None	None	G2	S2	1B.2
Santa Cruz Mountains beardtongue *Penstemon rattanii var. kleei*	PDSCR1L5B1	None	None	G4T2	S2	1B.2
Santa Cruz Mountains pussypaws *Calyptridium parryi var. hesseae*	PDPOR09052	None	None	G3G4T2	S2	1B.1
Schreiber's manzanita *Arctostaphylos glutinosa*	PDERI040G0	None	None	G1	S1	1B.2
Serpentine Bunchgrass *Serpentine Bunchgrass*	CTT42130CA	None	None	G2	S2.2	
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	PDASTE5011	None	None	G4T3	S2	1B.2
slender silver moss *Anomobryum julaceum*	NBMUS80010	None	None	G5?	S2	4.2
slender-leaved pondweed *Stuckenia filiformis ssp. alpina*	PMPOT03091	None	None	G5T5	S3	2B.2
steelhead - central California coast DPS *Oncorhynchus mykiss irideus*	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Toren's grimmia *Grimmia torenii*	NBMUS32330	None	None	G2	S2	1B.3
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
two-fork clover *Trifolium amoenum*	PDFAB40040	Endangered	None	G1	S1	1B.1
unsilvered fritillary *Speyeria adiaste adiaste*	IILEPJ6143	None	None	G1G2T1	S1	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
vaginulate grimmia *Grimmia vaginulata*	NBMUS32340	None	None	G2G3	S1	1B.1
Valley Needlegrass Grassland *Valley Needlegrass Grassland*	CTT42110CA	None	None	G3	S3.1	
Valley Oak Woodland *Valley Oak Woodland*	CTT71130CA	None	None	G3	S2.1	
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western leatherwood *Dirca occidentalis*	PDTHY03010	None	None	G2	S2	1B.2
western pearlshell *Margaritifera falcata*	IMBIV27020	None	None	G4G5	S1S2	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
white-rayed pentachaeta *Pentachaeta bellidiflora*	PDAST6X030	Endangered	Endangered	G1	S1	1B.1
woodland woollythreads *Monolopia gracilens*	PDAST6G010	None	None	G3	S3	1B.2

Record Count: 112

Project Location Topographic Map



Fish Passage Improvement at Crossing 9, Quiota Creek | 2017

Introduction:

1. Cachuma Operation and Maintenance Board (COMB) will implement the Quiota Creek Fish Passage Improvement at Crossing 9. The purpose of the project is replace an existing Arizona low-flow crossing. This effort will continue the long-term effort and sequence of projects that will remove all remaining man-made migration barriers within Quiota Creek and throughout the Santa Ynez River basin in Santa Barbara County.

   This project will allow O. mykiss to gain upstream access to the perennial portions of Quiota Creek as spring and summer flows diminish. In its current state, Crossing 9 acts as a barrier to fish at low flows and any O. mykiss found below the crossing are subject to stranding and desiccation in the summer months, particularly in years with below average rainfall (such as 2012-2016). Installing the proposed bottomless arched culvert will allow fish passage for juvenile and adult steelhead/rainbow trout during all flows, which is even more critical during drought years when O. mykiss need to seek refuge in perennial habitat further upstream.

2. The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

3. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*, Volume I, and Volume II Part XI and Part XII. The Grantee/landowner will maintain the new crossing, inspect the crossing in a timely manner and remove debris as necessary during the storm season.

Objective(s):

1. Removing the impediment at Crossing 9 on Quiota Creek and replacing it with a free span bridge will provide access to 2.73 miles of high quality upstream habitat for southern steelhead (Oncorhynchus mykiss) spawning, rearing and over-summering. Despite a prolonged period of below average rainfall (Water Year 2012 through 2016), the upper reaches of Quiota Creek (above Crossing 9) continue to hold water and O. mykiss, showing its resiliency in maintaining flow and a population of O. mykiss.
2. Addresses task “SYR-SCS-3.1 - Develop and implement plan to remove or modify fish passage barriers within the watershed” from the *Southern California Steelhead Recovery Plan*

Project Description:

Location: The Quiota Creek watershed is located in the lower half of the Santa Ynez River watershed, 8.4 stream miles below Bradbury Dam (Lake Cachuma) (Figures 1 and 2 in Project Location Topographic Map) and 39.6 miles inland from the Pacific Ocean and east of the cities of Lompoc and Buellton. Quiota Creek enters the Santa Ynez River near the town of Santa Ynez within the County of Santa Barbara. Crossing 9 is located 3.30 miles upstream of the Santa Ynez River.

The proposed work in the creek will extend approximately 100 feet upstream and 100 feet downstream of the South Refugio Road crossing. The proposed roadwork extends approximately 200 feet east and 150 feet west of the stream crossing. The project extends from the upstream County Right-of-Way to downstream of the County Right-of-Way and is bounded by privately owned parcels. COMB has actively collaborated with the landowners and will continue to work with each landowner with regard to temporary construction easements and impacts during the implementation of this project.

Quiota Creek Crossing #9 - 34.55477000 : -120.08171000 - location of ford crossing removal and installation of bottomless-arch culvert. The total length of stream that will be treated is 0.04 miles.

Project Set Up:
COMB will be implementing the Quiota Creek Crossing 9 Project. This includes all required permitting, project management (Timothy H. Robinson), and contract administration (preparation of bid documents, advertising the construction project, awarding the contract, conducting the prebid meeting as well as the pre-construction meeting). COMB has on staff two qualified biologists (Scott J. Volan and Scott B. Engblom) who will be conducting surveys for O. mykiss and red-legged frog prior to any construction activities and conduct pre-project safety meetings. COMB is also responsible for erosion control at the project site, and assisting in the installation of the dewatering system (if needed). Biologists will be on site daily to sweep the entire construction site for any sensitive species and conduct daily water quality monitoring if the stream is flowing and bypass system is necessary. Towards the end of the project, COMB will be responsible for planting and maintaining all mitigation trees.

The HDR Fisheries Design Center is responsible for the design and engineering of the Quiota Creek Crossing 9 Project. Specifically, Michael Garello (Civil Engineer, PE) is the lead designer for this project. HDR will conduct site visits for design, engineering oversight and regular communication with the project manager, contractor and subcontractors.

The hired contractor (awarded by COMB through a competitive bidding process, to be named later) will be responsible for the bulk of the on-the-ground construction activities. The hired contractor will be responsible for the mobilization of equipment, demolition of the existing concrete crossing and culvert, and the installation of the new 55-foot bottomless-arched culvert. The contractor will install and operate the dewatering system

(if needed). The contractor will be responsible for site excavation and prep, exporting unsuitable material, preparing and constructing the Cast-in-Place (CIP) footings for the bridge, building the instream rock weirs, site drainage, and installing the new bridge. Once the bridge is installed, the contractor will complete the road embankment fill, compaction, and grading. The contractor will be preparing, grading, and installing the road base pavement for the road. The contractor will be installing the rock riffle, ESM, backfill, and RSP within and around the stream corridor. The contractor will be responsible for the finished grade, and installation of the cattle exclusion fencing (pickets). Finally, the contractor will be responsible for site clean-up and demobilization, the required County signs and delineators, bridge graffiti coating, and the protection of existing facilities.

The awarded construction contractor will subcontract the following job duties:
- Materials testing
- Hydromulch/hydroseed application
- Guardrail and bridge rail fabrication and installation
- Ranch fence installation

Materials:

If water is present at Crossing 9 during construction, stream bypass and dewatering systems will be installed if necessary, including sandbags, straw bales, visqueen, and piping/culvert, sump pumps, screens, and piping material. Erosion and sedimentation matierals will include silt fencing and straw bales.

Bridge Footing preparation will include imported foundation (float) rock and geotextile fabric. Concrete for cast-in-place (CIP) concrete forms will be delivered via truck and a concrete pump truck with an 80-foot boom to reach both footings. The 15 pieces of the 55-foot prefabricated bridge will be constructed at an off-site facility and brought in via large semi-trucks to the project site. A large crane and boom system will be used at the project site to pick from the semi-trucks and place each bridge segment. The vertical profile of Quiota Creek will be maintained with buried rock weir grade control structures, using rocks of 44-inches to 54-inches, approximately 600 tons of material.

Compactable soil (fill) to backfill both road approaches to the new bridge, and areas behind the wing-walls; an excavator, skid steer loader, and vibratory compacters will be used to place and compact the soil.

Crushed road base will be will be delivered via haul truck to the project site and installed to form the road approaches and across the new bridge. A skid steer loader and vibratory compactor will be used to transfer, grade and compact the new road base material.

Geotextile fabric will be placed to line road drainage areas. Quarry spalls (cobble sized rock) will be imported via haul truck and placed on top of the geotextile to armor the drainages.

Once the road base is installed, graded, and compacted, asphalt will be spread on the bridge approach roads and over the new bridge. Approximately 370 linear feet of guard and bridge rail will be fabricated off-site and then imported to site. The rails will be installed by hand and using a post driver. Anti-graffiti coating will be applied to the new bridge—approximately 22 gallons of concrete sealer (and masonry stain) and 22 gallons of anti-graffiti coating will be used on the new bridge. A power washer, airless sprayer, and 12 feet of scaffolding will be used to clean the bridge and apply the coating.

Approximately 515 tons of ESM will be delivered to the project site. This material will be placed and spread with a large excavator and watered in with gravels, sands and fines. Approximately 660 tons of RSP will be delivered and placed around the bridge foundations and in front of all wingwalls to prevent lateral scour under the bridge and toe scour along the channel slopes to maintain bank stability. Geotextile fabric will be placed under the RSP. Soil will be placed (within the interstitial spaces of the RSP) to facilitate willow stakes and hydraulic roughness. RSP will be imported to the project site and placed with a large excavator.

Towards the end of the project, trees will be planted at the appropriate mitigation rate, commensurate with the number of trees removed or damaged as a result of the project. Only local native trees will be used for revegetation. In addition, hydro-mulch and hydro-seed with a native seed mix approved by CDFW will be broadcast throughout the project footprint.

Cattle exclusion fencing is necessary to keep the herds separate on either side of the creek. A flexible system of picket fence will be installed underneath the bridge. Lumber, wire rope, and hardware will be brought into the project site to build the needed cattle exclusionary fencing. A newly aligned fence line will then be installed to secure the cattle in relation to the new bridge. The contractor will install the pickets and the replacement fencing will be installed by a subcontractor (to be named later).

Once the bridge, road and guardrails are installed, delineators and guardrail reflectors will be placed on both sides of the road. In addition, the County required signage and delineators will be installed as specific by County code.

Tasks:

1. Project management: COMB will conduct and coordinate all aspects of pre-project planning, administration, preparing bid documents, advertising, awarding the contract, running the prebid meeting, project oversight, billing and grant administration and reimbursements.

2. Pre-construction meeting: All landowners will be invited to discuss the impending project, expectations, access needs, timeline and meet the contractor.

3. Permitting: Permits include Army Corps of Engineers Permit (ACOE), CDFW 1600 (LSA), S.B. County Encroachment Permit, and SWRCB 401 Certification. All permits will be submitted in the spring of 2018 and are expected to be complete (approved and signed) several months before the start of construction.

4. Stormwater Pollution Prevention Plan and Traffic Control Plan: These plans will be completed by the contractor. All plans will be approved and signed by the necessary parties before the start of construction.

5. Dewatering, Erosion Control, Fish Removal, Road Access, Maintenance and Monitoring, and Re-vegetation Plans: These will be reviewed and approved through the design approval, by CDFW and NMFS.

6. Fish and California red-legged frog rescue and relocation: Although it is unlikely that fish will be present prior to and during construction due to the prolonged drought, appropriate regulatory agencies (CDFW, NMFS, and USFWS) will be notified and a rescue/relocation operation will commence as recommended by the agencies if fish are present. COMB biologists will also be conducting pre-project protocol surveys (and subsequent relocation if present within the footprint) for red-legged frogs and other sensitive species and will provide a report to USFWS.

7. Stream bypass/dewatering system: Prior to any on-the-ground construction within the stream channel, the contractor and COMB personnel will install the stream bypass system in the event that water is present within the project site. If a stream bypass is needed, careful consideration will be made to allow all surface water to be reconnected with the stream downstream of the project footprint.

8. Erosion Control: COMB will lay out all of the erosion control measures prior to on-the-ground-construction and will maintain it (with assistance from the contractor) throughout the construction.

9. Demolition: The contractor will be using heavy equipment (excavator, jackhammer, and haul truck) to demo and remove the existing crossing and road approaches.

10. Excavation: The contractor will be using heavy equipment to excavate, stockpile, separate and prepare the area for the installation of the bridge and wingwall footings and reuse existing native materials.

11. Export material: The contractor will haul out all unwanted material created from excavation of the project site and dispose in an approved manner.

12. Footing preparation: The bridge footings will be prepared by the contractor by laying out geotextile fabric and putting foundation rock below the footings. The contractor will build the footing forms on top of the foundation rock.

13. CIP footings: The contractor will prepare cast-in-place concrete forms and reinforcement. The concrete will be delivered to the site and then pumped to each foundation.

14. Installation of arch bridge and wing walls: The contractor, with the help of a crane truck and crew, will pick each individual piece (15 total) of the 55-foot span prefabricated bridge arch system off a semi-truck and construct the bridge.

15. Road embankment fill, compaction, and grading: The contractor will use various pieces of heavy equipment to move, place and compact soil fill, mainly to construct the road approaches and tie in all other elements of the project up to the designed grade.

16. Installation of Engineered Streambed Material (ESM): The contractor will use an excavator to move and place ESM within the stream channel to create the design stream grade/profile throughout the project site. Native stream bed materials will be used for the ESM.

17. Placement of Rock Slope Protection (RSP): The contractor will place geotextile fabric (by hand) along the banks of the project site that are in need of stabilization and use an excavator to move and place RSP on top of the geotextile. Voids between placed rock will be filled with native cobbles and dirt to allow for revegetation.

18. Site drainage: The contractor will use geotextile fabric and quarry spalls to create the appropriate drainage around the project site.

19. Asphalt road: The contractor will place asphalt along both road approaches and over the bridge.

20. Anti-graffiti treatment: The contractor will clean all exposed areas of the bridge and wingwalls with a power washer, and then use an airless sprayer to apply concrete sealer, masonry stain, and anti-graffiti coating.

21. Installation of Bridge and road guardrails: A subcontractor (to be named later) will install the required guardrails for the road and the bridge once the bridge and wingwalls are in place. Sections of guardrail will be delivered by truck, lifted and installed with appropriate machinery.

22. Replace existing fence: A subcontractor (to be named later) will replace all damaged/removed sections of existing fence line along South Refugio Road.

23. Cattle exclusion fencing: The contractor will construct and install a picket fence underneath the new bridge to prevent cattle from moving into adjacent properties.

24. Revegetation: COMB will acquire native trees at the required mitigation rate (depending on how many trees are damaged/removed) during the construction of the new bridge and plant them within or in the vicinity of the project area. A subcontractor (to be named later) will spray hydromulch and CDFW approved native seed on all disturbed areas of the project site.

25. County road safety requirements: The contractor will install all required signage and reflectors on the bridge and road guardrails.

26. Protection of existing facilities: The contractor will coordinate with truck drivers and install measures to protect storm water facilities and private property existing within the road right-of-way during all aspects of construction, specifically during Bridge delivery and installation.

27. Site cleanup: The contractor will be cleaning up the entire project site and will leave no traces of construction material, trash, and rubbish. Material will be moved offsite and disposed at an approved facility.

28. Invoice: Invoices will be submitted by COMB to the CDFW FRGP grant program during construction with the final invoice in January, shortly after the completion of the project.

29. Final Report: A final report will be submitted by COMB to the CDFW FRGP grant program. The report will summarize the construction and post-monitoring data to verify that the project was successful in addressing the known limiting factors and identified threats.

Deliverables:

(Tasks 1-5) - Pre-project checklist items (including contract management, design, meetings, and required permits and plans). The bidding and eventual hiring of the contractor will be conducted through a competitive bidding process with the ultimate goal of hiring a licensed, experienced, competent, and efficient construction crew.

(Tasks 6-8) - COMB biologists will be on site daily to make sure all protection measures are in place prior to the commencement of work each day. Erosion control measures will be installed and maintained throughout the project area prior to construction activities to prevent sedimentation and impact to local wildlife and sensitive species, adjacent properties, land, and water.

(Tasks 9-19) - This portion of the task list will allow fish passage to designated critical spawning and rearing habitat upstream by removing the Arizona crossing and replacing it with a prefabricated 55-foot bottomlessarched culvert (bridge) that will provide adult and

juvenile steelhead passage across the full range of identified fish passage flows (1-148 cfs). The new load capacity of the Bridge will be designed to the HL-93 loading factor.

(Tasks 20-21) - Once the new bridge has been installed, the contractor will focus on refurbishing and redesigning the project footprint along Refugio Road to meet County standards and requirements. All safety standards, signage, and road/bridge rails will be constructed. The exposed concrete of the 55-foot bottomless-arched culvert will be treated with concrete sealer, masonry stain, and treated with anti-graffiti coating.

(Tasks 22-23) - Once the bridge is installed, the contractor will replace all damaged/removed sections of the fence lines with new fencing. The contractor will also construct and install a wooden picket fence underneath the new bridge to prevent movement between adjacent properties.

(Task 24) – Any removed trees will be replaced at or above the required mitigation rate, and are maintained for years after the project is finished to ensure a greater than 80% survival rate. Hydromulch and hydro-seed will be spread throughout all disturbed areas of the project site.

(Tasks 25-27) - The final elements include road delineators, signs, site cleanup, and the protection of existing facilities.

(Task 28) - Invoices will be submitted by COMB to the CDFW FRGP grant program during construction with the final invoice in January.

(Task 29) - A final report will be submitted by COMB to the CDFW FRGP grant program.

Additional Deliverables:

1. Post-project monitoring to evaluate the structural and biological effectiveness of the project.
2. Conducting public outreach through a) conference presentations highlighting the successes of the Crossing 9 Project and b) local presentations to the general public and to further promote recovery efforts.
3. Annual performance evaluation of the structural stability and fish passage conditions as well as the success of the re-vegetation effort that will be submitted to CDFW and NMFS.

Timelines:

The proposed project is anticipated to take one year to prepare and construct within a 2 year time-frame (pending no permitting or final decision review delays). The 100% design approval is expected by the summer of 2018. Permits will be submitted in the spring of 2018 and will be completed by the summer of 2018.

Construction, restoration, and pre-/post-construction monitoring will begin in the late summer of 2018 and end in December of that year. If there are any delays the project will then be constructed in the fall of 2019.

The timeline below is linked to the tasks (task list section above), with estimated completion dates in parenthesis.
1. Project management, contract administration and prebid meeting: (February-August)
2. Pre-construction landowner meeting: (August-September)
3. Permitting (Army Corps of Engineers Permit (ACOE), CDFW 1600 (LSA), S.B. County Encroachment Permit, and SWRCB 401 Certification): (February-May)
4. Stormwater Pollution Prevention Plan and Traffic Control Plan: (June-August)
5. Dewatering, Erosion Control, Fish Removal, Road Access, Maintenance and Monitoring, and Re-vegetation Plans: (September)
6. Fish and California red-legged frog rescue and relocation: (September-December)
7. Stream bypass/dewatering system: (September-December)
8. Erosion control: (September-December)
9. Demolition: (September-December)
10. Excavation: (September-December)
11. Export material: (September-December)
12. Footing preparation: (September-December)
13. CIP footings: (September-December)
14. Installation of arch bridge and wing walls: (September-December)
15. Road embankment fill, compaction, and grading: (September-December)
16. Installation of Engineered Streambed Material (ESM): (September-December)
17. Placement of Rock Slope Protection (RSP): (September-December)
18. Site drainage: (September-December)
19. Asphalt road: (September-December)
20. Anti-graffiti treatment: (September-December)
21. Installation of bridge and road guardrails: (September-December)
22. Replace existing fence: (November-December)
23. Cattle exclusion fencing: (November-December)
24. Revegetation: (November-December)
25. County road safety requirements: (November-December)
26. Protection of existing facilities: (September-December)
27. Site cleanup: (November-December)
28. Final Invoice: (December-January)
29. Final Report: (January-February)

Additional Requirements:

The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of

salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

a. Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.

b. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

c. The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.

d. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

e. USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Santa Ynez (3412051) OR Zaca Creek (3412062) OR Los Olivos (3412061) OR Figueroa Mtn. (3411968) OR Solvang (3412052) OR Lake Cachuma (3411958) OR Gaviota (3412042) OR Dos Pueblos Canyon (3411948) OR Tajiguas (3412041))

Possible species within Santa Ynez Quad and surrounding quads for 725521 Fish Passage Improvement at Crossing 9, Quiota Creek, T06N R30W S31, Santa Barbara County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abrams' oxytheca *Acanthoscyphus parishii var. abramsii*	PDPGN0J041	None	None	G4?T1T2	S1S2	1B.2
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
bald eagle *Haliaeetus leucocephalus*	ABNKC10010	Delisted	Endangered	G5	S3	FP
black-flowered figwort *Scrophularia atrata*	PDSCR1S010	None	None	G2?	S2?	1B.2
California red-legged frog *Rana draytonii*	AAABH01022	Threatened	None	G2G3	S2S3	SSC
California tiger salamander *Ambystoma californiense*	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
chaparral ragwort *Senecio aphanactis*	PDAST8H060	None	None	G3	S2	2B.2
coast horned lizard *Phrynosoma blainvillii*	ARACF12100	None	None	G3G4	S3S4	SSC
Contra Costa goldfields *Lasthenia conjugens*	PDAST5L040	Endangered	None	G1	S1	1B.1
Cooper's hawk *Accipiter cooperii*	ABNKC12040	None	None	G5	S4	WL
Coulter's goldfields *Lasthenia glabrata ssp. coulteri*	PDAST5L0A1	None	None	G4T2	S2	1B.1
Crotch bumble bee *Bombus crotchii*	IIHYM24480	None	None	G3G4	S1S2	
Davidson's saltscale *Atriplex serenana var. davidsonii*	PDCHE041T1	None	None	G5T1	S1	1B.2
ferruginous hawk *Buteo regalis*	ABNKC19120	None	None	G4	S3S4	WL
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Gaviota tarplant *Deinandra increscens ssp. villosa*	PDAST4R0U3	Endangered	Endangered	G4G5T2	S2	1B.1
globose dune beetle *Coelus globosus*	IICOL4A010	None	None	G1G2	S1S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Hoover's bent grass *Agrostis hooveri*	PMPOA040M0	None	None	G2	S2	1B.2
La Purisima manzanita *Arctostaphylos purissima*	PDERI041A0	None	None	G2	S2	1B.1
late-flowered mariposa-lily *Calochortus fimbriatus*	PMLIL0D1J2	None	None	G3	S3	1B.3
least Bell's vireo *Vireo bellii pusillus*	ABPBW01114	Endangered	Endangered	G5T2	S2	
mesa horkelia *Horkelia cuneata var. puberula*	PDROS0W045	None	None	G4T1	S1	1B.1
Miles' milk-vetch *Astragalus didymocarpus var. milesianus*	PDFAB0F2X3	None	None	G5T2	S2	1B.2
monarch - California overwintering population *Danaus plexippus pop. 1*	IILEPP2012	None	None	G4T2T3	S2S3	
northern California legless lizard *Anniella pulchra*	ARACC01020	None	None	G3	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Ojai fritillary *Fritillaria ojaiensis*	PMLIL0V0N0	None	None	G2?	S2?	1B.2
pale-yellow layia *Layia heterotricha*	PDAST5N070	None	None	G2	S2	1B.1
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
Palmer's mariposa-lily *Calochortus palmeri var. palmeri*	PMLIL0D122	None	None	G3T2	S2	1B.2
Refugio manzanita *Arctostaphylos refugioensis*	PDERI041B0	None	None	G3	S3	1B.2
round-leaved filaree *California macrophylla*	PDGER01070	None	None	G4	S4	1B.2
San Diego desert woodrat *Neotoma lepida intermedia*	AMAFF08041	None	None	G5T3T4	S3S4	SSC
sandy beach tiger beetle *Cicindela hirticollis gravida*	IICOL02101	None	None	G5T2	S2	
Santa Barbara honeysuckle *Lonicera subspicata var. subspicata*	PDCPR030R3	None	None	G5T2?	S2?	1B.2
Santa Barbara jewelflower *Caulanthus amplexicaulis var. barbarae*	PDBRA0M012	None	None	G4T2	S2	1B.1
Santa Ynez false lupine *Thermopsis macrophylla*	PDFAB3Z0E0	None	Rare	G1	S1	1B.3
seaside bird's-beak *Cordylanthus rigidus ssp. littoralis*	PDSCR0J0P2	None	Endangered	G5T2	S2	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Sonoran maiden fern *Thelypteris puberula var. sonorensis*	PPTHE05192	None	None	G5T3	S2	2B.2
southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	ABPBX91091	None	None	G5T3	S3	WL
Southern California Steelhead Stream *Southern California Steelhead Stream*	CARE2310CA	None	None	GNR	SNR	
Southern Coast Live Oak Riparian Forest *Southern Coast Live Oak Riparian Forest*	CTT61310CA	None	None	G4	S4	
Southern Cottonwood Willow Riparian Forest *Southern Cottonwood Willow Riparian Forest*	CTT61330CA	None	None	G3	S3.2	
southern curly-leaved monardella *Monardella sinuata ssp. sinuata*	PDLAM18161	None	None	G3T2	S2	1B.2
southern tarplant *Centromadia parryi ssp. australis*	PDAST4R0P4	None	None	G3T2	S2	1B.1
Southern Vernal Pool *Southern Vernal Pool*	CTT44300CA	None	None	GNR	SNR	
Southern Willow Scrub *Southern Willow Scrub*	CTT63320CA	None	None	G3	S2.1	
southwestern willow flycatcher *Empidonax traillii extimus*	ABPAE33043	Endangered	Endangered	G5T2	S1	
steelhead - southern California DPS *Oncorhynchus mykiss irideus*	AFCHA0209J	Endangered	None	G5T1Q	S1	
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
two-striped gartersnake *Thamnophis hammondii*	ARADB36160	None	None	G4	S3S4	SSC
umbrella larkspur *Delphinium umbraculorum*	PDRAN0B1W0	None	None	G3	S3	1B.3
Valley Needlegrass Grassland *Valley Needlegrass Grassland*	CTT42110CA	None	None	G3	S3.1	
vernal pool fairy shrimp *Branchinecta lynchi*	ICBRA03030	Threatened	None	G3	S3	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
western spadefoot *Spea hammondii*	AAABF02020	None	None	G3	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Elanus leucurus						
white-veined monardella	PDLAM180A3	None	None	G4T3	S3	1B.3
Monardella hypoleuca ssp. hypoleuca						

Record Count: 61

Project Location Topographic Map

Project Location Watershed Map

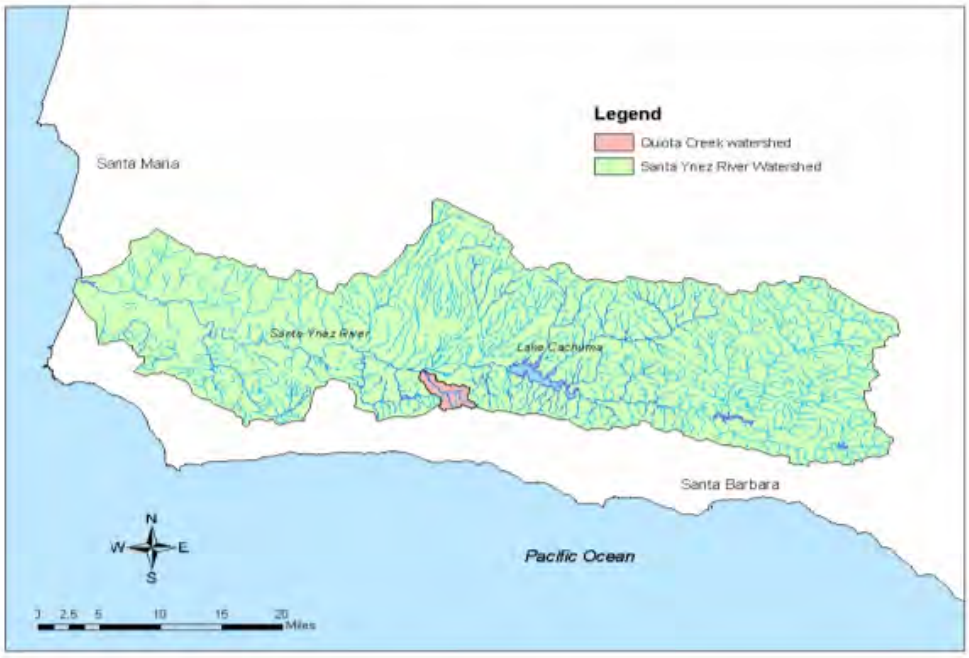


Figure 1a: Santa Ynez River Watershed (green) showing the Quiota Creek Watershed (pink).

Introduction:
The Northwest California Resource Conservation and Development Council (NCRCD) will implement the Little Springs Migration Barrier Removal Project. The current culvert is undersized, creating velocity restrictions and limiting fish passage upstream. An approved crossing replacement design was completed through Fisheries Restoration Grant Program Grant P1510514.

Improving fish passage to cold water rearing habitats will address limiting factors identified for the recovery of Coho Salmon in the Shasta River Watershed. The upgrade of this stream crossing will allow fish passage for juvenile Coho Salmon to 1.4 miles of cold water rearing habitat.

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Parts XII (Flosi et al 2002).

Objective(s):
This project's objective is to improve fish passage on the East Louie Road crossing at Little Springs Creek. The 36" corrugated metal pipe crossing is preventing upstream migration for juvenile Coho Salmon to cold water rearing habitat.

An assessment and design project was completed for this crossing. The assessment identified the crossing as a velocity barrier for juvenile salmon at some flows. With the installation of a channel spanning, multi-plate structure, stream velocities will be reduced allowing unimpeded fish passage.

Project Description:
This project will upgrade an existing road crossing to allow fish passage for juvenile salmonids upstream of East Louie Road to provide access to cold water rearing habitat.

Little Springs Creek is 1.4 miles long, emanating from several cold water springs, and is a tributary to Big Springs Creek and Shasta River. The culvert at Louie Road is 0.23 miles upstream of the confluence with Big Springs Creek.

Location:
The project is located near the town of Grenada in Siskiyou County, California on Little Springs Creek. The subject crossing on East Louie Road is at 41.59335500 : 122.43153300 and is approximately 0.3 miles from the confluence with Big Springs Creek and 0.75 miles from mainstem Shasta River.

Project Set Up:
NCRCD Director will provide project oversight and grant management. They will participate in project tracking, invoicing, permitting and reporting.

NCRCD Project Coordinator will manage subcontractors, and assist with project tracking, invoicing and reporting. They will oversee the de-watering plan and storm-water plan. They will be responsible for overseeing layout and construction as well as the post project monitoring.

NCRD Accountant will track the project budget and assist with invoicing.

NCRD Office Manager will assist with invoicing, procurement of materials and reporting.

Engineering Subcontractor will be responsible for site layout and grade staking, implementation oversight, coordination, and creating as-built plans.

Environmental Service Subcontractor will be responsible for implementing the water diversion plan and fish exclusion and relocation plan.

Heavy Equipment Subcontractor will be responsible for the following: Mobilization of equipment, site preparation, de-watering activities, excavation, concrete support installation, culvert removal/installation and seeding and mulching of disturbed areas.

Materials:

Construction Supplies will include the following: Contech prefabricated, multi-plate, galvanized, aluminum, arch culvert, lumber, rebar steel, concrete, base rock (gravel), rock (half ton boulders), stakes, flagging, paint, and signage.

De-watering and erosion control materials will include the following: straw bales and waddles, silt fence, tarps, plastic sheeting, sandbags, wire mesh, rebar and bailing wire.

Revegetation materials include native grass seed, Cottonwood and willow trees.

Tasks:

Implement the Little Springs Migration Barrier Removal Project consistent with 100% design plans including the installation of a multi-plate crossing structure and grade controls sufficient to maintain existing stream grade by completing the following tasks:

Task 1 – Subcontracting: Compile the bid packages and select winning bids for the subcontractors.

Task 2 – Project Management: Perform project management and subcontractor administration functions; prepare invoices, progress, quarterly, annual and final reports. Prepare and submit permit applications. Perform project documentation and grant administration, coordination among contractors, landowner, agencies, and other stakeholders.

Task 3 - Site Preparation: Prepare sites for implementation by coordinating construction activities and performing grade and location staking per design plans for construction.

Task 4 - Heavy Equipment Mobilization: Transport all equipment to and from the project site with the use of a lowboy flatbed truck and trailer(s).

Task 5 - Dewatering and Fish Exclusion: Implement the de-watering and fish exclusion activities per 100% design plans. Install sump hole and coffer dam upstream of the project reach to capture and divert all surface flow around the work site and return flow to the creek downstream of the project. Construct fish exclusion screens per permit requirements at the upstream and downstream end of the project reach and remove all fish and aquatic vertebrates from the reach. Maintain diversion pumps and exclusion fencing. Perform water quality monitoring.

Task 6 - Road demolition and Excavation: Excavate and remove the existing roadway and crossing structure with the use of excavator, backhoe and dump truck to reach the design grade and depth per 100% plans. This includes surveying elevations and disposal of asphalt and culvert.

Task 7: Crossing Structure Installation: Accept delivery of the culvert and store on site as needed. Construct the multi-plate structure in situ or adjacent to the crossing site. Form and pour the concrete footings. Remove forms, secure the structure to the forms and backfill the culvert per design specifications and road grade requirements. Accept delivery of, assemble and install the metal beam guard rails.

Task 8 – Streambed Installation: Purchase, accept delivery of, and install streambed material (small cobbles, gravels and fines) and inlet grade controls per 100% design plans. This will include the water jetting of fine substrate material.

Task 9 – Paving: Grade the road with base material, lay asphalt and paint stripe the road.

Task 10 – Erosion Control: Purchase and install straw waddles, silt fencing, straw bales and plastic tarp on and around the spoils pile locations and any exposed ground to prevent air quality issues due to wind and or sediment delivery due to precipitation.

Task 11 – Revegetation: Purchase and plant native grass seed and tress to revegetate any bare soil related to construction activities.

Task 12 – Project Monitoring: Complete survey of as-built conditions and surveys to ensure the crossing is providing passage depths and velocities during migrating flows.

Task 13 – Reporting: Complete a Final Report containing the following information:

- Overview of the project
- Final Budget
- Location Map

- Performance Measures Including:
  - Overall stream length treated (miles, count one side of stream only)
  - Length of aquatic habitat disturbed (feet)
  - Area (footprint) of instream features installed within bankfull channel (square feet)
  - Fish passage funding (dollars)
  - Total blockages/impediments/barriers removed/altered (number)
  - Total length of stream made accessible by removing blockages (miles)
  - Barriers/Impediments/Barriers Impeding Passage (number)
  - Site name (text)
  - Culverts installed or improved (number)
  - Length of stream made accessible upstream of the culvert (miles)
- Photos

Deliverables:

Task 1: Subcontract agreements.
Task 2: Notice to Proceed, Final Landowner Access Agreement that specifies CDFW access to the property, Project permits, and Quarterly, annual and final report(s).
Tasks 3-11: An upgraded crossing structure and stream channel that meets design specifications and fish passage criteria.
Tasks 12-13: Post project survey, as-built design plans and monitoring report

Timelines:

Task 1 – Subcontracting: June 2018
Task 2 – Project Management: June 2018 to project completion December 2019
Task 3 - Project Site Preparation: July 2018
Tasks 4-5 – Equipment Mobilization, Dewatering and Fish Exclusion: August 2018
Tasks 6-9 – Stream crossing upgrade: September-October 2018
Task 10 – Erosion Control: October-November 2018
Task 11 – Re-vegetation: December 2018
Task 12 – Project Monitoring: January – April 2019
Task 13 – Final Reporting: October 2019

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a “notice to proceed” letter has been received from the Grantor Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of Grantor.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads,

tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other native aquatic species from the project area. If the project requires dewatering of the site and the relocation of listed aquatic species, the Grantee will implement the following measures to minimize harm and mortality to listed species as well as other native aquatic species:

- Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year.

- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the Grantor Project Manager and pursuant to conditions in the USACE Regional General Permit, NMFS Biological Opinion, and project's Lake and Streambed Alteration Agreement (1600 permit).

- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

- Only qualified fisheries biologist that are approved by USFWS and permitted by CDFW under a California Endangered Species Act (CESA) Memorandum of Understanding (MOU) shall handle and relocate CESA listed species.

- All electrofishing shall be performed by a qualified fisheries biologist under the supervision of CDFW and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

- USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the Grantor Project Manager on a form provided by Grantor.

The stream crossing design and installation will meet flow carrying capacity required for a 100-year flood event as identified by specifications determined by National Oceanic and Atmospheric Administration (NOAA) Fisheries and the California Department of Fish and Wildlife (CDFW), for adult and juvenile salmonid fish passage. The project will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and criteria for fish passage as described in Volume II, Part IX, of the *California Salmonid Stream Habitat Restoration Manual*. The engineered plans for the bridge (culvert) installation shall be visually reviewed and authorized by NOAA Fisheries or California Department of Fish and Wildlife engineers prior to commencement of work. Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Manager. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*, Volume I, and Volume II Part XI and Part XII. The Grantee/landowner will maintain the new crossing, inspect the crossing in a timely manner and remove debris as necessary during the storm season.

Final structure design and placement will be determined by field consultation between the Grantee and the CDFW Grant Manager. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Lake Shastina (4112254) OR Montague (4112265) OR Little Shasta (4112264) OR Solomons Temple (4112263) OR Gazelle (4112255) OR Juniper Flat (4112253) OR China Mtn. (4112245) OR Weed (4112244) OR Hotlum (4112243))

Possible species within the Lake Shastina quadrangle and surrounding quads for 725552 Little Springs Migration Barrier Removal, T43N R05W S9, Siskiyou County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
alkali hymenoxys *Hymenoxys lemmonii*	PDAST530C0	None	None	G4?	S2S3	2B.2
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
Baker's globe mallow *Iliamna bakeri*	PDMAL0K010	None	None	G4	S3	4.2
bald eagle *Haliaeetus leucocephalus*	ABNKC10010	Delisted	Endangered	G5	S3	FP
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S2	
blue alpine phacelia *Phacelia sericea var. ciliosa*	PDHYD0C4A1	None	None	G5T4T5	S3	2B.3
brittle prickly-pear *Opuntia fragilis*	PDCAC0D0H0	None	None	G4G5	S1	2B.1
California gull *Larus californicus*	ABNNM03110	None	None	G5	S4	WL
Canadian buffalo-berry *Shepherdia canadensis*	PDELG03020	None	None	G5	S1	2B.1
Cascade stonecrop *Sedum divergens*	PDCRA0A0B0	None	None	G5?	S2	2B.3
Cascades frog *Rana cascadae*	AAABH01060	None	None	G3G4	S3	SSC
coast fawn lily *Erythronium revolutum*	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Cooke's phacelia *Phacelia cookei*	PDHYD0C0Y0	None	None	G1	S1	1B.1
Crotch bumble bee *Bombus crotchii*	IIHYM24480	None	None	G3G4	S1S2	
Darlingtonia Seep *Darlingtonia Seep*	CTT51120CA	None	None	G4	S3.2	
fisher - West Coast DPS *Pekania pennanti*	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Franklin's bumble bee *Bombus franklini*	IIHYM24010	None	None	G1	S1	

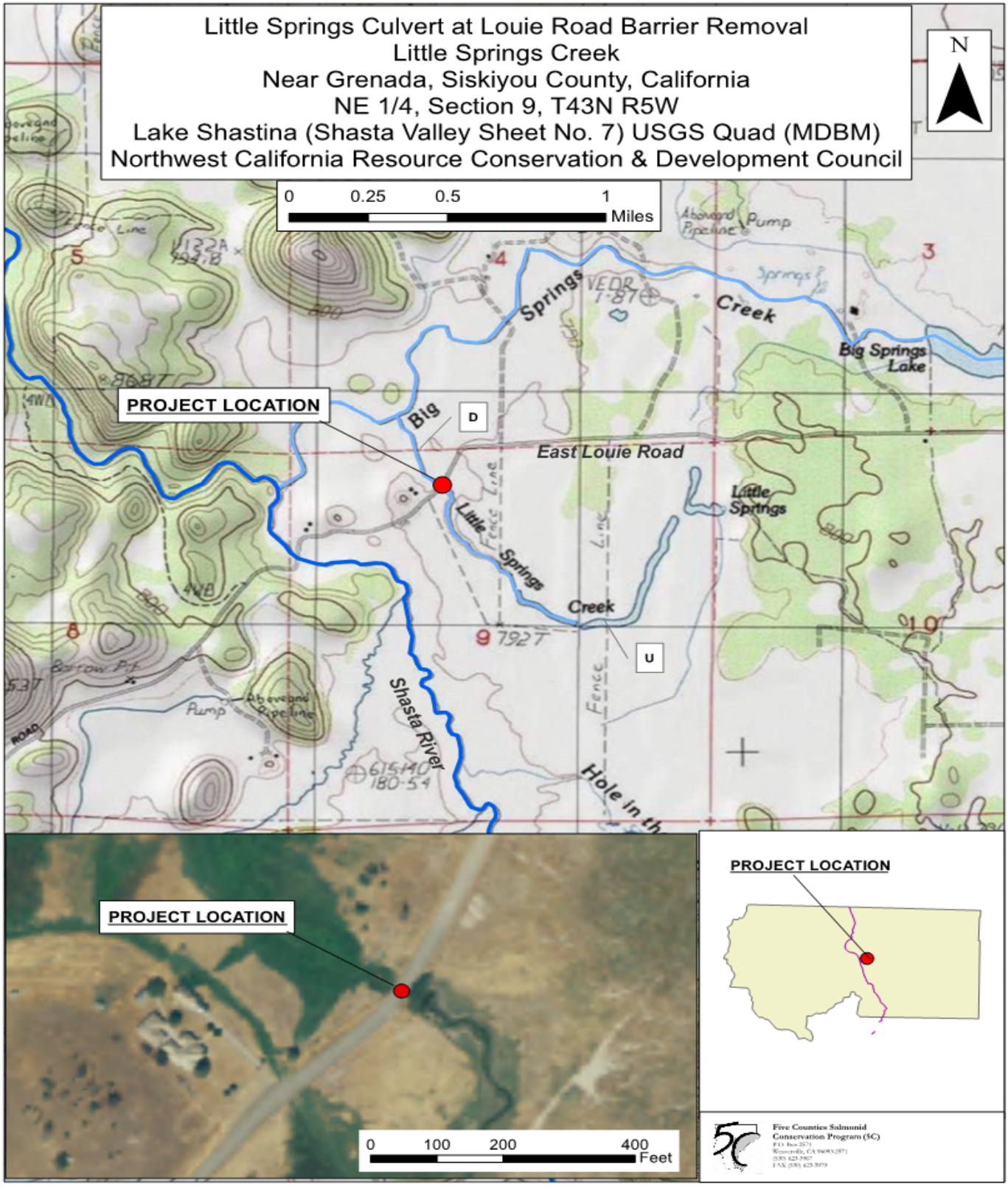
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
golden eagle *Aquila chrysaetos*	ABNKC22010	None	None	G5	S3	FP
gray-headed pika *Ochotona princeps schisticeps*	AMAEA0102H	None	None	G5T2T4	S2S4	
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
greater sandhill crane *Grus canadensis tabida*	ABNMK01014	None	Threatened	G5T4	S2	FP
green yellow sedge *Carex viridula ssp. viridula*	PMCYP03EM5	None	None	G5T5	S2	2B.3
Greene's mariposa-lily *Calochortus greenei*	PMLIL0D0H0	None	None	G3	S2S3	1B.2
hairy marsh hedge-nettle *Stachys pilosa*	PDLAM1X1A0	None	None	G5	S3	2B.3
Henderson's triteleia *Triteleia hendersonii*	PMLIL21070	None	None	G4	S1	2B.2
Jepson's dodder *Cuscuta jepsonii*	PDCUS011T0	None	None	GH	SH	1B.2
Klamath Spring Stream *Klamath Spring Stream*	CARB2325CA	None	None	GNR	SNR	
large-flowered triteleia *Triteleia grandiflora*	PMLIL21060	None	None	G4G5	S1	2B.1
little-leaved huckleberry *Vaccinium scoparium*	PDERI180Y0	None	None	G5	S3	2B.2
long-eared myotis *Myotis evotis*	AMACC01070	None	None	G5	S3	
Morrison bumble bee *Bombus morrisoni*	IIHYM24460	None	None	G4G5	S1S2	
Mt. Eddy draba *Draba carnosula*	PDBRA112T0	None	None	G2	S2	1B.3
Mt. Shasta sky pilot *Polemonium pulcherrimum var. shastense*	PDPLM0E0J4	None	None	G5T2	S2	1B.2
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
northern goshawk *Accipiter gentilis*	ABNKC12060	None	None	G5	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon polemonium *Polemonium carneum*	PDPLM0E050	None	None	G3G4	S2	2B.2
pallid bird's-beak *Cordylanthus tenuis ssp. pallescens*	PDSCR0J0S3	None	None	G4G5T1	S1	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Peck's lomatium *Lomatium peckianum*	PDAPI1B1G0	None	None	G4	S1	2B.2
pendulous bulrush *Scirpus pendulus*	PMCYP0Q160	None	None	G5	S1	2B.2
Pickering's ivesia *Ivesia pickeringii*	PDROS0X0D0	None	None	G2	S2	1B.2
prairie falcon *Falco mexicanus*	ABNKD06090	None	None	G5	S4	WL
Scott Mountain bedstraw *Galium serpenticum ssp. scotticum*	PDRUB0N1Y6	None	None	G4G5T2	S2	1B.2
Scott Mountain sandwort *Sabulina stolonifera*	PDCAR0G110	None	None	G2	S2	1B.3
Scott Valley phacelia *Phacelia greenei*	PDHYD0C1V0	None	None	G2	S2	1B.2
Shasta chaenactis *Chaenactis suffrutescens*	PDAST200H0	None	None	G3	S3	1B.3
Shasta orthocarpus *Orthocarpus pachystachyus*	PDSCR1H0L0	None	None	G1	S1	1B.1
Sierra Nevada red fox *Vulpes vulpes necator*	AMAJA03012	Candidate	Threatened	G5T1T2	S1	
silver-haired bat *Lasionycteris noctivagans*	AMACC02010	None	None	G5	S3S4	
single-flowered mariposa-lily *Calochortus monanthus*	PMLIL0D0W0	None	None	GH	SH	1A
Siskiyou clover *Trifolium siskiyouense*	PDFAB402S0	None	None	GH	SH	1B.1
Siskiyou hesperian *Vespericola sierranus*	IMGASA4080	None	None	G2	S1S2	
snow fleabane daisy *Erigeron nivalis*	PDASTE1060	None	None	G4G5	S3	2B.3
southern long-toed salamander *Ambystoma macrodactylum sigillatum*	AAAAA01085	None	None	G5T4	S3	SSC
subalpine aster *Eurybia merita*	PDASTEB030	None	None	G5	SH	2B.3
Swainson's hawk *Buteo swainsoni*	ABNKC19070	None	Threatened	G5	S3	
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
Waldo daisy *Erigeron bloomeri var. nudatus*	PDAST3M0M2	None	None	G5T4	S3	2B.3
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
willow flycatcher *Empidonax traillii*	ABPAE33040	None	Endangered	G5	S1S2	
woolly balsamroot *Balsamorhiza lanata*	PDAST11047	None	None	G3	S3	1B.2
woolly meadowfoam *Limnanthes floccosa ssp. floccosa*	PDLIM02043	None	None	G4T4	S3	4.2
yellow willowherb *Epilobium luteum*	PDONA060H0	None	None	G5	S1	2B.3
Yreka phlox *Phlox hirsuta*	PDPLM0D100	Endangered	Endangered	G1	S1	1B.2

Record Count: 67

Project Location Topographic Map



Introduction:

The Salmon River Restoration Council (SRRC) will construct and enhance off-channel and side channel habitat on Kelly Gulch tributary to the North Fork Salmon River in Siskiyou County. The Phase I portion of this project will enhance the back-bar channel of West Bar (the North Fork Salmon river bar across the river from Kelly Gulch) by installing a large wood apex jam at the inlet and excavating an alcove at the outlet. The Phase III portion of the project will enhance an existing off-channel pond and outlet at the mouth of Kelly Gulch by enlarging an existing pond to a total of 0.18 acres and depth of four feet. Also, two large wood cover structures and six small woody debris structures will be installed in the pond to provide salmonid cover and complexity. Phase II of the project has already been funded by a 2016 FRGP grant for enhancement of a Kelly Gulch river bar overflow channel and a pond. The goal of all three phases is to increase and improve coho salmon rearing habitat.

A combination of habitat simplification and fragmentation has occurred in the Salmon River Basin. Between 1870 and 1950 it is estimated that millions of cubic yards of sediment was discharged into the Salmon River and its tributaries through hydraulic gold mining. While most of the watershed is under National Forest, the legacies of hydraulic mining (mine tailings), large scale timber harvest, high road density, and wildfires continue to contribute to the issues of channel aggradation, limited riparian function, and temperature impairment in the Salmon River and its main tributaries.

The Karuk Tribe and SRRC surveys found juvenile coho using refugia in eight North Fork Salmon tributaries, both in the project vicinity and above and below project area. 2014). The NOAA summary also states that the lower reaches of these tributaries provide substantially cooler summer habitat than the mainstem river. The NOAA-Fisheries Coho Recovery Plan for the Southern Oregon – Northern California Coastal ESU stated that improving the quality and extent of rearing habitat including both summer cool-water and winter slow-water refugia. By creating and enhancing side-channel habitat adjacent to low gradient reaches of the North Fork Salmon River, this project will increase the complexity and extent of winter and summer rearing habitat for coho salmon.

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured.

All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Parts VII, XI, XI and XII (Flosi et al 1998 and 2002).

Objectives:

The goal of this project is to provide more winter, slow-water habitat and summer cool water habitat for juvenile coho salmon. The two specific objectives of the project are - 1) to enhance the back-bar channel of West Bar (the North Fork Salmon river bar across the river from Kelly Gulch) by installing a large wood apex jam at the inlet and enhance

the mid-bar channel by enlarging and deepening the side-channel inlet, installing an apex bar jam, excavating a 130 foot long alcove at the downstream end of the mid-bar channel and adding four small woody debris structures in the alcove; and
2) to enhance an existing off-channel pond and outlet at the mouth of Kelly Gulch by enlarging the pond to a total of 0.18 acres and depth of four feet with installation of two large wood cover structures and six small woody debris structures in the pond, and excavating a 61-foot long outfall channel with four stabilizing boulder weirs to connect the pond to the river, as well as excavating a 95-foot long channel to connect the pond to the existing back channel on Kelly Bar.

Project Description:

Location: The mouth of Kelly Gulch is located at 41.31532º north latitude, 123.16852º west longitude in Siskiyou County. Kelly Gulch is located on the North Fork Salmon River, 14 miles upstream from its confluence with the South Fork Salmon River. The project area includes (1) the West Bar; a bar complex on River-left, across from the confluence of Kelly Gulch with the river; (2); the mouth of Kelly Gulch as it flows into the river; and (3) a wide overbank bar complex on River-right, upstream of the Kelly Gulch confluence.

Project Set Up:

The Grantee (SRRC) Restoration Director will provide contracting oversight and administration (Task 1). The Grantee Associate Director will provide project tracking, invoicing, and reporting (Task 1). The Grantee Program Coordinator provides overall project management - including obtaining permits; scheduling of Archeological and Listed Plant Surveys; securing contracts (grantors, subcontractors, and landowner); project scheduling; implementation oversite management of subcontractors; assisting with project tracking and reporting; coordinating procurement of materials; overseeing layout and construction; and assisting with project monitoring. (Tasks 1, 2, and 3). The Grantee Program Staff will assist with fish relocation and revegetation tasks and perform before and after effectiveness monitoring tasks (Tasks 2 and 3).

Two project partners – the Karuk Tribe and US Forest Service will provide staff time as cost-share. The Karuk Tribe Fisheries Biologist will provide consultation during project construction and assistance with fish removal during implementation (Tasks 2, and 3). The US Forest Service Specialists will provide consultation during project construction and monitoring (Tasks 1, 2, and 3).

The Engineering subcontractor, Michael Love & Associates, Inc. (MLA), will serve as the project engineers. MLA Principal Engineer: will be the “Responsible Engineer” for the project and will oversee project activities to ensure the project is built as intended, participate in project meetings, and assist with addressing any unforeseen field conditions (Tasks 1, 2, and 3). MLA Senior Project Engineer,

Project Engineer, Staff Engineers, and Geomorphologist will participate in pre-implementation coordination, implementation oversight, and post-implementation documentation (Tasks 2 and 3). MLA Project Engineer and Staff Engineers will conduct the construction staking, grade checks as part of construction preparation and the as-built survey and part of project management (Tasks 2 and 3).

Planting Subcontractor, Pacific Watershed Associates (PWA) Watershed Ecologist will oversee the planting of trees and shrubs, including layout and planting methods (Task 2).

Heavy Equipment Subcontractor/s (to be selected):
The Selected Contractor will perform all heavy equipment work and material installation: including excavation, backfill, installation of log and rock structures, erosion control, water management and dewatering, and installation of temporary stream crossings (Task 2). The equipment required will include, but is not be limited, to: 1) excavator, 2) dump truck(s), 3) bulldozer, 4) water truck, and 5) field laborer.

Heavy equipment subcontractor/s will be selected prior to project implementation using criteria outlined in Grantee's Financial Policies. The selection process includes evaluation on a weighted scale that considers the following criteria: availability, adequacy of the proposed methodology, skill and experience of key personnel, demonstrated company experience, technical specifications, compliance with administrative requirements of the request for proposal (format, due date, etc.), ability/commitment to meeting time deadlines, cost, along with other business criteria (to be specified in the solicitation).

Materials:
These are the required materials to meet the contract deliverables described in the List of Tasks below:

Grantee Office and Field Supplies - Materials required to complete the project include field work and office-related supplies. Field supplies include items such as flagging, sharpies, pencils, write in-the-rain paper, measuring tapes, total station, kinematic GPS, digital camera, water monitoring equipment, and felt boots and waders. Office-related supplies include: copy paper, report binding materials, large format printer paper, map lamination materials, ink, and postage.

Temporary Watercourse Crossings: A 20-foot section of 36" HDPE pipe will be purchased by Grantee to install a temporary crossing at Kelly Pond outlet. Approximately 100 feet of temporary fish exclusion screening will be placed to exclude fish from the wetted work area. Also, a temporary crossing will be needed

to cross the NF Salmon River to the West Bar. This crossing will require a temporary bridge to be rented by Heavy Equipment Subcontractor.

Boulder Weirs to stabilize the Kelly Pond Outfall Channel and allow for fish passage into and out of Kelly Pond will be constructed using 60 tons of ½ ton rock.

Heavy Equipment Contractor will require excavator, 1-2 dump trucks, bulldozer, water truck for excavation, backfill, installation of log and rock features, dust control, and installation of temporary stream crossings.

Log Structures – Log structures for the project will require purchase of a total of 90, 30-40 foot long, 18-36" DBH logs, with rootwads of either Douglas fir or incense cedar. Structures will be anchored using plates, washers, and threaded rebar, as well as 130 tons of ¼ ton ballast rock. Small woody material (totaling 150 cubic yards) will be purchased and incorporated into all log structures to increase complexity.

Revegetation will consist of planting 920 riparian plants along the stream and pond banks of the entire project area. Native wood mulch will also be applied on up to 1.5 acres of disturbance from construction and spoil disposal. Willow stakes will be planted along the banks of the channels, alcove, and pond as well as incorporated into 225 linear feet of brush baffles to provide channel stabilization and riparian shade.

Tasks:

Task 1. Project Management, Meetings and Permitting

Grantee will provide all contracting, oversight, and administration including obtaining permits; securing contracts (grantor, subcontractors, landowner); scheduling; implementation oversight; invoicing; developing and delivering required reports; and agency, subcontractor, and landowner communications. Grantee will contract with a qualified heavy equipment contractor and coordinate construction of the project. Grantee will provide daily construction management and oversight, and resolution of contractual issues. This task will occur throughout the life of the project.

All reporting and billing will be pursuant to grant and regulatory guidelines. Upon final execution of the Grant and prior to receiving a Final Notice to Proceed, Grantee shall deliver the following items to the Grantor Project Manager:

- Final Landowner Access Agreement – written permission from landowner to for access to perform grant work.
- Subcontractor Agreements. If a subcontractor is to be used, then a written copy of the sub agreement(s) shall be submitted to the Grantor Project Manager. The subcontract shall include specific language which establishes the rights of the

auditors of the State to examine the records of the subcontractor relative to the services and materials provided under the grant.

A Preliminary Notice to Proceed can be requested from the Grantor Project Manager, if necessary, to prepare for project implementation (e.g., obtain permits, secure subcontracts, purchase supplies, apply for a Streambed Alteration Agreement).

A Final Notice to Proceed will be delivered to the Grantee when Final Landowner Access Agreement(s) and subcontracts are delivered to Grantor Project Manager, and when all required permits have been finalized (e.g., 401 State Water Quality Control Board Permit, Streambed Alteration Agreement).

The Grantee shall notify the Grantor Project Manager a minimum of 10 business days prior to the beginning of project implementation.

Engineering subcontractor will be Mike Love and Associates (MLA). MLA staff, including the Principal Engineer, Sr. Project Engineer, Project Engineer, Geomorphologist, and Staff Engineers will provide oversight of excavation and backfill, installation of the rock and large wood structures, and grade checks to verify constructed elevations.

MLA staff, including the Project Engineer and Staff Engineers will also provide construction stakeout. The stakeout will include establishment of elevation control, placement of stakes to denote the location and stationing of the proposed centerline of the channels, pond geometry, and structure locations. Once staking is complete, it will be the obligation of the contractor to maintain the stake locations and to determine locations of non-staked items.

MLA will attend one construction kickoff meeting and up to three (3) weekly construction progress meetings. MLA will be available to make recommendations for addressing unforeseen conditions that arise and for making field changes, if necessary.

Pacific Watershed Associates (PWA) Watershed Ecologist will be subcontracted to oversee riparian planting.

Task 2. Implementation Habitat Enhancement

The selected contractor will provide maintenance of traffic, erosion and sediment control, water management and dewatering, all construction work, and provide all material certifications.

2.1 Mobilization. Procurement and delivery of all materials and equipment to the site, contractor will finalize contracts and insurance requirements.

2.2 Clearing/Grubbing/Construction Access/Site Preparation. Areas for equipment storage, re-fueling and equipment maintenance will be flagged and established for use by the contractor. Areas for material storage will be established and prepared with pre-construction erosion control measures. Installation of sediment control as needed within work area. Ground preparation for construction activities including preparation for dust control and other best management practices for protection of water quality.

2.4 Dewatering/Isolation: Appropriate measures will be taken to dewater construction areas as necessary depending on current sites conditions at the time of implementation. Water isolation measures may be necessary to contain turbid waters during removal of temporary earthen berms separating the Kelly Bar Outfall Channel, and West Bar Alcove or Inlet from the Salmon River. Dikes, cofferdams or other suitable measures shall be employed. Flow isolation will be performed concurrently with Fish Relocation.

2.5 Fish Relocation: Work areas in the Salmon River will have fish removal by a qualified biologist provided by the Karuk Tribe assisted by SRRC Program Staff concurrently with streamflow isolation. It is expected that the inlet to the Mid-Bar Channel on the West Bar and Kelly Pond will be the only potentially wetted areas of the project during the construction window. Although, the Inlet, Alcove, and Outfall Channels may be wet, depending on seasonal river flows. Fish exclusion screens will be placed a minimum of 30-feet upstream and downstream of dewatered areas and fish will be removed from the wetted work areas.

2.6 Installation Temporary Stream Crossings: A temporary stream crossing over Kelly Gulch will be installed at the Kelly pond outlet using salvaged cobbles and a 20-foot section of 36” HDPE pipe. A combination of salvaged gravel causeway placed in the low-flow area and a temporary bridge, rented by the heavy equipment contractor, will be installed to cross the North Fork Salmon River to access West Bar.

2.7 Excavation/Spoil Placement: All excavations will be made according to the depths and side slopes indicated in the plans. At the West Bar site - the inlet and outlet of the Mid-Bar Channel will be excavated as well as a 130-foot long alcove with a 6-foot wide bottom.

The existing pond (Kelly Pond) at the mouth of Kelly Gulch will be enlarged with an approximately 61-foot long, Outfall Channel with a 5-foot bottom width to be excavated to provide fish ingress and egress between the pond and river. The channel will be stabilized using 4 boulder weirs with maximum 0.5-foot drops to allow juvenile salmonid passage. A 95-foot long Connecting Channel with a 5-foot bottom width will be excavated to connect Kelly Pond to the existing Back-Channel.

An earthen plug will remain at the Kelly Bar Outfall Channel, and West Bar alcove or Inlet confluence with Salmon River to maintain flow separation and dewatered areas.

Spoil material will be spread in the designated areas as shown on the plans. Material suitable for rock ballast or structure enhancement will be separated and stockpiled.

2.8 Log Structure Installation: Log structures will be installed, using purchased logs and both purchased and salvaged rock ballast. Apex abutment jams, log constrictors, large wood pond cover structures and small woody debris structures will be installed and anchored according to the construction details and specifications.

2.9. Planting and Site Stabilization: Planting will include live willow stakes, live brush baffles, diverse riparian planting, and temporary site stabilization. The Planting Contractor (PWA) will be assisted Grantee Program Staff. Revegetation of riparian species will follow the project Planting Plan. Willows and cottonwoods will be planted during construction, dormant redbud and *Ceanothus* will be planted in the fall following construction and all other species will be planted in the following fall. Wood chipped mulch will be applied around plantings to reduce weed competition.

Revegetation will consist of planting 920 riparian plants along the stream and pond banks of the entire project area. Native wood mulch will also be applied on up to 1.5 acres of disturbance from construction and spoil disposal. The banks of the channels, alcove, and pond will be planted with 900 willow stakes. Additionally, live stakes will be incorporated into 225 linear feet of brush baffles that will be placed along the banks to provide channel stabilization and riparian shade. Grantee will work with a local nursery to develop plant materials for the project, preferred species include: coyote willow, black cottonwood, redbud, white alder, blue-blossom Ceanothus, golden currant, flowering currant, ponderosa pine, sugar pine and incense cedar. If preferred species are not available, SRRC will substitute locally adapted, native species appropriate for the site.

Areas disturbed by construction will be stabilized and planted with diverse riparian trees and shrubs. The project area has very little soil, the substrate is primarily gravel and cobble. Erosion control BMPs for disturbed areas will be implemented including stabilizing the site with wood-chipped mulch, if necessary.

2.10 Demobilization and Equipment Decontamination: When construction has been completed and each site has been reconnected to the channel, the isolation measures will be removed allowing free flow, if any, into the work site.

Demobilization will entail removal of equipment and all excess materials with proper decontamination.

All personal gear as well as tools/equipment used in the field will be properly decontaminated before moving to a new project even within the same watershed, in compliance with CDFW and CA Oak Mortality Task Force decontamination protocol requirements.

Task 3. Post-Construction Monitoring

Post-implementation monitoring will be conducted in accordance with the project's Draft Monitoring and Maintenance Plan. Post-construction monitoring requirements include physical, biological, and water quality monitoring for three years after implementation, which will include the following:

3.1 As-Built Survey and Memorandum. After implementation is complete, Engineering Subcontractor - MLA will conduct an as-built survey of the project, including longitudinal profiles of the Connecting Channel, Kelly Pond, and Outfall channel, and Mid Bar Channel Inlet and Outlet, including locations of log and rock structures, and cross sections of the channels and ponds. Elevations will be surveyed at critical locations to verify the project was built as designed.

Based on the results of the survey, MLA will prepare as-built plans using red-line markups of the construction documents with any changes that occurred during implementation. As-Built elevations will be included on the red-line markup. A brief Technical Memorandum will accompany the As-built plans.

3.2 Pre-and Post-Project Photo Monitoring. Photo monitoring will be conducted by Grantee to document physical and vegetative response to the project and identify any issues of concern that may require maintenance. Photo points will be established as part of pre-construction activities and used for post-construction monitoring to provide matched pre- and post-project photos. GPS coordinates will be taken and points staked and flagged, where possible, to ensure consistent and comparable views. Photo locations will include the mouth of the alcove, inlets to the Back-Bar and Mid-Bar Channels, and Kelly Pond. During the first three years after construction the photo-point monitoring will be conducted twice a year: once during focus period for fish usage (late fall through mid-spring) and once during the dry season.

Observations based on the photo documentation will be summarized by Grantee in the annual post-construction memoranda. Observed changes at each site will be noted in the report, with particular focus on:

- Functionality and stability of log structures,
- Sedimentation patterns channel confluence,
- Overall bank stability along the channel,

• Sedimentation within the pond and alcove,
• Overall revegetation plant success, and,
• Encroachment into the project area by invasive riparian vegetation.

3.3 Physical Surveys: Longitudinal profiles, cross sections, and water depth surveys will be conducted once per year for three years after implementation by Grantee. Surveys will be conducted during the focus period for fish usage. Grantee will survey cross sections along the pond and alcove, longitudinal profiles of the connecting channels and alcove thalweg, and water surface. These surveys will be referenced to survey benchmarks and conducted with equipment with the minimum accuracy of an engineer's level or total station.

The profiles will be presented in context with the as-built and design drawings to evaluate changes to channel and assess potential sedimentation. The survey will also be used to evaluate water depths during the time of survey to ensure passage criteria are satisfied. Flow measurements in the connecting channels may also be taken during the time of survey, if conditions allow.

3.4 Monitoring of Fish Use: Fish monitoring will be conducted for three years by Grantee using snorkel surveys and will include sampling for juvenile salmonids. Although the period when utilization by juvenile coho salmon is expected from November through May, biological sampling will occur monthly throughout the year to best assess when fish use occurs. The Salmonid Field Protocols Handbook: Techniques for Assessing Status and Trends in Salmon and Trout Populations (Johnson et al. 2007), will be used as a guide to conduct fish observation snorkel surveys. Data collected by Grantee will be made directly available to CDFW fish biologists monitoring salmonid movements in the Salmon River.

3.5 Vegetation Monitoring: Grantee conduct photo monitoring to document the growth of re-vegetated areas over the monitoring period. Photo points will be established and monitoring will be conducted once annually for three years. Native plants installed in the riparian zone will be monitored in the early summer each year to determine overall establishment, health, and vigor. Encroachment of nonnative species will be noted and recorded. If invasive species, such as spotted knapweed, begins growing within the project area, the invasive vegetation will be removed.

3.6 Water Quality Monitoring: Grantee will compare conditions in the main channel before and after reconnecting the side channels and pond to the river. Monitoring will be used to evaluate when water quality conditions in the pond is adequate to support juvenile salmonids. Water quality monitoring will be conducted in Kelly Pond, alcove, and channels once a month for three years following construction. Parameters to be measured include: temperature and dissolved

oxygen. Measurements will be conducted using a handheld water quality meter. Results will be included in the annual memoranda.

3.7 Monitoring Data Summary and Reporting: Data summary will be completed by Grantee and provided to CDFW in Annual Monitoring Memoranda which will be prepared each year for the three years following construction and will be provided to CDFW by February 5th of the year following monitoring. The report will summarize monitoring activities, findings, and recommendations. The annual report will also identify any issues identified by the annual inspection that may warrant maintenance or other types of treatment. In the event that items of concern arise, the report will recommend actions to be initiated to further characterize its impact on project objectives and/or consultation with the appropriate resource agencies, including CDFW, to determine if a maintenance action is warranted.

3.8 Other Reporting: Grantee will provide Annual Reports to Grantor that provide information on activities conducted each year and how much of project is completed. Annual performance metrics as listed in the Final Report template will also be provided by November 15 of each year.

Upon completion of the project, the Grantee will photograph the constructed project and develop a written final completion report for submission to CDFW. The final report will contain: 1) general grant information, 2) location of work, 3) project access, 4) participating landowners contact information, 5) a description and analysis of the restoration and planning techniques used, 6) a description of the results of the project including performance metrics in Final Report Template, 7) dates of work and the number of person hours expended, 8) labeled, matched pre- and post-construction photos of restoration features, and 9) grant dollars spent and contributed and/or in kind services used to complete the project.

Deliverables:

- 0.07 miles of instream habitat
- 4,948 sq. ft. of instream features (18 features) installed within bankfull channel
- 0.28 miles of stream treated with instream features
- 0.36 acres of off-channel/floodplain connection created
- 920 native riparian plants planted along stream and pond banks
- Progress Reports submitted with each billing invoice
- Annual Reports with Performance Metrics – due November 15 each year
- As-Built Survey and Memo
- Three Annual Monitoring Memoranda
- Final Grant Report

Timelines:

Following dates are based on grant execution by June 1st 2018:

- Task 1: Project Management June 1st, 2018 – February 5th, 2022

- Tasks 2.1 – 2.9: Construction July 1st – October 15th, 2018, including mulching and planting of willows and cottonwood and decontamination of personal gear, tools, and equipment.
- Task 2.9: Planting of dormant redbud and Ceanothus, and other species: late fall 2018 and late fall 2019
- Task 3.6: As-Built Memorandum November 30th, 2018
- Task 3: Monitoring: annually ending December 2021
- 2019 Annual Monitoring Memorandum February 5th, 2020
- 2020 Annual Monitoring Memorandum February 5th, 2021
- 2021 Annual Monitoring Memorandum February 5th, 2022
- Annual Reports with Performance metrics and progress due November 15, 218, 2019, 2020, 2021
- Draft Final Report due January 15th, 2022
- Final Grant Report February 5th, 2022

Summer Season Work time frame will be July 10 – October 31, activity restrictions are modified through surveys indicating the absence of Northern Spotted Owls.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a "notice to proceed" letter has been received from the California Department of Fish and Wildlife (CDFW) Grant Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly

contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the CDFW Grant Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for CDFW personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other native aquatic species from the project area. If the project requires dewatering of the site and the relocation of listed aquatic species, the Grantee will implement the following measures to minimize harm and mortality to listed species as well as other native aquatic species:

- Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year.

- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit, NMFS Biological Opinion, and project's Lake and Streambed Alteration Agreement (1600 permit).

- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

- Only a qualified fisheries biologist that are approved by USFWS and permitted by CDFW under a California Endangered Species Act (CESA) Memorandum of Understanding (MOU) shall handle and relocate CESA listed species.

- All electrofishing shall be performed by the qualified fisheries biologist under the supervision of CDFW and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

- USFWS-Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW.

Final structure design and placement will be determined by field consultation between the Grantee and the CDFW Grant Manager. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Seeding and mulching of all exposed soils shall be done for all slopes which may

deliver sediment to a stream. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years. Mulching and seeding will take place as sites are completed to avoid unforeseen erosion. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Sawyers Bar (4112332) OR Medicine Mtn. (4112343) OR English Peak (4112342) OR Yellow Dog Peak (4112341) OR Forks of Salmon (4112333) OR Tanners Peak (4112331) OR Youngs Peak (4112323) OR Cecilville (4112322) OR Grasshopper Ridge (4112321))

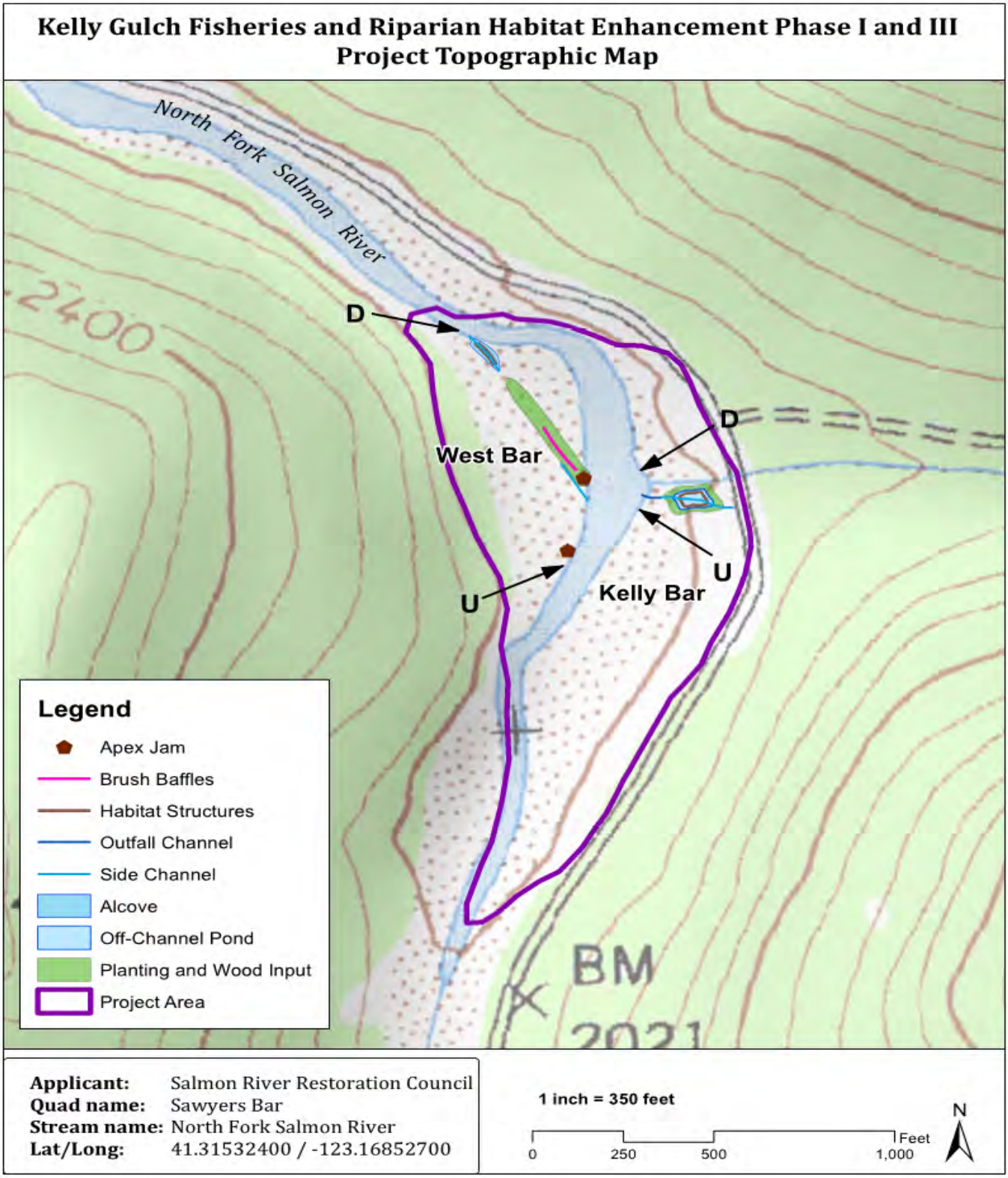
Possible species within the Sawyers Bar quadrangle and surrounding quads for 725592 Kelly Gulch Fisheries and Riparian Habitat Enhancement Phase I and III, T40N R12W S24, Siskiyou County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American peregrine falcon *Falco peregrinus anatum*	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
buttercup-leaf suksdorfia *Hemieva ranunculifolia*	PDSAX0W010	None	None	G5	S2	2B.2
California wolverine *Gulo gulo*	AMAJF03010	Proposed Threatened	Threatened	G4	S1	FP
Cascades frog *Rana cascadae*	AAABH01060	None	None	G3G4	S3	SSC
chinook salmon - upper Klamath and Trinity Rivers ESU. *Oncorhynchus tshawytscha*	AFCHA02056	None	None	G5	S1S2	SSC
Del Norte salamander *Plethodon elongatus*	AAAAD12050	None	None	G4	S3	WL
English Peak greenbrier *Smilax jamesii*	PMSMI010D0	None	None	G3G4	S3S4	4.2
fisher - West Coast DPS *Pekania pennanti*	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
giant fawn lily *Erythronium oregonum*	PMLIL0U0C0	None	None	G4G5	S2	2B.2
Henderson's fawn lily *Erythronium hendersonii*	PMLIL0U070	None	None	G4	S2	2B.3
Howell's tauschia *Tauschia howellii*	PDAPI27050	None	None	G2G3	S2S3	1B.3
Humboldt marten *Martes caurina humboldtensis*	AMAJF01012	None	Candidate Endangered	G5T1	S1	SSC
Jaynes Canyon buckwheat *Eriogonum diclinum*	PDPGN081S0	None	None	G3	S3	2B.3
Klamath gentian *Gentiana plurisetosa*	PDGEN060V0	None	None	G2G3	S2	1B.3
Klamath/No Coast Spring Run Chinook/Summer Steelhead Stream *Klamath/No Coast Spring Run Chinook/Summer Steelhead Stream*	CARB2333CA	None	None	GNR	SNR	
Klamath/North Coast Rainbow Trout Stream *Klamath/North Coast Rainbow Trout Stream*	CARB2312CA	None	None	GNR	SNR	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
little-leaved huckleberry *Vaccinium scoparium*	PDERI180Y0	None	None	G5	S3	2B.2
long-eared myotis *Myotis evotis*	AMACC01070	None	None	G5	S3	
Marble Mountain campion *Silene marmorensis*	PDCAR0U0Z0	None	None	G2	S2	1B.2
northern goshawk *Accipiter gentilis*	ABNKC12060	None	None	G5	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Pacific fuzzwort *Ptilidium californicum*	NBHEP2U010	None	None	G4G5	S3S4	4.3
Pacific silver fir *Abies amabilis*	PGPIN01010	None	None	G5	S2	2B.3
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
Robbins' pondweed *Potamogeton robbinsii*	PMPOT030Z0	None	None	G5	S3	2B.3
Shasta chaenactis *Chaenactis suffrutescens*	PDAST200H0	None	None	G3	S3	1B.3
snow dwarf bramble *Rubus nivalis*	PDROS1K4S0	None	None	G4?	S1	2B.3
subalpine fir *Abies lasiocarpa var. lasiocarpa*	PGPIN01072	None	None	G5T5	S3	2B.3
summer-run steelhead trout *Oncorhynchus mykiss irideus*	AFCHA0213B	None	None	G5T4Q	S2	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
Trinity Mountains rockcress *Arabis rigidissima var. rigidissima*	PDBRA061R2	None	None	G3T3	S3	1B.3
Trinity shoulderband *Helminthoglypta talmadgei*	IMGASC2630	None	None	G2	S2	
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
northern spotted owl *Strix occidentalis caurina*	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SC

Record Count: 36

Project Location Topographic Map



Introduction needs to include:

1. Gold Ridge Resource Conservation District, Green Valley Creek 2017 Coho Instream Habitat Enhancement Project
2. Along Green Valley Creek a total of 16 structures will be placed at 11 sites through an 800-foot stream reach, previously inaccessible during earlier phases of habitat enhancement, designed to scour pools, provide cover, sort spawning gravels, and enhance overall channel complexity. The materials tally for the proposed project estimates the structures to collectively provide 19 key pieces to the reach, or nearly 8 key pieces per 100 meters. The completion of this project will therefore meet the Large Woody Material (LWM) frequency objective for the 800-ft project reach.
3. Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and Notice to Proceed are secured.
4. All habitat improvement will follow techniques in the California Stream Habitat Restoration Manual, Part VII.

Objective(s):

The project seeks to enhance rearing and spawning habitat for coho salmon in upper Green Valley Creek through the installation of 16 complex large wood structures at 11 sites throughout a critical 800-ft reach to achieve at least six key pieces of Large Woody Material (LWM) per 100 meters in the project reach.

Structure placement will be achieved using a small excavator to place logs, rootwads, and boulders, anchored with rebar pins and allthread. Sites will be dewatered prior to construction as necessary, with salmonids and other native species relocated to nearby pre-determined sites specified by the Grantor Project Manager and the Grantee Qualified Biologist. While deep channel incision prohibits work from the banks at many sites, efforts will be made to minimize dewatering. Designs were also developed with consideration to equipment access, and meant to minimize disturbance to mature riparian vegetation, existing naturally recruited wood, and to the streambed. After the project is completed access routes will be seeded and covered with erosion control fabric. Average bankfull width throughout the reach is approximately 30 feet, with many areas are deeply incised. Some natural wood (3 unanchored logs) exists in project reach, as shown on the attached plans, and will be retained during construction. Disturbed area within the 11 project sites, is approximately 400 linear feet and 0.06 acres. Sites to be constructed are as follows:

a. Site 1 Existing conditions: Eroding left stream bank approximately 15 feet in height, on the outside of a meander bend. The stream channel is a long

riffle with bed load that is 3-4 inches in size. The bank erosion is undercutting several red alders and willows that are the only riparian vegetation at this site. The proposed solution is to place 3 logs, 1 rootwad, and several 1ton boulders at the upstream end of the active eroding bank. The logs and boulders will deflect and slow high velocity stream flows, thus arresting the active erosion. The structure will also serve to create pool scour and provide cover.

b. Sites 2 and 3 Existing condition: There is a 100 feet. long shallow glide that is immediately downstream of a full spanning bed rock formation. The upstream end of the glide begins with 4 feet. deep plunge pool that has naturally recruited cover habitat. Below the pool the stream channel is dominated with large cobble. The large cobble is a symptom of excessive stream velocity, the velocities are partially a result of a lack of large wood. The glide itself does not contain any wood for cover habitat. The proposed work is to place 15 pieces of wood that will accomplish the objective of creating hydraulic roughness, scouring pools, cover or rearing habitat and to trap spawning size gravel. As the structures are designed to aggrade the channel with spawning gravel, site locations are shown on the attached pre-construction longitudinal profile.

c. Site 4 Existing conditions: Large 4 feet. deep pool upstream of the full spanning bed rock formation, with the right bank actively eroding. If the right bank erosion is not arrested the stream could migrate around the bedrock creating an in stream head cut. The head cut could migrate upstream incising the channel for several hundred feet. A similar situation did occur several years ago downstream where the head cut removed 200 feet. of the last remaining prime spawning habitat. To deflect high velocity stream flows away from the eroding stream bank and create cover habitat, several logs, boulders and root wads will be placed on the right bank.

d. Site 5-7 Existing conditions: Is a long glide with a few alder logs, dominate particle size is smaller than ¾ inch. The glide is created by the full spanning bed rock formation. Sites 5, 6 and 7 are similar in design and the channel type is the same so they have been lumped together. These structures will create pool and cover habitat as 10 well as increasing in stream complexity. Sites 5 and 6 consist of opposing anchored log and rootwad structures, while site 7 sits on the left bank.

e. Sites 8 & 9 Existing conditions: Is another long glide lacking in LWM, pool and cover habitat. There is spawning habitat at the downstream end of the glide in the pool crest. The proposed work is to place several logs, root wads and boulders in the stream to scour pools, create cover habitat and to increase in stream complexity. Site 8 consists of 2 anchored rootswads

on the left bank, downstream of an existing log; site 9 is opposing log and rootwad structures.

f. Site 10 Existing conditions: This site is on the outside of a meander bend on the right bank, where there is an existing shallow pool. To deepen the existing pool and provide long term shelter and cover habitat, several logs, boulders and root wads will be placed at this site.

g. Site 11 Existing conditions: The stream makes a "U" turn at this site. There is a 3-5 ft. deep pool that is void of LWM and cover habitat. The pool crest has gravel that is of suitable size for spawning. The proposed work is to place 4 logs, 3 root wads and several boulders on the outside left bank that will create cover or rearing habitat.

Project Description:

Location: The 800-foot project reach on upper Green Valley Creek is approximately 1.5 miles above the confluence with Purrington Creek, and 2.4 miles above the confluence with Atascadero Creek. The project constitutes another phase of a series of large wood structure placement projects implemented between the Green Valley Road and Bones Road crossings. The upstream end of the project is located at 38.43978300° north, -122.91380700° east with the downstream start at 38.43880800° north, -122.91155900° east in Section 24 of Township 7 north Range 10 west, Mount Diablo Base and Meridian, within the Camp Meeker United States Geologic Survey 7.5 minute topographic quadrangle.

Take highway 116 north from Sebastopol, then west on Green Valley Road. The project is accessible from a private gated road near 11571 Green Valley Road. Access through the locked gate must be arranged through Gold Ridge Resource Conservation District.

Project Set Up: With oversight by the Grantee Conservation Planner, the Grantee Project Assistant will be responsible for overall project management, including contract administration, landowner communication, public outreach, permit application development, subcontractor management, invoicing, and reporting.

The Grantee Conservation Planner and Project Assistant will also perform daily construction oversight, photo-documentation, planting, and revegetation maintenance and monitoring, and assist with dewatering and fish relocation.

The Grantee Project Manager will assist in dewatering and species relocation, construction oversight, and development of the post-construction longitudinal profile.

The Grantee Qualified Biologist will perform biological surveys and monitoring as required, and assist in dewatering and species relocation.

The Grantee Executive Director will review contracts and invoices, and assist in landowner communications.

Dragonfly Stream Enhancement (a subcontractor) will source materials and perform all aspects of project construction, including: structure placement and anchoring, oversight of the Skilled Labor assisting with construction, erosion control, revegetation, and plant maintenance.

The subcontracted Qualified Biologist will assist with dewatering and species relocation, and perform biological surveys as needed when the Grantee Biologist is unavailable.

Contractor Compliance and Monitoring, Incorporated will perform labor compliance monitoring in order to comply with prevailing wage requirements.

Additional budget expenses include Grantee staff mileage for travel to and from the project site, and for the 1602 permit fee.

Materials: While Construction subcontractor will be responsible for equipment rental and acquiring logs and rootwads, other materials will be purchased directly by the Grantee. Materials in the budget is as follows:
Grantee Expenses: Permits: 1602 permit required for instream work. Mileage required for travel to and from the project site. Dewatering materials such as sand bags, sand, and block net material are used for constructing coffer dams. Polyvinylchloride pipe is needed to pump water around the work sites. Anchoring components such as boulders are key for anchoring structures. The cost provided includes delivery from the quarry to the different sites. Epoxy and application nozzles, allthread, flat washers, nuts, rebar, 5/8 inch cable and cable clamps are used for anchoring the log and root wads to the boulders. Drill bits are need to be replaced regularly during anchoring. Erosion control materials such as grass seed, rice straw, erosion control blanket and pins are for providing cover over the soil that will be exposed as a result of the project. Revegetation materials such as replacement (5-gallon container) plants are to revegetate riparian areas where small trees need to be removed for equipment access, and to enhance the riparian corridor. Soil amendment will be used to prep the soil for planting. Plants will be fitted with browse protectors, mulched for weed control, and watered through dripline irrigation from a 3,000-gallon tank. Water will be delivered to fill the tank, as landowners currently rely on riparian diversions for their water. The irrigation system will be fitted with a solar electric pump, pressure regulator, timer, and filter. Subcontractor equipment and materials expenses include: Log transport includes log delivery which is the cost of delivering logs and root wads to the different sites.

These materials can originate from different sources, depending on what's available. Mileage is to reimburse contractors for picking up materials, going to the quarry to pick out the appropriate boulders and the daily drive to the work site. Rental of heavy equipment like front loader and excavator: The front loader will be used for transporting boulders and wood materials to the job sites. The excavator will be used for placing the boulders, logs and root wads in the stream channel. Rental of small equipment such as generator, wood drills, rock drill.
Structure components will be directly sourced by the construction subcontractor such as logs and rootwads as key components of structures. Redwood logs will be used when available. If sufficient redwoods cannot be located, Douglas-fir or eucalyptus may be used with prior approval From the Grantor Project Manager. Eucalyptus logs will have been seasoned for at least one year, with the bark removed.

Tasks: Task 1: Project Management. The Grantee Conservation Planner and Project Assistant will perform all duties related to contract administration, subcontractor management, invoicing, and reporting. The Grantee Executive Director will review contracts and invoices, and assist in landowner communications.

Task 2: Permitting. The Grantee Conservation Planner and Project Assistant will develop the 1602 permit.

Task 3: Biological Surveys. The Grantee Ecologist, Field Technician, and subcontracted Qualified Biologist will perform all biological surveys as required for California Environmental Quality Act and permit compliance.

Task 4: Project Construction. With guidance from the Grantee Conservation Planner, the Project Assistant will oversee Dragonfly Stream Enhancement in all construction activities. Construction includes placement and anchoring of instream structures, composed of logs, rootwads, and boulders, anchored with allthread and rebar pins. Specific roles of the list of materials included in the budget is presented in the Materials section. Construction preparation activities such as dewatering and sensitive species relocation are also included. Construction activities will adhere to the attached Aquatic Invasives Protocol. Revegetation will occur after structure placement in the fall 2018 with the onset of rains, and include the installation of 30 5- gallon container plants of native tree species, with dripline irrigation from an adjacent 3,000-gallon water tank.

Task 5: Monitoring and Maintenance. The Grantee Project Assistant, with assistance from the Grantee Conservation Planner, will oversee monitoring and maintenance, including post-construction storm monitoring and photo-monitoring, revegetation survival rate monitoring, and plant maintenance.

Deliverables: Task 1 Project Management includes writing annual and final reports

Task 2 Permitting involves securing permits, including the 1602 permit

Task 3 Biological Surveys includes conducting surveys and writing reports, including: protected species habitat assessment and writing the relocation plan, and final report of findings with data sheets.

Task 4 Project Construction involves drafting as-built construction plans, post longitudinal profile, and pre- and post-construction photo-documentation showing the successful installation of 16 instream structures at 11 sites and revegetation with 35 5-gallon container plants.

Task 5 Monitoring and Maintenance involves maintaining an 80% survival rate of revegetation by close of project, and observations of post-storm structure stability and functionality to be included in final report.

Timelines:

1. Task 1 Project Management occurs from June 1, 2018 to March 31, 2021

2. Task 2 Permitting occurs from June 1, 2018 to July 31, 2018 The 1602 permit application will be submitted by June 30, 2018. Implementation within the 2018 construction season will rely on this permit being in place.

3. Task 3 Biological Surveys happen between July 1, 2018 and October 31, 2018. Biological surveys will be conducted prior to and during construction, with a final report (including data sheets) to be submitted after the completion of construction in November 2018.

4. Task 4 Project Construction occurs between August 1, 2018 and February 28, 2019. All tasks related to the structure placement will be complete by October 15, 2018. Revegetation will be conducted that winter, not later than January 31, 2019. Plants will be put on drip irrigation, and watered from a nearby tank, to be filled with a water truck. A post-longitudinal profile will be completed by February 28, 2019.

5. Task 5 Monitoring and Maintenance occurs from November 1, 2018 to March 31, 2021. Post-construction and photo-documentation will be submitted with the 2018 annual report, and photos of the completed revegetation will be submitted once its installation is complete. Follow-up photos and plant survival rates will be submitted with the final report in March 2021. The extension of the timeline for two years beyond the 2018 construction season is to allow for plant maintenance to ensure high survival rates.

6. The construction work window for this project will be July 1 through October 15.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a “notice to proceed” letter has been received from the Grantor Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of Grantor.

Staging or storage areas for equipment, materials, fuels, lubricants, and solvents, will be located outside of the stream's high water channel and associated riparian area where it cannot enter the stream channel. Stationary equipment such as motors, pumps, generators, compressors, and welders located within the dry portion of the stream channel or adjacent to the stream, will be positioned over drip-pans. Vehicles will be moved out of the normal high water area of the stream prior to refueling and lubricating. The grantee shall ensure that contamination of habitat does not occur during such operations. Prior to the onset of work, the Grantee shall provide to Grantor a plan to allow a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish and Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other native aquatic species from the project area. If the project requires dewatering of the site and the relocation of listed aquatic species, the Grantee will implement the following measures to minimize harm and mortality to listed species as well as other native aquatic species:

- Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year.

- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the Grantor Project Manager and pursuant to conditions in the USACE Regional General Permit, NMFS Biological Opinion, and project's Lake and Streambed Alteration Agreement (1600 permit).

- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the California Salmonid Stream Habitat Restoration Manual.

- Only qualified fisheries biologist that are approved by USFWS and permitted by CDFW under a California Endangered Species Act (CESA) Memorandum of Understanding (MOU) shall handle and relocate CESA listed species.

- All electrofishing shall be performed by a qualified fisheries biologist under the supervision of CDFW and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

- NMFS Approved fisheries biologists will provide fish relocation data via the Grantee to the Grantor Project Manager on a form provided by Grantor.

All habitat improvements will follow techniques described in the California Salmonid Stream Habitat Restoration Manual, Volume I, and Volume II Part XI and Part XII. The Grantee/landowner will maintain the new crossing, inspect the crossing in a timely manner and remove debris as necessary during the storm season.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Manager. All habitat improvements will follow techniques described in the California Salmonid Stream Habitat Restoration Manual.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Camp Meeker (3812248) OR Cazadero (3812351) OR Guerneville (3812258) OR Healdsburg (3812257) OR Duncans Mills (3812341) OR Sebastopol (3812247) OR Bodega Head (3812331) OR Valley Ford (3812238) OR Two Rock (3812237))

Possible species within Camp Meeker Quad and surrounding quads for 725499 Green Valley Creek 2017 Coho Instream Habitat Enhancement Project, T07N R10W S24, Sonoma County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
Baker's goldfields *Lasthenia californica ssp. bakeri*	PDAST5L0C4	None	None	G3T1	S1	1B.2
Baker's larkspur *Delphinium bakeri*	PDRAN0B050	Endangered	Endangered	G1	S1	1B.1
Baker's manzanita *Arctostaphylos bakeri ssp. bakeri*	PDERI04221	None	Rare	G2T1	S1	1B.1
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	PDPLM0C0E1	None	None	G4T2	S2	1B.1
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S2	
black swift *Cypseloides niger*	ABNUA01010	None	None	G4	S2	SSC
Blasdale's bent grass *Agrostis blasdalei*	PMPOA04060	None	None	G2	S2	1B.2
Blennosperma vernal pool andrenid bee *Andrena blennospermatis*	IIHYM35030	None	None	G2	S2	
blue coast gilia *Gilia capitata ssp. chamissonis*	PDPLM040B3	None	None	G5T2	S2	1B.1
bluff wallflower *Erysimum concinnum*	PDBRA160E3	None	None	G3	S2	1B.2
bristly sedge *Carex comosa*	PMCYP032Y0	None	None	G5	S2	2B.1
brownish beaked-rush *Rhynchospora capitellata*	PMCYP0N080	None	None	G5	S1	2B.2
bumblebee scarab beetle *Lichnanthe ursina*	IICOL67020	None	None	G2	S2	
Burke's goldfields *Lasthenia burkei*	PDAST5L010	Endangered	Endangered	G1	S1	1B.1
burrowing owl *Athene cunicularia*	ABNSB10010	None	None	G4	S3	SSC
California beaked-rush *Rhynchospora californica*	PMCYP0N060	None	None	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
California freshwater shrimp *Syncaris pacifica*	ICMAL27010	Endangered	Endangered	G2	S2	
California giant salamander *Dicamptodon ensatus*	AAAAH01020	None	None	G3	S2S3	SSC
California linderiella *Linderiella occidentalis*	ICBRA06010	None	None	G2G3	S2S3	
California red-legged frog *Rana draytonii*	AAABH01022	Threatened	None	G2G3	S2S3	SSC
California tiger salamander *Ambystoma californiense*	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Coastal and Valley Freshwater Marsh *Coastal and Valley Freshwater Marsh*	CTT52410CA	None	None	G3	S2.1	
coastal bluff morning-glory *Calystegia purpurata ssp. saxicola*	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
Coastal Brackish Marsh *Coastal Brackish Marsh*	CTT52200CA	None	None	G2	S2.1	
Coastal Terrace Prairie *Coastal Terrace Prairie*	CTT41100CA	None	None	G2	S2.1	
coastal triquetrella *Triquetrella californica*	NBMUS7S010	None	None	G2	S2	1B.2
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	PDAST4R065	None	None	G5T1T2	S1S2	1B.2
Contra Costa goldfields *Lasthenia conjugens*	PDAST5L040	Endangered	None	G1	S1	1B.1
Crystal Springs lessingia *Lessingia arachnoidea*	PDAST5S0C0	None	None	G2	S2	1B.2
Cunningham Marsh cinquefoil *Potentilla uliginosa*	PDROS1B4A0	None	None	GH	SH	1A
dark-eyed gilia *Gilia millefoliata*	PDPLM04130	None	None	G2	S2	1B.2
Dorr's Cabin jewelflower *Streptanthus morrisonii ssp. hirtiflorus*	PDBRA2G0S2	None	None	G2T1	S1	1B.2
dwarf downingia *Downingia pusilla*	PDCAM060C0	None	None	GU	S2	2B.2
dwarf soaproot *Chlorogalum pomeridianum var. minus*	PMLIL0G042	None	None	G5T3	S3	1B.2
eulachon *Thaleichthys pacificus*	AFCHB04010	Threatened	None	G5	S3	
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
fragrant fritillary *Fritillaria liliacea*	PMLIL0V0C0	None	None	G2	S2	1B.2
Franciscan onion *Allium peninsulare var. franciscanum*	PMLIL021R1	None	None	G5T1	S1	1B.2
Franciscan thistle *Cirsium andrewsii*	PDAST2E050	None	None	G3	S3	1B.2
fringed myotis *Myotis thysanodes*	AMACC01090	None	None	G4	S3	
Giuliani's dubiraphian riffle beetle *Dubiraphia giulianii*	IICOL5A020	None	None	G1G3	S1S3	
globose dune beetle *Coelus globosus*	IICOL4A010	None	None	G1G2	S1S2	
golden larkspur *Delphinium luteum*	PDRAN0B0Z0	Endangered	Rare	G1	S1	1B.1
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
Greene's narrow-leaved daisy *Erigeron greenei*	PDAST3M5G0	None	None	G3	S3	1B.2
Gualala roach *Lavinia symmetricus parvipinnis*	AFCJB19025	None	None	G4T1T2	S2S3	SSC
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
Hoffman's bristly jewelflower *Streptanthus glandulosus ssp. hoffmanii*	PDBRA2G0J4	None	None	G4T2	S2	1B.3
holly-leaved ceanothus *Ceanothus purpureus*	PDRHA04160	None	None	G2	S2	1B.2
Jepson's leptosiphon *Leptosiphon jepsonii*	PDPLM09140	None	None	G3	S3	1B.2
legenere *Legenere limosa*	PDCAM0C010	None	None	G2	S2	1B.1
long-eared myotis *Myotis evotis*	AMACC01070	None	None	G5	S3	
longfin smelt *Spirinchus thaleichthys*	AFCHB03010	Candidate	Threatened	G5	S1	SSC
many-flowered navarretia *Navarretia leucocephala ssp. plieantha*	PDPLM0C0E5	Endangered	Endangered	G4T1	S1	1B.2
Marin hesperian *Vespericola marinensis*	IMGASA4140	None	None	G2	S2	
Marin knotweed *Polygonum marinense*	PDPGN0L1C0	None	None	G2Q	S2	3.1
marsh microseris *Microseris paludosa*	PDAST6E0D0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Mendocino dodder *Cuscuta pacifica var. papillata*	PDCUS011A2	None	None	G5T1	S1	1B.2
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
mimic tryonia (=California brackishwater snail) *Tryonia imitator*	IMGASJ7040	None	None	G2	S2	
minute pocket moss *Fissidens pauperculus*	NBMUS2W0U0	None	None	G3?	S2	1B.2
monarch - California overwintering population *Danaus plexippus pop. 1*	IILEPP2012	None	None	G4T2T3	S2S3	
Morrison's jewelflower *Streptanthus morrisonii ssp. morrisonii*	PDBRA2G0S3	None	None	G2T1?	S1?	1B.2
Myrtle's silverspot butterfly *Speyeria zerene myrtleae*	IILEPJ608C	Endangered	None	G5T1	S1	
Napa false indigo *Amorpha californica var. napensis*	PDFAB08012	None	None	G4T2	S2	1B.2
narrow-anthered brodiaea *Brodiaea leptandra*	PMLIL0C022	None	None	G3?	S3?	1B.2
Navarro roach *Lavinia symmetricus navarroensis*	AFCJB19023	None	None	G4T1T2	S2S3	SSC
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
North Coast semaphore grass *Pleuropogon hooverianus*	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Northern Coastal Salt Marsh *Northern Coastal Salt Marsh*	CTT52110CA	None	None	G3	S3.2	
Northern Hardpan Vernal Pool *Northern Hardpan Vernal Pool*	CTT44110CA	None	None	G3	S3.1	
Northern Vernal Pool *Northern Vernal Pool*	CTT44100CA	None	None	G2	S2.1	
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon polemonium *Polemonium carneum*	PDPLM0E050	None	None	G3G4	S2	2B.2
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
oval-leaved viburnum *Viburnum ellipticum*	PDCPR07080	None	None	G4G5	S3?	2B.3
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC

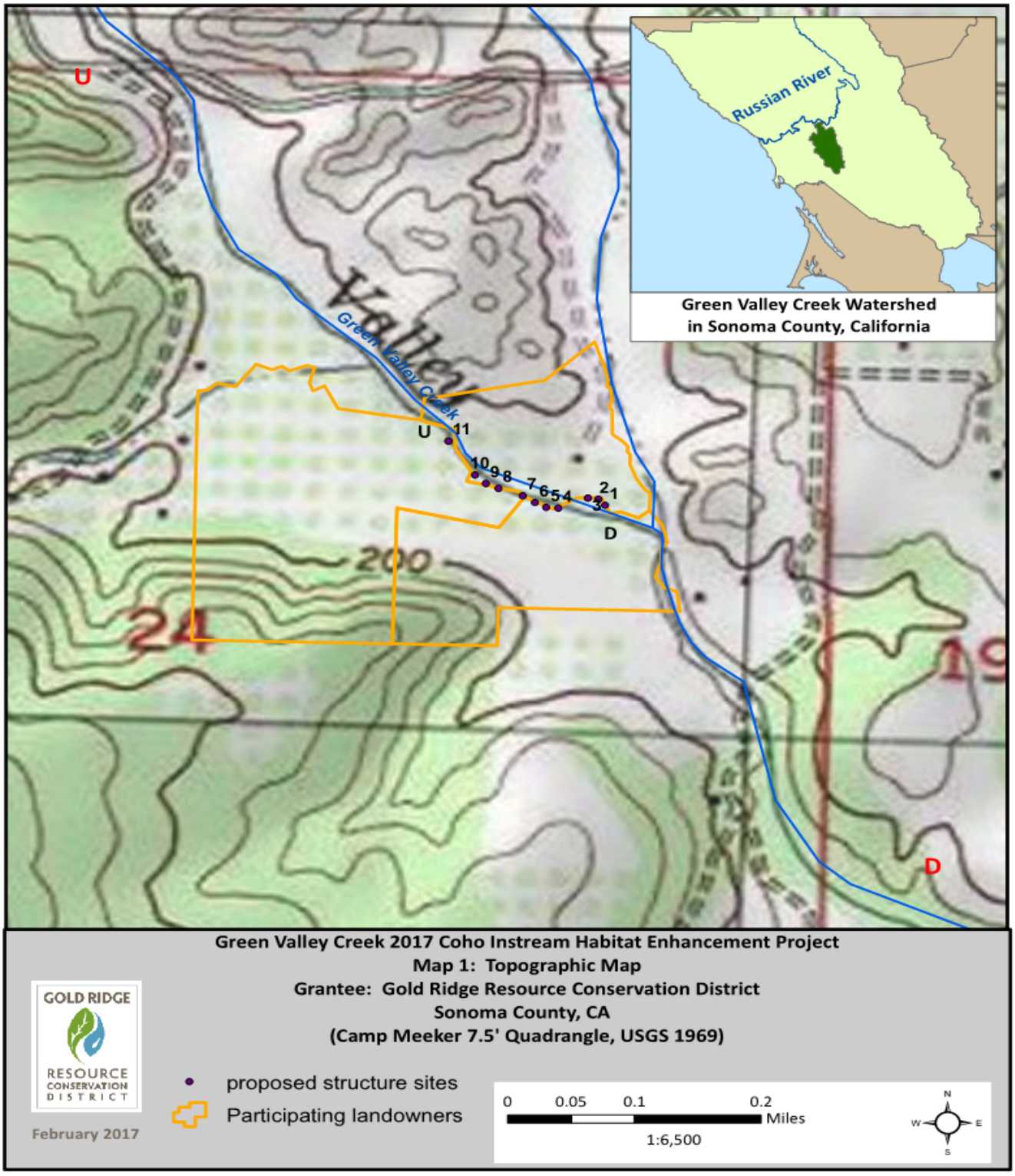
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
pappose tarplant *Centromadia parryi ssp. parryi*	PDAST4R0P2	None	None	G3T2	S2	1B.2
Pennell's bird's-beak *Cordylanthus tenuis ssp. capillaris*	PDSCR0J0S2	Endangered	Rare	G4G5T1	S1	1B.2
perennial goldfields *Lasthenia californica ssp. macrantha*	PDAST5L0C5	None	None	G3T2	S2	1B.2
Peruvian dodder *Cuscuta obtusiflora var. glandulosa*	PDCUS01111	None	None	G5T4T5	SH	2B.2
pink sand-verbena *Abronia umbellata var. breviflora*	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Pitkin Marsh lily *Lilium pardalinum ssp. pitkinense*	PMLIL1A0H3	Endangered	Endangered	G5T1	S1	1B.1
Pitkin Marsh paintbrush *Castilleja uliginosa*	PDSCR0D380	None	Endangered	GXQ	SX	1A
Point Reyes checkerbloom *Sidalcea calycosa ssp. rhizomata*	PDMAL11012	None	None	G5T2	S2	1B.2
Point Reyes horkelia *Horkelia marinensis*	PDROS0W0B0	None	None	G2	S2	1B.2
Point Reyes salty bird's-beak *Chloropyron maritimum ssp. palustre*	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
purple-stemmed checkerbloom *Sidalcea malviflora ssp. purpurea*	PDMAL110FL	None	None	G5T1	S1	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
rhinoceros auklet *Cerorhinca monocerata*	ABNNN11010	None	None	G5	S3	WL
Rincon Ridge ceanothus *Ceanothus confusus*	PDRHA04220	None	None	G1	S1	1B.1
Rincon Ridge manzanita *Arctostaphylos stanfordiana ssp. decumbens*	PDERI041G4	None	None	G3T1	S1	1B.1
rose leptosiphon *Leptosiphon rosaceus*	PDPLM09180	None	None	G1	S1	1B.1
round-headed beaked-rush *Rhynchospora globularis*	PMCYP0N0W0	None	None	G4	S1	2B.1
Russian River tule perch *Hysterocarpus traski pomo*	AFCQK02011	None	None	G5T4	S4	SSC
saline clover *Trifolium hydrophilum*	PDFAB400R5	None	None	G2	S2	1B.2
San Bruno elfin butterfly *Callophrys mossii bayensis*	IILEPE2202	Endangered	None	G4T1	S1	
San Francisco Bay spineflower *Chorizanthe cuspidata var. cuspidata*	PDPGN04081	None	None	G2T1	S1	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
San Francisco owl's-clover *Triphysaria floribunda*	PDSCR2T010	None	None	G2?	S2?	1B.2
Santa Cruz clover *Trifolium buckwestiorum*	PDFAB402W0	None	None	G2	S2	1B.1
Sebastopol meadowfoam *Limnanthes vinculans*	PDLIM02090	Endangered	Endangered	G1	S1	1B.1
serpentine daisy *Erigeron serpentinus*	PDAST3M5M0	None	None	G2	S2	1B.3
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	PDASTE5011	None	None	G4T3	S2	1B.2
small groundcone *Kopsiopsis hookeri*	PDORO01010	None	None	G4?	S1S2	2B.3
Sonoma alopecurus *Alopecurus aequalis var. sonomensis*	PMPOA07012	Endangered	None	G5T1	S1	1B.1
Sonoma spineflower *Chorizanthe valida*	PDPGN040V0	Endangered	Endangered	G1	S1	1B.1
Sonoma sunshine *Blennosperma bakeri*	PDAST1A010	Endangered	Endangered	G1	S1	1B.1
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
steelhead - central California coast DPS *Oncorhynchus mykiss irideus*	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
swamp harebell *Campanula californica*	PDCAM02060	None	None	G3	S3	1B.2
The Cedars buckwheat *Eriogonum cedrorum*	PDPGN087A0	None	None	G1	S1	1B.3
The Cedars fairy-lantern *Calochortus raichei*	PMLIL0D1L0	None	None	G2	S2	1B.2
The Cedars manzanita *Arctostaphylos bakeri ssp. sublaevis*	PDERI04222	None	Rare	G2T2	S2	1B.2
thin-lobed horkelia *Horkelia tenuiloba*	PDROS0W0E0	None	None	G2	S2	1B.2
Thurber's reed grass *Calamagrostis crassiglumis*	PMPOA17070	None	None	G3Q	S2	2B.1
Tidestrom's lupine *Lupinus tidestromii*	PDFAB2B3Y0	Endangered	Endangered	G1	S1	1B.1
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
tufted puffin *Fratercula cirrhata*	ABNNN12010	None	None	G5	S1S2	SSC
two-fork clover *Trifolium amoenum*	PDFAB40040	Endangered	None	G1	S1	1B.1
Vine Hill ceanothus *Ceanothus foliosus var. vineatus*	PDRHA040D6	None	None	G3T1	S1	1B.1
Vine Hill clarkia *Clarkia imbricata*	PDONA050K0	Endangered	Endangered	G1	S1	1B.1
Vine Hill manzanita *Arctostaphylos densiflora*	PDERI040C0	None	Endangered	G1	S1	1B.1
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western leatherwood *Dirca occidentalis*	PDTHY03010	None	None	G2	S2	1B.2
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western red bat *Lasiurus blossevillii*	AMACC05060	None	None	G5	S3	SSC
western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
white beaked-rush *Rhynchospora alba*	PMCYP0N010	None	None	G5	S2	2B.2
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
white-tailed kite *Elanus leucurus*	ABNKC06010	None	None	G5	S3S4	FP
whiteworm lichen *Thamnolia vermicularis*	NLTES43860	None	None	G3G5	S1	2B.1
woolly-headed gilia *Gilia capitata ssp. tomentosa*	PDPLM040B9	None	None	G5T1	S1	1B.1
woolly-headed spineflower *Chorizanthe cuspidata var. villosa*	PDPGN04082	None	None	G2T2	S2	1B.2

Record Count: 139

Project Location Topographic Map



Franchini Creek Sediment Reduction Project

Introduction:

The Conservation Fund (TCF) will implement the Franchini Creek Sediment Reduction Project (Project). The Projects objectives is to improve anadromous fish habitat conditions in Franchini Creek by preventing approximately 4,581 yds3 of future sediment delivery by decommissioning approximately one mile of road and storm proofing a stream crossing by replacing the culvert and installing rock armor and a critical dip.

1. The purpose of the project is to decommission one mile and replace a culvert on near stream roads which pose a high risk of substantial future chronic and episodic sediment delivery if left untreated; resulting in approximately 4,581 yds3 of sediment savings. Three acres of uplsope area will be treated.
2. The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured.
3. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* (Parts VII, and X).

Objectives:

The objective is to decommission one mile of near stream road and associated crossings and replace one culvert to reduce sediment to the stream, which will improve salmonid habitat.

Project Description:

Location:

The 19,651 acre Buckeye Forest is located in Sonoma County. The project is located on Franchini Creek, a tributary of Buckeye Creek in the Gualala River watershed. The Gualala River drains 685 miles of streams in the northern California Coastal Ranges. The river enters the Pacific Ocean south of the town of Gualala, 114 miles north of San Francisco. The center of the project areas are: Site #1 38.75188200 -123.37156000; Site #2 38.74248000 -123.35470500 as shown on the Project Location Map (Attachment 1), which is attached and made part of this agreement by this reference.

Project Set Up:

The Conservation Fund (TCF) will provide all contracting oversight and administration including but not limited to obtaining permits, securing agreements (Grantor, subcontractors, and landowner), scheduling, implementation oversight, invoicing, reporting and agency and landowner communications.

Materials:

Materials for this project include straw mulch to be placed for erosion control, 20 yards of rip-rap generated on site and a 48" culvert for road upgrade.

Tasks:

Task 1 – Contract Oversight:

The Conservation Fund (TCF) will provide all contracting oversight and administration including but not limited to obtaining permits, securing agreements (Grantor, subcontractors, and landowner), scheduling, implementation oversight, invoicing, reporting and agency and landowner communications.

Task 2 – Implementation of Proposed Treatment:

TCF Forester will administer the project in the field to ensure timeliness, completion, and conformance with restoration and land management goals and provide project supervision. The Subcontracted Licensed Contractor will provide equipment and work under the direction of TCF. Implementation of the proposed treatment includes the following action items:

Action 1: Heavy equipment will be moved in via Lowbed to the project site.

Action 2: Upgrade stream crossing at road point feature 19 by installing at new 48" culvert with critical dip and rock armor.

Action 3: Decommission approximately one mile of near stream road and associated crossings, using a Cat D7 and Excavator. When necessary spoils will be removed with a dump truck.

The following general guidelines apply to road abandonment treatments:

- Stream crossings shall be excavated such that to the extent possible all fill is removed and a 100 year flood flow channel bottom is left. Crossing approaches will be sloped back to 2:1 or otherwise stable sideslopes. Excavated spoils will be stored locally against the road cutbank where it will not erode. Where limited space is present for local spoils disposal, excavated material will be hauled offsite with dumptruck and stabilized such that it will not deliver to a watercourse.
- Road surface treatments to minimize long-term chronic erosion and facilitate revegetation will include a combination of one or all of the following measures: 1) Ripping of the road surface with mechanical rippers; 2) Excavation of perched fill and unstable sidecast and placement against the truck road cutbank to create an outslope; 3) Installation of oversized waterbars to provide road surface drainage.

Deliverables:

Final Report by Task which contains: (1) general grant information, (2) location of work, (3) project access, (4) landowner's name and address, (5) a description and analysis of the restoration and planning person hours expended, (6) dates of

work and the number of person hours expended, (7) labeled before and after photos of selected restoration activities and techniques, (8) grant dollars spent and contributed and/or in kind services used to complete the project, (9) GIS generated maps of project achievements, (10) a quantified description of the results of the project that will include:
a. Total miles of road treated;
b. Total acres of upslope area treated;
c. For each work site indicate;
i. Cubic yards of sediment prevented from entering the stream;
ii. Miles of road treated for road drainage system improvements;
iii. Miles of road decommissioned/abandoned;
iv. Number of upslope stream crossing treated (not for fish passage);
v. Number of springs and landslides treated;
vi. Type and number of upland erosion/sediment control used, select from: erosion control structures, planting, or slope stabilization;
vii. Scientific names of plant species planted;

Timelines:
The project will be completed according to the following timeline information:

- Task 1: Grantee project oversight, coordination and reporting will begin upon final execution of the grant and will continue through the life of the project – June 2018 through March 31, 2019.
- Task 2: Implementation of work will occur from July 1, 2018 through October 31. 2018.

Additional Requirements:

The following additional requirements apply to this project:
The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the

standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

All road decommissioning will be done in accordance with techniques described in the Handbook for Forest and Ranch Roads, (PWA, 1994c.) and the *California Salmonid Stream Habitat Restoration Manual*, Volume II, Part X. All road upgrade and decommissioning sites and techniques shall be approved by the Grantor Project Manager before any equipment work takes place.

All crossings treated in fish bearing reaches of streams will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and the criteria for adult and juvenile salmonid fish passage as described in Volume II, Part IX of the *California Salmonid Stream Habitat Restoration Manual*.

Seeding and mulching of all exposed soils shall be done for all slopes which may deliver sediment to a stream. Woody debris will be concentrated on finished slopes adjacent to stream crossings. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years. Mulching and seeding will take place as sites are completed to avoid unforeseen erosion. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Sites that are expected to erode and deliver sediment to the stream are the only locations where work will be authorized for reimbursement under the terms of this agreement. Reimbursement will not be authorized for work done to improve aesthetics only.

The landowner or responsible party must sign an access agreement stating they agree to maintain the erosion control project for a period of not less than 10 years. Maintenance will consist of repair to the road or stream crossing to a level that will effectively reduce sediment from entering the stream. In the event of an act of nature which results in partial or complete failure of the project, the landowner or applicant will not be held responsible for costs incurred after the act of nature. Acts of nature include, but are not limited to floods, earthquakes, volcanic eruptions, and wind storms.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Annapolis (3812363) OR McGuire Ridge (3812374) OR Gube Mountain (3812373) OR Big Foot Mtn. (3812372) OR Stewarts Point (3812364) OR Tombs Creek (3812362) OR Plantation (3812353) OR Fort Ross (3812352))

Possible species within Annapolis Quad and surrounding quads for 725516 Franchini Creek Sediment Reduction Project, T10N R13W S6, Sonoma County

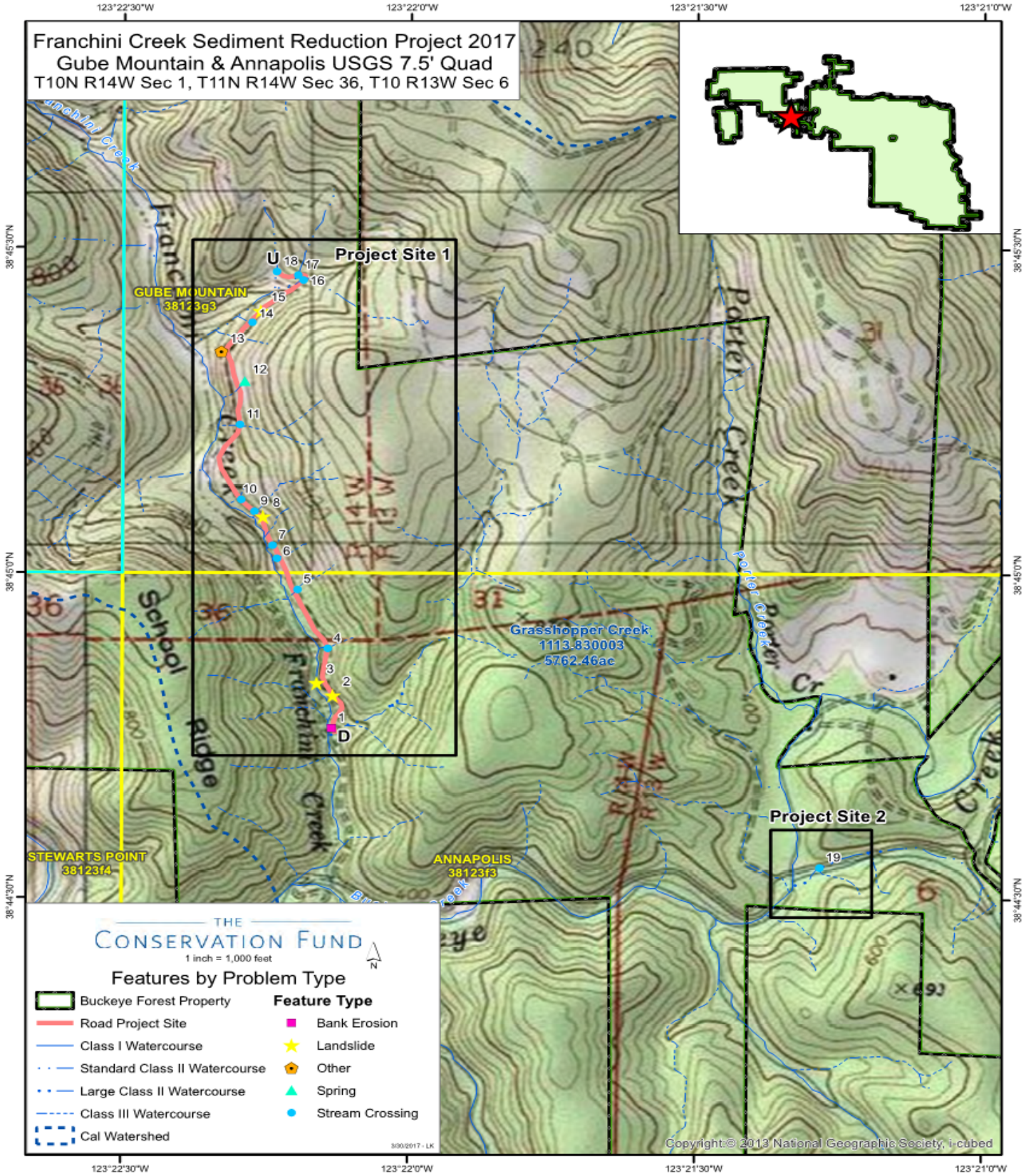
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
angel's hair lichen *Ramalina thrausta*	NLLEC3S340	None	None	G5	S2?	2B.1
Baker's goldfields *Lasthenia californica ssp. bakeri*	PDAST5L0C4	None	None	G3T1	S1	1B.2
beaked tracyina *Tracyina rostrata*	PDAST9D010	None	None	G2	S2	1B.2
Behren's silverspot butterfly *Speyeria zerene behrensii*	IILEPJ6088	Endangered	None	G5T1	S1	
Blasdale's bent grass *Agrostis blasdalei*	PMPOA04060	None	None	G2	S2	1B.2
bluff wallflower *Erysimum concinnum*	PDBRA160E3	None	None	G3	S2	1B.2
California giant salamander *Dicamptodon ensatus*	AAAAH01020	None	None	G3	S2S3	SSC
California red-legged frog *Rana draytonii*	AAABH01022	Threatened	None	G2G3	S2S3	SSC
coast lily *Lilium maritimum*	PMLIL1A0C0	None	None	G2	S2	1B.1
coastal bluff morning-glory *Calystegia purpurata ssp. saxicola*	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
Coastal Terrace Prairie *Coastal Terrace Prairie*	CTT41100CA	None	None	G2	S2.1	
Cobb Mountain lupine *Lupinus sericatus*	PDFAB2B3J0	None	None	G2?	S2?	1B.2
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
deceiving sedge *Carex saliniformis*	PMCYP03BY0	None	None	G2	S2	1B.2
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
grasshopper sparrow *Ammodramus savannarum*	ABPBXA0020	None	None	G5	S3	SSC
Gualala roach *Lavinia symmetricus parvipinnis*	AFCJB19025	None	None	G4T1T2	S2S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Hoffman's bristly jewelflower *Streptanthus glandulosus ssp. hoffmanii*	PDBRA2G0J4	None	None	G4T2	S2	1B.3
holly-leaved ceanothus *Ceanothus purpureus*	PDRHA04160	None	None	G2	S2	1B.2
maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0	None	None	G3	S3	4.2
marbled murrelet *Brachyramphus marmoratus*	ABNNN06010	Threatened	Endangered	G3G4	S1	
marsh pea *Lathyrus palustris*	PDFAB250P0	None	None	G5	S2	2B.2
Mendocino Pygmy Cypress Forest *Mendocino Pygmy Cypress Forest*	CTT83161CA	None	None	G2	S2.1	
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
monarch - California overwintering population *Danaus plexippus pop. 1*	IILEPP2012	None	None	G4T2T3	S2S3	
Morrison's jewelflower *Streptanthus morrisonii ssp. morrisonii*	PDBRA2G0S3	None	None	G2T1?	S1?	1B.2
Napa false indigo *Amorpha californica var. napensis*	PDFAB08012	None	None	G4T2	S2	1B.2
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
perennial goldfields *Lasthenia californica ssp. macrantha*	PDAST5L0C5	None	None	G3T2	S2	1B.2
Point Reyes checkerbloom *Sidalcea calycosa ssp. rhizomata*	PDMAL11012	None	None	G5T2	S2	1B.2
purple-stemmed checkerbloom *Sidalcea malviflora ssp. purpurea*	PDMAL110FL	None	None	G5T1	S1	1B.2
pygmy cypress *Hesperocyparis pygmaea*	PGCUP04032	None	None	G1	S1	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
rose leptosiphon *Leptosiphon rosaceus*	PDPLM09180	None	None	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
running-pine *Lycopodium clavatum*	PPLYC01080	None	None	G5	S3	4.1
serpentine daisy *Erigeron serpentinus*	PDAST3M5M0	None	None	G2	S2	1B.3
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	PDASTE5011	None	None	G4T3	S2	1B.2
Sonoma arctic skipper *Carterocephalus palaemon magnus*	IILEP42012	None	None	G5T5	S1	
Sonoma spineflower *Chorizanthe valida*	PDPGN040V0	Endangered	Endangered	G1	S1	1B.1
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
steelhead - northern California DPS *Oncorhynchus mykiss irideus*	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
supple daisy *Erigeron supplex*	PDAST3M3Z0	None	None	G2	S2	1B.2
swamp harebell *Campanula californica*	PDCAM02060	None	None	G3	S3	1B.2
The Cedars buckwheat *Eriogonum cedrorum*	PDPGN087A0	None	None	G1	S1	1B.3
The Cedars fairy-lantern *Calochortus raichei*	PMLIL0D1L0	None	None	G2	S2	1B.2
The Cedars manzanita *Arctostaphylos bakeri ssp. sublaevis*	PDERI04222	None	Rare	G2T2	S2	1B.2
thin-lobed horkelia *Horkelia tenuiloba*	PDROS0W0E0	None	None	G2	S2	1B.2
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
woolly-headed gilia *Gilia capitata ssp. tomentosa*	PDPLM040B9	None	None	G5T1	S1	1B.1
woolly-headed spineflower *Chorizanthe cuspidata var. villosa*	PDPGN04082	None	None	G2T2	S2	1B.2
Yuma myotis *Myotis yumanensis*	AMACC01020	None	None	G5	S4	

Record Count: 58

Project Location Topographic Map



Introduction needs to include:

1. Gold Ridge Resource Conservation District Dempster Vineyard Dam Removal Project
2. Gold Ridge Resource Conservation District will implement the Dempster Vineyard Dam Removal Project. This project seeks to remove a concrete dam spanning lower Green Valley Creek and install large wood structures to improve fish passage for juvenile and adult coho salmon and steelhead at all flow conditions. The Dempster dam was likely constructed to provide a drafting pool to irrigate the adjacent vineyard. In August 1969, DFG identified the section of creek as containing a 4 inch diversion. The 1976 DFG survey described a diversion pump backwatered by a 2 feet wide by 2 feet high concrete dam. The 1996 DFG Green Valley Creek Stream Inventory Report, describes the site as containing a 3 feet tall by 4 feet diameter concrete dam fitted with a culvert. In November 2015, Eric Austensen, Professional Engineer of Streamline Engineering completed a topographic survey of the site. Austensen's measurements reveal the current dam dimensions to be approximately 6 feet tall by 30 feet wide, containing a boulder spillway and no culvert. Austensen's hydrologic and hydraulic study revealed that fish passage at the site is limited by both high velocities and low water depths during low flow conditions. This structure is believed to be the most downstream anthropogenic barrier to fish passage in the Green Valley Creek watershed.
3. Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and Notice to Proceed are secured.
4. All habitat improvement will follow techniques in the California Stream Habitat Restoration Manual parts VII, IX and XII.

Objective(s):

a. The goal of this project is to remove a concrete dam spanning lower Green Valley Creek and install large wood structures to improve fish passage for juvenile and adult coho and steelhead for all flow conditions. The Project restoration elements include:
b. i. Prior to construction fish will be relocated by a qualified biologist.
c. ii. To prevent downstream pollution and to facilitate construction of the project the site will be dewatered utilizing a temporary dewatering pipe, outletting dirty water onto the floodplain as a natural sediment filter, and returning clean water to the channel downstream of the site.
d. iii. Excavation and off-haul of 140 cubic yards of concrete, earth, and metal dam debris, will be accomplished by utilizing an excavator, bulldozer, loader and dumptruck.
e. iv. Installation and anchoring of three (3) redwood logs and four (4) rootwads with eleven (11) one-ton boulders to further enhance fish passage at varying flow depths, will be completed utilizing hand labor and equipment.
f. v. To facilitate access to the site, 60 cubic yards of gravel will be temporarily relocated to the right bank of the stream.

g. vi. To stabilize the right bank, 10 tons of vegetated rock revetment will be installed.
h. vii. Installation of twenty (20) willow sprigs to revegetate site will be installed with hand tools.
i. viii. To prevent post-implementation erosion, installation of erosion control seed, straw and blankets will follow construction activities.
j. ix. After completing construction, the grantee will complete a topographic survey, develop as-built drawings and longitudinal profile, and monitor the project post-construction at two life stage design flows.
k.

Project Description:

Location: The project is located within the channel of Green Valley Creek on the Dempster property, Sonoma County Assessor Parcel Number 083 200 005, approximately 550 feet east-north-east from the intersection of Vellutini and Martinelli Roads in Sonoma County, California. Green Valley Creek is a tributary to the Russian River. The project site is approximately 8,115 feet upstream of the Green Valley Creek confluence with the Russian River. The project site is located at 38.48613700° North, 122.91830100° West, in Section 1 of Township 7 North, Range 10 West, Mount Diablo Base and Meridian, on the Camp Meeker 7.5 Minute United States Geological Survey (USGS) Quadrangle.

From the intersection of Covey Road and Highway 116 in downtown Forestville, travel west on Highway 116 for 0.9 miles. Turn right on Martinelli Road. Continue on Martinell Road for 1.3 miles. Turn right at the double metal gates across from the driveway for 8781 Martinelli Road (approximately 200 feet beyond the intersection with Vellutini Road). Continue down the vineyard avenue for 525 feet to the project site.

Project Set Up: The Dempster Vineyards Dam Removal Project will be implemented by the Gold Ridge Resource Conservation District (Grantee). The Grantee Project Manager will provide overall project oversight, including contract administration, landowner communication, public outreach, bid packet development and bid tour organization, permit application development, subcontractor selection and management, invoicing, and reporting. The Grantee Lead Scientist will assist in permitting and bid tour preparations. The Grantee Ecologist will perform biological surveys and monitoring as required, and assist in dewatering and species relocation. The Grantee Executive Director will review contracts and invoices, and assist in landowner communications and public outreach.

Engineering oversight subcontractor Eric Austensen, Professional Engineer (P.E.) of Streamline Engineering, as designer of the project, will assist in permitting and bid tours, will provide construction subcontractor oversight and engineering

inspections, and will develop asbuilt drawings and a post-construction longitudinal profile of the affected stream reach.

The subcontractor Qualified Biologist will lead dewatering and species relocation, with assistance from the Grantee Ecologist, and Grantee Project Coordinator.

The Construction Contractor (subcontractor) will construct the project and will be selected during a competitive bid process according to the Gantee's Construction Procurement Policy. The Construction Contractor and will perform actual construction activities, including barrier removal, habitat structure placement, and erosion control.

Subcontractor, Contractor Compliance and Monitoring Incorporated, will perform labor compliance monitoring to comply with prevailing wage requirements.

Materials: GRRCD materials charges include a 1600 permit fee and mileage for travel to and from the project site. All other materials will be purchased by the construction contractor, who will be selected through a competitive bidding process. Construction materials include the following: Logs and rootwads, with boulders used for anchoring. Cable, cable clamps, epoxy and nozzles, nuts, washers, rebar, air compressor, and allthread are used for anchoring wood pieces to boulders. Drill bits require frequent replacement during anchoring, and are included in the budget. Dewatering materials are needed to dewater pools during construction as needed. Rice straw, seed, erosion blanket, and erosion control pins are used on graded slopes following construction. Other materials, such as willow sprigs, gravel, and revetment rock, will be acquired onsite and not purchased.

Tasks: Task 1 Project Management. The Grantee Project Manager will perform all duties related to contract administration, bid packet development and bid tour organization, subcontractor management, invoicing, and reporting. The Grantee Executive Director will review contracts and invoices, and assist in landowner communications and public outreach.

Task 2 Permitting. The Grantee Project Manager will develop the 1602 permit, County Grading Exemption, and all permitting information required for dewatering and species relocation. Grantee Lead Scientist will assist in permit application development.

Task 3 Biological Surveys. The Grantee Ecologist and Grantee Project Coordinator will perform all biological surveys as required for California Environmental Quality Act and permit compliance.

Task 4 Project Construction. The Grantee Project Manager, with assistance from the Lead Scientist, will oversee subcontractors engaged in project construction, including the construction contractor, Streamline Engineering, and the Qualified

Biologist. The Grantee Ecologist and Project Coordinator will assist in dewatering and species relocation. As the Project Engineer, Streamline Engineering will provide Engineering oversight for the project. Contractor Compliance and Monitoring Incorporated will perform third-party labor compliance monitoring.

Deliverables: Task 1 Project Management. The grantee will deliver monthly, annual and final reports to the Grantor Project Manager.

Task 2 Permitting. The Grantee will deliver copies of Permits, including 1602 permit and county grading exemption to the Grantor Project Manager.

Task 3 Biological surveys. The Grantee will deliver copies of biological surveys and reports, including: protected species habitat assessment and relocation plan, and final report of findings with data sheets to the Grantor Project Manager.

Task 4 Project Construction. The following will be delivered to the Grantor Project Manager to demonstrate successful dam removal and reestablishment of fish passage flows: As-built construction plans, post longitudinal profile, and pre and post construction photo documentation.

Timelines:

1. Task 1 – Project Management will occur from June 01, 2018 to March 31, 2020. Activities related to the bid tour will be completed by May 31, 2019. Subcontractor management, invoicing, and reporting will be ongoing throughout the grant agreement period.
2. Task 2 – Permitting will occur from June 01, 2018 to May 31, 2019. All permits for project construction will be in place by May 31, 2019.
3. Task 3 – Biological Surveys will be conducted from March 01, 2019 to October 31, 2019. A protected species habitat assessment and relocation plan will be submitted for approval by May 31, 2019. Biological surveys will be conducted prior to and during construction, with a final report (including data sheets) to be submitted after the completion of construction in March 2020.
4. Task 4 – Project Construction will occur from August 01, 2019 to February 28, 2020. All tasks related to the dam removal and installation of wood habitat, and post construction erosion control will be completed by October 15, 2019. Revegetation (willow sprigging) will be conducted winter 2019, not later January 31, 2020. A post-longitudinal profile, photo-monitoring, and as-built construction plans will be completed by February 28, 2020.
5. The work window for the project will be from July 1 through October 15.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a “notice to proceed” letter has been received from the Grantor Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit.

Actual project start and end dates, within this timeframe, are at the discretion of Grantor.

Staging or storage areas for equipment, materials, fuels, lubricants, and solvents, will be located outside of the stream's high water channel and associated riparian area where it cannot enter the stream channel. Stationary equipment such as motors, pumps, generators, compressors, and welders located within the dry portion of the stream channel or adjacent to the stream, will be positioned over drip-pans. Vehicles will be moved out of the normal high water area of the stream prior to refueling and lubricating. The grantee shall ensure that contamination of habitat does not occur during such operations. Prior to the onset of work, the Grantee shall provide to Grantor a plan to allow a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish and Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other native aquatic species from the project area. If the project requires dewatering of the site and the relocation of listed aquatic species, the Grantee will implement the following measures to minimize harm and mortality to listed species as well as other native aquatic species:

- Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year.

- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the Grantor Project Manager and pursuant to conditions in the USACE Regional General Permit, NMFS Biological Opinion, and project's Lake and Streambed Alteration Agreement (1600 permit).

- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in

Part IX, pages 52 and 53 of the California Salmonid Stream Habitat Restoration Manual.

- Only qualified fisheries biologist that are approved by USFWS and permitted by CDFW under a California Endangered Species Act (CESA) Memorandum of Understanding (MOU) shall handle and relocate CESA listed species.

- All electrofishing shall be performed by a qualified fisheries biologist under the supervision of CDFW and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

- NMFS Approved fisheries biologists will provide fish relocation data via the Grantee to the Grantor Project Manager on a form provided by Grantor.

The bridge (culvert) design and installation will meet flow carrying capacity required for a 100-year flood event as identified by specifications determined by National Oceanic and Atmospheric Administration (NOAA) Fisheries and the Grantor, for adult and juvenile salmonid fish passage. The project will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and criteria for fish passage as described in Volume II, Part IX, of the California Salmonid Stream Habitat Restoration Manual. The engineered plans for the bridge (culvert) installation shall be visually reviewed and authorized by NOAA Fisheries or Grantor engineers prior to commencement of work.

All habitat improvements will follow techniques described in the California Salmonid Stream Habitat Restoration Manual, Volume I, and Volume II Part XI and Part XII. The Grantee/landowner will maintain the new crossing, inspect the crossing in a timely manner and remove debris as necessary during the storm season.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Manager. All habitat improvements will follow techniques described in the California Salmonid Stream Habitat Restoration Manual.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Camp Meeker (3812248) OR Cazadero (3812351) OR Guerneville (3812258) OR Healdsburg (3812257) OR Duncans Mills (3812341) OR Sebastopol (3812247) OR Bodega Head (3812331) OR Valley Ford (3812238) OR Two Rock (3812237))

Possible species within the Camp Meeker quadrangle and surrounding quads for 725591 Dempster Vineyard Dam Removal Project, T07N R10W S1, Sonoma County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
Baker's goldfields *Lasthenia californica ssp. bakeri*	PDAST5L0C4	None	None	G3T1	S1	1B.2
Baker's larkspur *Delphinium bakeri*	PDRAN0B050	Endangered	Endangered	G1	S1	1B.1
Baker's manzanita *Arctostaphylos bakeri ssp. bakeri*	PDERI04221	None	Rare	G2T1	S1	1B.1
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	PDPLM0C0E1	None	None	G4T2	S2	1B.1
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S2	
black swift *Cypseloides niger*	ABNUA01010	None	None	G4	S2	SSC
Blasdale's bent grass *Agrostis blasdalei*	PMPOA04060	None	None	G2	S2	1B.2
Blennosperma vernal pool andrenid bee *Andrena blennospermatis*	IIHYM35030	None	None	G2	S2	
blue coast gilia *Gilia capitata ssp. chamissonis*	PDPLM040B3	None	None	G5T2	S2	1B.1
bluff wallflower *Erysimum concinnum*	PDBRA160E3	None	None	G3	S2	1B.2
bristly sedge *Carex comosa*	PMCYP032Y0	None	None	G5	S2	2B.1
brownish beaked-rush *Rhynchospora capitellata*	PMCYP0N080	None	None	G5	S1	2B.2
bumblebee scarab beetle *Lichnanthe ursina*	IICOL67020	None	None	G2	S2	
Burke's goldfields *Lasthenia burkei*	PDAST5L010	Endangered	Endangered	G1	S1	1B.1
burrowing owl *Athene cunicularia*	ABNSB10010	None	None	G4	S3	SSC
California beaked-rush *Rhynchospora californica*	PMCYP0N060	None	None	G1	S1	1B.1
California freshwater shrimp *Syncaris pacifica*	ICMAL27010	Endangered	Endangered	G2	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
California giant salamander *Dicamptodon ensatus*	AAAAH01020	None	None	G3	S2S3	SSC
California linderiella *Linderiella occidentalis*	ICBRA06010	None	None	G2G3	S2S3	
California red-legged frog *Rana draytonii*	AAABH01022	Threatened	None	G2G3	S2S3	SSC
California tiger salamander *Ambystoma californiense*	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Coastal and Valley Freshwater Marsh *Coastal and Valley Freshwater Marsh*	CTT52410CA	None	None	G3	S2.1	
coastal bluff morning-glory *Calystegia purpurata ssp. saxicola*	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
Coastal Brackish Marsh *Coastal Brackish Marsh*	CTT52200CA	None	None	G2	S2.1	
Coastal Terrace Prairie *Coastal Terrace Prairie*	CTT41100CA	None	None	G2	S2.1	
coastal triquetrella *Triquetrella californica*	NBMUS7S010	None	None	G2	S2	1B.2
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	PDAST4R065	None	None	G5T1T2	S1S2	1B.2
Contra Costa goldfields *Lasthenia conjugens*	PDAST5L040	Endangered	None	G1	S1	1B.1
Crystal Springs lessingia *Lessingia arachnoidea*	PDAST5S0C0	None	None	G2	S2	1B.2
Cunningham Marsh cinquefoil *Potentilla uliginosa*	PDROS1B4A0	None	None	GH	SH	1A
dark-eyed gilia *Gilia millefoliata*	PDPLM04130	None	None	G2	S2	1B.2
Dorr's Cabin jewelflower *Streptanthus morrisonii ssp. hirtiflorus*	PDBRA2G0S2	None	None	G2T1	S1	1B.2
dwarf downingia *Downingia pusilla*	PDCAM060C0	None	None	GU	S2	2B.2
dwarf soaproot *Chlorogalum pomeridianum var. minus*	PMLIL0G042	None	None	G5T3	S3	1B.2
eulachon *Thaleichthys pacificus*	AFCHB04010	Threatened	None	G5	S3	
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
fragrant fritillary *Fritillaria liliacea*	PMLIL0V0C0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Franciscan onion *Allium peninsulare var. franciscanum*	PMLIL021R1	None	None	G5T1	S1	1B.2
Franciscan thistle *Cirsium andrewsii*	PDAST2E050	None	None	G3	S3	1B.2
fringed myotis *Myotis thysanodes*	AMACC01090	None	None	G4	S3	
Giuliani's dubiraphian riffle beetle *Dubiraphia giulianii*	IICOL5A020	None	None	G1G3	S1S3	
globose dune beetle *Coelus globosus*	IICOL4A010	None	None	G1G2	S1S2	
golden larkspur *Delphinium luteum*	PDRAN0B0Z0	Endangered	Rare	G1	S1	1B.1
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
Greene's narrow-leaved daisy *Erigeron greenei*	PDAST3M5G0	None	None	G3	S3	1B.2
Gualala roach *Lavinia symmetricus parvipinnis*	AFCJB19025	None	None	G4T1T2	S2S3	SSC
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
Hoffman's bristly jewelflower *Streptanthus glandulosus ssp. hoffmanii*	PDBRA2G0J4	None	None	G4T2	S2	1B.3
holly-leaved ceanothus *Ceanothus purpureus*	PDRHA04160	None	None	G2	S2	1B.2
Jepson's leptosiphon *Leptosiphon jepsonii*	PDPLM09140	None	None	G3	S3	1B.2
legenere *Legenere limosa*	PDCAM0C010	None	None	G2	S2	1B.1
long-eared myotis *Myotis evotis*	AMACC01070	None	None	G5	S3	
longfin smelt *Spirinchus thaleichthys*	AFCHB03010	Candidate	Threatened	G5	S1	SSC
many-flowered navarretia *Navarretia leucocephala ssp. plieantha*	PDPLM0C0E5	Endangered	Endangered	G4T1	S1	1B.2
Marin hesperian *Vespericola marinensis*	IMGASA4140	None	None	G2	S2	
Marin knotweed *Polygonum marinense*	PDPGN0L1C0	None	None	G2Q	S2	3.1
marsh microseris *Microseris paludosa*	PDAST6E0D0	None	None	G2	S2	1B.2
Mendocino dodder *Cuscuta pacifica var. papillata*	PDCUS011A2	None	None	G5T1	S1	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
mimic tryonia (=California brackishwater snail) *Tryonia imitator*	IMGASJ7040	None	None	G2	S2	
minute pocket moss *Fissidens pauperculus*	NBMUS2W0U0	None	None	G3?	S2	1B.2
monarch - California overwintering population *Danaus plexippus pop. 1*	IILEPP2012	None	None	G4T2T3	S2S3	
Morrison's jewelflower *Streptanthus morrisonii ssp. morrisonii*	PDBRA2G0S3	None	None	G2T1?	S1?	1B.2
Myrtle's silverspot butterfly *Speyeria zerene myrtleae*	IILEPJ608C	Endangered	None	G5T1	S1	
Napa false indigo *Amorpha californica var. napensis*	PDFAB08012	None	None	G4T2	S2	1B.2
narrow-anthered brodiaea *Brodiaea leptandra*	PMLIL0C022	None	None	G3?	S3?	1B.2
Navarro roach *Lavinia symmetricus navarroensis*	AFCJB19023	None	None	G4T1T2	S2S3	SSC
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
North Coast semaphore grass *Pleuropogon hooverianus*	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Northern Coastal Salt Marsh *Northern Coastal Salt Marsh*	CTT52110CA	None	None	G3	S3.2	
Northern Hardpan Vernal Pool *Northern Hardpan Vernal Pool*	CTT44110CA	None	None	G3	S3.1	
Northern Vernal Pool *Northern Vernal Pool*	CTT44100CA	None	None	G2	S2.1	
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon polemonium *Polemonium carneum*	PDPLM0E050	None	None	G3G4	S2	2B.2
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
oval-leaved viburnum *Viburnum ellipticum*	PDCPR07080	None	None	G4G5	S3?	2B.3
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
pappose tarplant *Centromadia parryi ssp. parryi*	PDAST4R0P2	None	None	G3T2	S2	1B.2

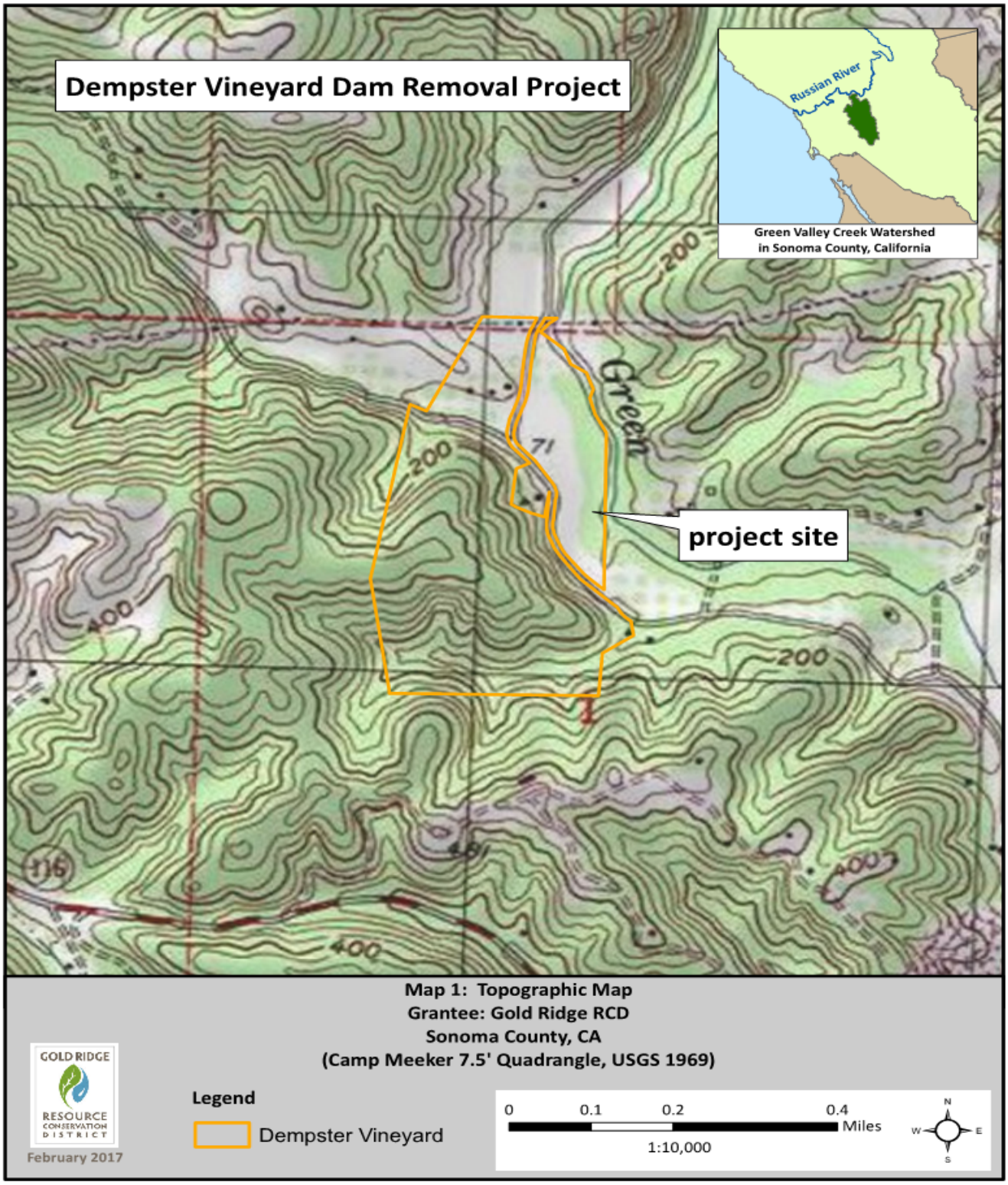
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Pennell's bird's-beak *Cordylanthus tenuis ssp. capillaris*	PDSCR0J0S2	Endangered	Rare	G4G5T1	S1	1B.2
perennial goldfields *Lasthenia californica ssp. macrantha*	PDAST5L0C5	None	None	G3T2	S2	1B.2
Peruvian dodder *Cuscuta obtusiflora var. glandulosa*	PDCUS01111	None	None	G5T4T5	SH	2B.2
pink sand-verbena *Abronia umbellata var. breviflora*	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Pitkin Marsh lily *Lilium pardalinum ssp. pitkinense*	PMLIL1A0H3	Endangered	Endangered	G5T1	S1	1B.1
Pitkin Marsh paintbrush *Castilleja uliginosa*	PDSCR0D380	None	Endangered	GXQ	SX	1A
Point Reyes checkerbloom *Sidalcea calycosa ssp. rhizomata*	PDMAL11012	None	None	G5T2	S2	1B.2
Point Reyes horkelia *Horkelia marinensis*	PDROS0W0B0	None	None	G2	S2	1B.2
Point Reyes salty bird's-beak *Chloropyron maritimum ssp. palustre*	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
purple-stemmed checkerbloom *Sidalcea malviflora ssp. purpurea*	PDMAL110FL	None	None	G5T1	S1	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
rhinoceros auklet *Cerorhinca monocerata*	ABNNN11010	None	None	G5	S3	WL
Rincon Ridge ceanothus *Ceanothus confusus*	PDRHA04220	None	None	G1	S1	1B.1
Rincon Ridge manzanita *Arctostaphylos stanfordiana ssp. decumbens*	PDERI041G4	None	None	G3T1	S1	1B.1
rose leptosiphon *Leptosiphon rosaceus*	PDPLM09180	None	None	G1	S1	1B.1
round-headed beaked-rush *Rhynchospora globularis*	PMCYP0N0W0	None	None	G4	S1	2B.1
Russian River tule perch *Hysterocarpus traski pomo*	AFCQK02011	None	None	G5T4	S4	SSC
saline clover *Trifolium hydrophilum*	PDFAB400R5	None	None	G2	S2	1B.2
San Bruno elfin butterfly *Callophrys mossii bayensis*	IILEPE2202	Endangered	None	G4T1	S1	
San Francisco Bay spineflower *Chorizanthe cuspidata var. cuspidata*	PDPGN04081	None	None	G2T1	S1	1B.2
San Francisco owl's-clover *Triphysaria floribunda*	PDSCR2T010	None	None	G2?	S2?	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Santa Cruz clover *Trifolium buckwestiorum*	PDFAB402W0	None	None	G2	S2	1B.1
Sebastopol meadowfoam *Limnanthes vinculans*	PDLIM02090	Endangered	Endangered	G1	S1	1B.1
serpentine daisy *Erigeron serpentinus*	PDAST3M5M0	None	None	G2	S2	1B.3
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	PDASTE5011	None	None	G4T3	S2	1B.2
small groundcone *Kopsiopsis hookeri*	PDORO01010	None	None	G4?	S1S2	2B.3
Sonoma alopecurus *Alopecurus aequalis var. sonomensis*	PMPOA07012	Endangered	None	G5T1	S1	1B.1
Sonoma spineflower *Chorizanthe valida*	PDPGN040V0	Endangered	Endangered	G1	S1	1B.1
Sonoma sunshine *Blennosperma bakeri*	PDAST1A010	Endangered	Endangered	G1	S1	1B.1
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
steelhead - central California coast DPS *Oncorhynchus mykiss irideus*	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
swamp harebell *Campanula californica*	PDCAM02060	None	None	G3	S3	1B.2
The Cedars buckwheat *Eriogonum cedrorum*	PDPGN087A0	None	None	G1	S1	1B.3
The Cedars fairy-lantern *Calochortus raichei*	PMLIL0D1L0	None	None	G2	S2	1B.2
The Cedars manzanita *Arctostaphylos bakeri ssp. sublaevis*	PDERI04222	None	Rare	G2T2	S2	1B.2
thin-lobed horkelia *Horkelia tenuiloba*	PDROS0W0E0	None	None	G2	S2	1B.2
Thurber's reed grass *Calamagrostis crassiglumis*	PMPOA17070	None	None	G3Q	S2	2B.1
Tidestrom's lupine *Lupinus tidestromii*	PDFAB2B3Y0	Endangered	Endangered	G1	S1	1B.1
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
tufted puffin *Fratercula cirrhata*	ABNNN12010	None	None	G5	S1S2	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
two-fork clover *Trifolium amoenum*	PDFAB40040	Endangered	None	G1	S1	1B.1
Vine Hill ceanothus *Ceanothus foliosus var. vineatus*	PDRHA040D6	None	None	G3T1	S1	1B.1
Vine Hill clarkia *Clarkia imbricata*	PDONA050K0	Endangered	Endangered	G1	S1	1B.1
Vine Hill manzanita *Arctostaphylos densiflora*	PDERI040C0	None	Endangered	G1	S1	1B.1
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western leatherwood *Dirca occidentalis*	PDTHY03010	None	None	G2	S2	1B.2
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western red bat *Lasiurus blossevillii*	AMACC05060	None	None	G5	S3	SSC
western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
white beaked-rush *Rhynchospora alba*	PMCYP0N010	None	None	G5	S2	2B.2
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
white-tailed kite *Elanus leucurus*	ABNKC06010	None	None	G5	S3S4	FP
whiteworm lichen *Thamnolia vermicularis*	NLTES43860	None	None	G3G5	S1	2B.1
woolly-headed gilia *Gilia capitata ssp. tomentosa*	PDPLM040B9	None	None	G5T1	S1	1B.1
woolly-headed spineflower *Chorizanthe cuspidata var. villosa*	PDPGN04082	None	None	G2T2	S2	1B.2

Record Count: 139

Project Location Topographic Map



Introduction needs to include:

Gold Ridge Resource Conservation District seeks to address limiting factors to rearing and spawning habitat in a high habitat-potential reach of Tannery Creek, tributary to Salmon Creek. The 3,030-ft reach has good riparian cover and cool summer water temperatures, but is suffering a lack of channel complexity and compromised rearing habitat. It currently contains just 8 key pieces of large wood material. The average bankfull width of the channel is 35 feet, and the average stream gradient is 1.4%. A total of 41 structures will be placed at 34 sites throughout the reach of high potential habitat. The total footprint of the structures is approximately 8,650 square feet. The length of aquatic habitat disturbed to install these structures will be approximately 1,400 feet.
The project will follow the techniques outlined in the California Stream Habitat Restoration Manual.

Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured.

Objective(s):

The project seeks to enhance rearing and spawning habitat for coho salmon in Tannery Creek through the installation of 41 complex large wood structures at 34 sites, designed to scour pools, trap spawning gravels, and provide cover and high flow refugia throughout a 3,030-ft reach.

Project Description:

Location:
Tannery Creek is a major tributary to Salmon Creek, a coastal watershed draining into a tidal estuary just north of Bodega Harbor along the Sonoma Coast. The work site lies on three properties 0.8 miles upstream of Tannery's confluence with Salmon Creek, and 0.4 miles downstream of a wood loading project conducted on the creek in 2014.
Upstream end of project reach: -38.36759000; -122.98025300
Downstream end of project reach: -38.36026600; -122.98160500

Project Set Up:
The GRRCD Project Coordinator, working in coordination with the GRRCD Conservation Planner, will provide overall project oversight, including contract administration, landowner communication, public outreach, permit application

development, subcontractor management, invoicing, and reporting. GRRCD Project Coordinator will also work with Dragonfly to perform planting, and revegetation maintenance and monitoring. GRRCD Project Manager and Lead Scientist will assist in dewatering and species relocation, construction oversight, and development of the post-construction longitudinal profile. The GRRCD Qualified Biologist will perform biological surveys and monitoring as required, and will assist with species relocation during dewatering. GRRCD Executive Director will review contracts and invoices, and assist in landowner communications. Dragonfly Stream Enhancement will source materials and perform all aspects of project construction, 12 including: dewatering, structure placement and anchoring, oversight of the Skilled Labor assisting with construction, erosion control, and revegetation. A detailed budget for Dragonfly is included as an attachment. A separate budget itemizes materials that will be purchased directly by GRRCD, including materials for dewatering, structure construction and anchorning, erosion control, and revegetation. The subcontracted Qualified Biologist will assist with dewatering and species relocation, and perform biological surveys as needed when the GRRCD Qualified Biologist is unavailable. Contractor Compliance and Monitoring, Inc, will perform labor compliance monitoring to meet prevailing wage requirements. Additional budget expenses include GRRCD staff mileage for travel to and from the project site, and the 1602 LSAA permit fee.

Materials:

While Dragonfly will be responsible for equipment rental and acquiring logs and rootwads, other materials will be purchased directly by GRRCD. Rental equipment for structure construction include: excavator, frontloader, and equipment needed for anchoring (air compressor, generator, post pounder, and compressor hoses). Materials to be purchased by GRRCD include: • Dewatering materials: Sand bags, sand, and block net material are used for constructing coffer dams. PVC pipe is needed to pump water around the work sites. • Anchoring components: Boulders are key for anchoring structures. The cost provided includes delivery from the quarry to the different sites. Epoxy and application nozzles, allthread, flat washers, nuts, rebar, 5/8 inch cable and cable clamps are used for anchoring the log and root wads to the boulders. Drill bits need to be replaced regularly during anchoring. • Erosion control materials: Grass seed, topsoil, rice straw, erosion control blanket and pins are for providing cover over the soil that will be exposed as a result of the project. • Re-vegetation materials: Replacement (5-gallon container) plants are to re-vegetate riparian areas where small trees needed to be removed for equipment access, and to enhance the riparian corridor. Plant species include redwood, alder, big-leaf maple, and Oregon Ash. Soil amendment will be used to prep the soil for planting. Plants will be fitted with browse protectors, mulched for weed control, and watered through dripline irrigation from a 3,000-gallon tank. Water will be delivered to fill the tank, as landowners currently rely on riparian diversions for their water. The irrigation system will be fitted with a solar electric pump, pressure regulator,

timer, and filter. Other expenses include a 1602 permit fee, and mileage for travel to and from the project site.

Tasks:

Task 1: The GRRCD Project Coordinator, working with the GRRCD Conservation Planner, will perform all duties 13 related to contract administration, subcontractor management, invoicing, and reporting. The GRRCD Executive Director will review contracts and invoices, and assist in landowner communications.

Task 2: Permitting. The GRRCD Project Coordinator will develop the 1602 LSAA and ensure receipt of the county grading exemption.

Task 3: Biological Surveys. The GRRCD Qualified Biologist and subcontracted Qualified Biologist will perform all biological surveys as required for CEQA and permit compliance.

Task 4: Project Construction. Under the oversight of the Conservation Planner, the GRRCD Project Coordinator will oversee Dragonfly Stream Enhancement in all construction activities, with occasional assistance from the Project Manager and Lead Scientist. Construction includes placement and anchoring of instream structures, composed of logs, rootwads, and boulders, anchored with allthread and rebar pins. Specific roles of the list of materials included in the budget is presented in the Materials section. Construction preparation activities such as dewatering and sensitive species relocation are also included. Construction activities will adhere to the attached Aquatic Invasives Protocol. In conjunction with structure placement at site #31, an eroding bank will be reshaped to a 2:1 slope, and a willow wall and mattress will be constructed to reduce further erosion from that site. Re-vegetation will occur in the fall 2018 with the onset of rains, and also include the installation of 10 5-gallon container plants of native tree species, with dripline irrigation from an adjacent water tank.

Task 5: Monitoring and Maintenance. The GRRCD Project Coordinator, with assistance from the GRRCD Conservation Planner, will oversee monitoring and maintenance, including post-construction storm monitoring and photo-monitoring, re-vegetation survival rate monitoring, and plant maintenance.

Deliverables:

Task 1 Project Management: Periodic progress reports with invoices; Annual and final reports.

Task 2 Permitting: Copies of Permits, including 1602 LSAA

Task 3 Biological Surveys: Copies of biological surveys and reports, including: protected species habitat assessment and relocation plan, and final report of findings with data sheets.

Task 4 Project Construction: As-built construction plans, Post longitudinal profile, Pre- and post-construction photo-documentation showing the successful

installation of 41 instream structures at 34 sites, installation of a willow wall and mattress and bank repair at site 31, and re-vegetation of the riparian corridor with 10 5-gallon container plants.

Task 5 Monitoring and Maintenance: 80% survival rate of re-vegetation by close of project; successful establishment of willow wall and mattress; observation from post-storm structure stability and functionality to be included in final report.

Timelines:

Task 1 Project Management: June 1, 2018 – March 31, 2021

Task 2 Permitting: June 1, 2018 – July 31, 2018 The 1602 permit application will be submitted to DFW by April 30, 2018. Construction within the 2018 construction season will rely on this permit being in place. GRRCD's restoration work is covered under a county grading exemption.

Task 1 Monthly Invoicing: Every month from July 2018 to March 2021

Task 3 Biological Surveys: July 1, 2018 – October 15, 2018 Biological surveys will be conducted prior to and during construction, with a final report (including data sheets) to be submitted after the completion of construction in November 2018.
Task 4 Project Construction: August 1, 2018 - February 28, 2019 All tasks related to the structure placement will be complete by October 15, 2018. Re-vegetation, including installation of willow structures, will be conducted that winter, not later than January 31, 2019. Plants will be put on drip irrigation, and watered from a nearby tank, to be filled with a water truck. A post-longitudinal profile will be completed by February 28, 2019.

Task 1 Annual Report: June 2019

Task 5 Monitoring and Maintenance: November 1, 2018 – March 31, 2021 Post-construction photo-documentation will be submitted with the 2018 annual report upon completion of construction, and photos of the completed re-vegetation will be submitted once it's complete. Follow-up photos and plant survival rates will be submitted with the final report in March 2021. The extension of the timeline for two years beyond the 2018 construction season is to allow for plant maintenance to ensure high survival rates.

Task 1 Final Report: March 31, 2021Provide completion dates for all tasks, deliverables, and steps of implementation.

Additional Requirements:

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Managers. All habitat improvements

will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Valley Ford (3812238) OR Duncans Mills (3812341) OR Camp Meeker (3812248) OR Sebastopol (3812247) OR Bodega Head (3812331) OR Two Rock (3812237) OR Tomales (3812228) OR Point Reyes NE (3812227))

Possible species within the Valley Ford quadrangle and surrounding quads for 725593 2017 Tannery Creek Coho Instream Habitat Enhancement Project, T06N R10W S17, Sonoma County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
American peregrine falcon *Falco peregrinus anatum*	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
ashy storm-petrel *Oceanodroma homochroa*	ABNDC04030	None	None	G2	S2	SSC
Baker's goldfields *Lasthenia californica ssp. bakeri*	PDAST5L0C4	None	None	G3T1	S1	1B.2
Baker's larkspur *Delphinium bakeri*	PDRAN0B050	Endangered	Endangered	G1	S1	1B.1
Baker's manzanita *Arctostaphylos bakeri ssp. bakeri*	PDERI04221	None	Rare	G2T1	S1	1B.1
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	PDPLM0C0E1	None	None	G4T2	S2	1B.1
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S2	
beach layia *Layia carnosa*	PDAST5N010	Endangered	Endangered	G2	S2	1B.1
bent-flowered fiddleneck *Amsinckia lunaris*	PDBOR01070	None	None	G2G3	S2S3	1B.2
black swift *Cypseloides niger*	ABNUA01010	None	None	G4	S2	SSC
Blasdale's bent grass *Agrostis blasdalei*	PMPOA04060	None	None	G2	S2	1B.2
Blennosperma vernal pool andrenid bee *Andrena blennospermatis*	IIHYM35030	None	None	G2	S2	
blue coast gilia *Gilia capitata ssp. chamissonis*	PDPLM040B3	None	None	G5T2	S2	1B.1
bluff wallflower *Erysimum concinnum*	PDBRA160E3	None	None	G3	S2	1B.2
Bolander's water-hemlock *Cicuta maculata var. bolanderi*	PDAPI0M051	None	None	G5T4	S2	2B.1
bristly sedge *Carex comosa*	PMCYP032Y0	None	None	G5	S2	2B.1
brownish beaked-rush *Rhynchospora capitellata*	PMCYP0N080	None	None	G5	S1	2B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
bumblebee scarab beetle *Lichnanthe ursina*	IICOL67020	None	None	G2	S2	
Burke's goldfields *Lasthenia burkei*	PDAST5L010	Endangered	Endangered	G1	S1	1B.1
burrowing owl *Athene cunicularia*	ABNSB10010	None	None	G4	S3	SSC
California beaked-rush *Rhynchospora californica*	PMCYP0N060	None	None	G1	S1	1B.1
California black rail *Laterallus jamaicensis coturniculus*	ABNME03041	None	Threatened	G3G4T1	S1	FP
California freshwater shrimp *Syncaris pacifica*	ICMAL27010	Endangered	Endangered	G2	S2	
California giant salamander *Dicamptodon ensatus*	AAAAH01020	None	None	G3	S2S3	SSC
California linderiella *Linderiella occidentalis*	ICBRA06010	None	None	G2G3	S2S3	
California red-legged frog *Rana draytonii*	AAABH01022	Threatened	None	G2G3	S2S3	SSC
California Ridgway's rail *Rallus obsoletus obsoletus*	ABNME05016	Endangered	Endangered	G5T1	S1	FP
California tiger salamander *Ambystoma californiense*	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Central Dune Scrub *Central Dune Scrub*	CTT21320CA	None	None	G2	S2.2	
Coastal and Valley Freshwater Marsh *Coastal and Valley Freshwater Marsh*	CTT52410CA	None	None	G3	S2.1	
coastal bluff morning-glory *Calystegia purpurata ssp. saxicola*	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
Coastal Brackish Marsh *Coastal Brackish Marsh*	CTT52200CA	None	None	G2	S2.1	
Coastal Terrace Prairie *Coastal Terrace Prairie*	CTT41100CA	None	None	G2	S2.1	
coastal triquetrella *Triquetrella californica*	NBMUS7S010	None	None	G2	S2	1B.2
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	PDAST4R065	None	None	G5T1T2	S1S2	1B.2
Contra Costa goldfields *Lasthenia conjugens*	PDAST5L040	Endangered	None	G1	S1	1B.1
Crystal Springs lessingia *Lessingia arachnoidea*	PDAST5S0C0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Cunningham Marsh cinquefoil *Potentilla uliginosa*	PDROS1B4A0	None	None	GH	SH	1A
dark-eyed gilia *Gilia millefoliata*	PDPLM04130	None	None	G2	S2	1B.2
dwarf downingia *Downingia pusilla*	PDCAM060C0	None	None	GU	S2	2B.2
eulachon *Thaleichthys pacificus*	AFCHB04010	Threatened	None	G5	S3	
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
fragrant fritillary *Fritillaria liliacea*	PMLIL0V0C0	None	None	G2	S2	1B.2
Franciscan onion *Allium peninsulare var. franciscanum*	PMLIL021R1	None	None	G5T1	S1	1B.2
Franciscan thistle *Cirsium andrewsii*	PDAST2E050	None	None	G3	S3	1B.2
fringed myotis *Myotis thysanodes*	AMACC01090	None	None	G4	S3	
globose dune beetle *Coelus globosus*	IICOL4A010	None	None	G1G2	S1S2	
golden larkspur *Delphinium luteum*	PDRAN0B0Z0	Endangered	Rare	G1	S1	1B.1
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
great egret *Ardea alba*	ABNGA04040	None	None	G5	S4	
Greene's narrow-leaved daisy *Erigeron greenei*	PDAST3M5G0	None	None	G3	S3	1B.2
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
holly-leaved ceanothus *Ceanothus purpureus*	PDRHA04160	None	None	G2	S2	1B.2
Humboldt Bay owl's-clover *Castilleja ambigua var. humboldtiensis*	PDSCR0D402	None	None	G4T2	S2	1B.2
Kellogg's horkelia *Horkelia cuneata var. sericea*	PDROS0W043	None	None	G4T1?	S1?	1B.1
legenere *Legenere limosa*	PDCAM0C010	None	None	G2	S2	1B.1
long-eared myotis *Myotis evotis*	AMACC01070	None	None	G5	S3	
longfin smelt *Spirinchus thaleichthys*	AFCHB03010	Candidate	Threatened	G5	S1	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Marin checker lily *Fritillaria lanceolata var. tristulis*	PMLIL0V0P1	None	None	G5T2	S2	1B.1
Marin hesperian *Vespericola marinensis*	IMGASA4140	None	None	G2	S2	
Marin knotweed *Polygonum marinense*	PDPGN0L1C0	None	None	G2Q	S2	3.1
Marin manzanita *Arctostaphylos virgata*	PDERI041K0	None	None	G2	S2	1B.2
marsh microseris *Microseris paludosa*	PDAST6E0D0	None	None	G2	S2	1B.2
Mason's ceanothus *Ceanothus masonii*	PDRHA04200	None	Rare	G1	S1	1B.2
Mendocino dodder *Cuscuta pacifica var. papillata*	PDCUS011A2	None	None	G5T1	S1	1B.2
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
mimic tryonia (=California brackishwater snail) *Tryonia imitator*	IMGASJ7040	None	None	G2	S2	
minute pocket moss *Fissidens pauperculus*	NBMUS2W0U0	None	None	G3?	S2	1B.2
monarch - California overwintering population *Danaus plexippus pop. 1*	IILEPP2012	None	None	G4T2T3	S2S3	
Mt. Vision ceanothus *Ceanothus gloriosus var. porrectus*	PDRHA040F7	None	None	G4T2	S2	1B.3
Myrtle's silverspot butterfly *Speyeria zerene myrtleae*	IILEPJ608C	Endangered	None	G5T1	S1	
Napa false indigo *Amorpha californica var. napensis*	PDFAB08012	None	None	G4T2	S2	1B.2
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
North Coast phacelia *Phacelia insularis var. continentis*	PDHYD0C2B1	None	None	G2T2	S2	1B.2
North Coast semaphore grass *Pleuropogon hooverianus*	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Northern Coastal Salt Marsh *Northern Coastal Salt Marsh*	CTT52110CA	None	None	G3	S3.2	
northern curly-leaved monardella *Monardella sinuata ssp. nigrescens*	PDLAM18162	None	None	G3T2	S2	1B.2
Northern Hardpan Vernal Pool *Northern Hardpan Vernal Pool*	CTT44110CA	None	None	G3	S3.1	
Northern Vernal Pool *Northern Vernal Pool*	CTT44100CA	None	None	G2	S2.1	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon polemonium *Polemonium carneum*	PDPLM0E050	None	None	G3G4	S2	2B.2
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
oval-leaved viburnum *Viburnum ellipticum*	PDCPR07080	None	None	G4G5	S3?	2B.3
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
Pennell's bird's-beak *Cordylanthus tenuis ssp. capillaris*	PDSCR0J0S2	Endangered	Rare	G4G5T1	S1	1B.2
perennial goldfields *Lasthenia californica ssp. macrantha*	PDAST5L0C5	None	None	G3T2	S2	1B.2
Peruvian dodder *Cuscuta obtusiflora var. glandulosa*	PDCUS01111	None	None	G5T4T5	SH	2B.2
pink sand-verbena *Abronia umbellata var. breviflora*	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Pitkin Marsh lily *Lilium pardalinum ssp. pitkinense*	PMLIL1A0H3	Endangered	Endangered	G5T1	S1	1B.1
Pitkin Marsh paintbrush *Castilleja uliginosa*	PDSCR0D380	None	Endangered	GXQ	SX	1A
Point Reyes blennosperma *Blennosperma nanum var. robustum*	PDAST1A022	None	Rare	G4T2	S2	1B.2
Point Reyes blue butterfly *Plebejus icarioides parapheres*	IILEPG801D	None	None	G5T1T2	S1S2	
Point Reyes checkerbloom *Sidalcea calycosa ssp. rhizomata*	PDMAL11012	None	None	G5T2	S2	1B.2
Point Reyes horkelia *Horkelia marinensis*	PDROS0W0B0	None	None	G2	S2	1B.2
Point Reyes jumping mouse *Zapus trinotatus orarius*	AMAFH01031	None	None	G5T1T3Q	S1S3	SSC
Point Reyes paintbrush *Castilleja leschkeana*	PDSCR0D1R0	None	None	GHQ	SH	1A
Point Reyes salty bird's-beak *Chloropyron maritimum ssp. palustre*	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
purple-stemmed checkerbloom *Sidalcea malviflora ssp. purpurea*	PDMAL110FL	None	None	G5T1	S1	1B.2
Raiche's red ribbons *Clarkia concinna ssp. raichei*	PDONA050A2	None	None	G5?T1	S1	1B.1

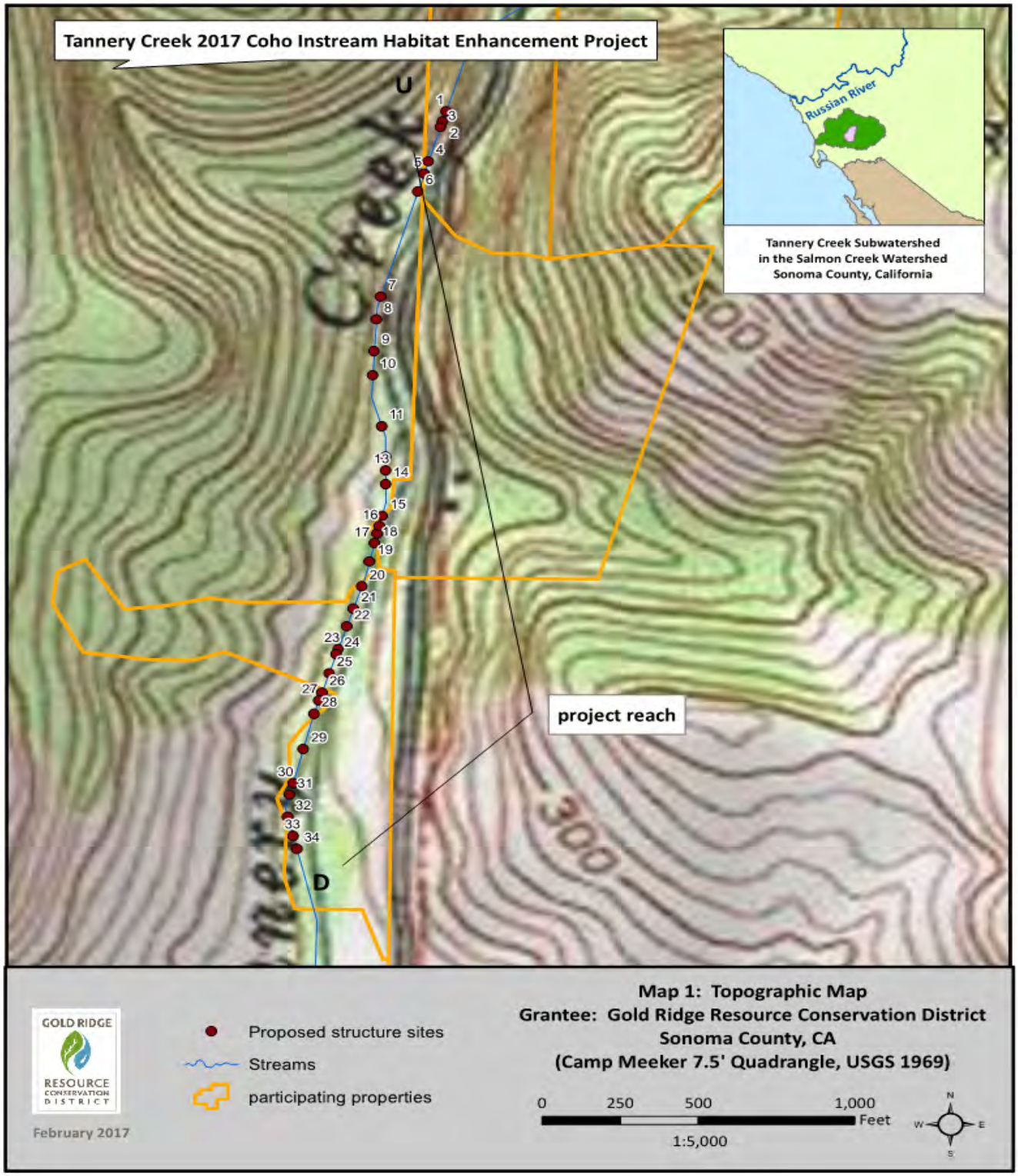
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
rhinoceros auklet *Cerorhinca monocerata*	ABNNN11010	None	None	G5	S3	WL
Rincon Ridge ceanothus *Ceanothus confusus*	PDRHA04220	None	None	G1	S1	1B.1
Rincon Ridge manzanita *Arctostaphylos stanfordiana ssp. decumbens*	PDERI041G4	None	None	G3T1	S1	1B.1
rose leptosiphon *Leptosiphon rosaceus*	PDPLM09180	None	None	G1	S1	1B.1
round-headed beaked-rush *Rhynchospora globularis*	PMCYP0N0W0	None	None	G4	S1	2B.1
saline clover *Trifolium hydrophilum*	PDFAB400R5	None	None	G2	S2	1B.2
saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	ABPBX1201A	None	None	G5T3	S3	SSC
San Bruno elfin butterfly *Callophrys mossii bayensis*	IILEPE2202	Endangered	None	G4T1	S1	
San Francisco Bay spineflower *Chorizanthe cuspidata var. cuspidata*	PDPGN04081	None	None	G2T1	S1	1B.2
San Francisco forktail damselfly *Ischnura gemina*	IIODO72010	None	None	G2	S2	
San Francisco owl's-clover *Triphysaria floribunda*	PDSCR2T010	None	None	G2?	S2?	1B.2
Santa Cruz microseris *Stebbinsoseris decipiens*	PDAST6E050	None	None	G2	S2	1B.2
Sebastopol meadowfoam *Limnanthes vinculans*	PDLIM02090	Endangered	Endangered	G1	S1	1B.1
serpentine daisy *Erigeron serpentinus*	PDAST3M5M0	None	None	G2	S2	1B.3
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	PDASTE5011	None	None	G4T3	S2	1B.2
Sonoma alopecurus *Alopecurus aequalis var. sonomensis*	PMPOA07012	Endangered	None	G5T1	S1	1B.1
Sonoma spineflower *Chorizanthe valida*	PDPGN040V0	Endangered	Endangered	G1	S1	1B.1
Sonoma sunshine *Blennosperma bakeri*	PDAST1A010	Endangered	Endangered	G1	S1	1B.1
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
steelhead - central California coast DPS *Oncorhynchus mykiss irideus*	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
swamp harebell *Campanula californica*	PDCAM02060	None	None	G3	S3	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
thin-lobed horkelia *Horkelia tenuiloba*	PDROS0W0E0	None	None	G2	S2	1B.2
Thurber's reed grass *Calamagrostis crassiglumis*	PMPOA17070	None	None	G3Q	S2	2B.1
Tidestrom's lupine *Lupinus tidestromii*	PDFAB2B3Y0	Endangered	Endangered	G1	S1	1B.1
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Tomales roach *Lavinia symmetricus ssp. 2*	AFCJB19022	None	None	G4T2T3	S2	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
tufted puffin *Fratercula cirrhata*	ABNNN12010	None	None	G5	S1S2	SSC
two-fork clover *Trifolium amoenum*	PDFAB40040	Endangered	None	G1	S1	1B.1
Vine Hill ceanothus *Ceanothus foliosus var. vineatus*	PDRHA040D6	None	None	G3T1	S1	1B.1
Vine Hill clarkia *Clarkia imbricata*	PDONA050K0	Endangered	Endangered	G1	S1	1B.1
Vine Hill manzanita *Arctostaphylos densiflora*	PDERI040C0	None	Endangered	G1	S1	1B.1
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western leatherwood *Dirca occidentalis*	PDTHY03010	None	None	G2	S2	1B.2
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western red bat *Lasiurus blossevillii*	AMACC05060	None	None	G5	S3	SSC
western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
white beaked-rush *Rhynchospora alba*	PMCYP0N010	None	None	G5	S2	2B.2
whiteworm lichen *Thamnolia vermicularis*	NLTES43860	None	None	G3G5	S1	2B.1
Williams' bronze shoulderband *Helminthoglypta stiversiana williamsi*	IMGASC2034	None	None	G2G3T1	S1	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
woolly-headed gilia *Gilia capitata ssp. tomentosa*	PDPLM040B9	None	None	G5T1	S1	1B.1
woolly-headed spineflower *Chorizanthe cuspidata var. villosa*	PDPGN04082	None	None	G2T2	S2	1B.2
northern spotted owl *Strix occidentalis caurina*	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 147

Project Location Topographic Map



Introduction needs to include:

1. Gold Ridge Resource Conservation District, Iron Horse Vineyards Dam Removal
2. Gold Ridge Resource Conservation District will implement the Iron Horse Vineyard Dam Removal project by removing the channel spanning concrete dam at the Iron Horse Vineyard property. Removal of this structure will restore natural flow conditions through the channel reach and allow for the unimpeded passage of adult and juvenile salmonids through the project reach.

   The project is necessary to re-establish natural flow regimes through the reach and facilitate the free movement of adult and juvenile salmonids. The project site has been identified in several historical Department of Fish and Wildlife stream surveys, Engineer Eric Austensen concluded that the site currently limits passage of both adults and juveniles salmonids during low flow conditions. Mr. Austensen completed an engineering plan to remove the concrete dam and install large wood habitat enhancement structures, including anchored redwood logs and rootwads. Implementing this project will completely remove the barrier, and enhance the passage of fish in Green Valley Creek.

3. Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and Notice to Proceed are secured.
4. All habitat improvement will follow techniques in the California Stream Habitat Restoration Manual parts VII, IX and XII.

Objective(s):

1. The goal of this project is to remove a concrete dam with metal sluice gate on Green Valley Creek to improve fish passage, and enhance habitat by installing large woody material (LWM) at the site. The Project restoration elements include:
   a. i. Relocation of fish by a qualified biologist, and subsequent dewatering of the site utilizing a temporary dewatering pipe, outletting dirty water onto the floodplain as a natural sediment filter, and returning clean water to the channel downstream of the site.
   b. ii. Excavation and off-haul of 84 cubic yards of concrete, earth, and metal dam debris, utilizing excavator, loader and dumptruck.
   c. iii. Installation and anchoring of four (4) redwood logs and six (6) rootwads with nineteen (19) one-ton boulders for habitat enhancement, utilizing labor and equipment.
   d. iv. Temporary cut and fill of 18 cubic yards gravel and 74 cubic yards earthwork for equipment access.
   e. v. Installation of forty (40) willow sprigs to revegetate site, installed with handtools.
   f. vi. Installation of erosion control seed, straw and blankets following construction activities to prevent post implementation erosion.
   g. vii. Removal and replacement of a gate and fence to access the site.
   h. viii. Completing post-construction topographic survey, and developing as-built drawings and longitudinal profile.

Project Description:

Location: The Project is located within the channel of Green Valley Creek in Sonoma County on the Iron Horse Vineyards property assessor parcel numbers 084-040-009, and 084-190-001, approximately 2,900 feet downstream from the Ross Station Road stream crossing over the mainstem of Green Valley Creek in Sonoma County, California. Green Valley Creek is tributary to the Russian River. The confluence of Green Valley with the Russian River is approximately 22.14 river miles upstream from the Pacific Ocean. The project site is approximately 22,000 feet upstream from the Russian River, Green Valley Creek confluence. Project coordinates are: 38.46260500° north, 122.89656200° east North American Datum 1983; within Section 7 of Township 7 north Range 9 west, Mount Diablo Base and Meridian on the United States Geologic Survey 7.5 minute quadrangle Camp Meeker topographic map.

From the intersection of Covey Road and Highway 116 in downtown Forestville, California, travel east on highway 116 for 0.9 miles. Turn right on Ross Station Road. Continue on Ross Station Road for 1.0 miles to Iron Horse Vineyards.

Project Set Up: The Iron Horse Vineyards Dam Removal Project will be implemented by the Gold Ridge Resource Conservation District (Grantee).
The Grantee Project Manager will provide overall project oversight, including contract administration, landowner communication, public outreach, bid packet development and bid tour organization, permit application development, subcontractor selection and management, invoicing, and reporting.
The Grantee Lead Scientist will assist in permitting and bid tour preparations.
The Grantee Ecologist will perform biological surveys and monitoring as required, and assist in dewatering and species relocation.
The Grantee Executive Director will review contracts and invoices, and assist in landowner communications and public outreach.

Eric Austensen, Professional Engineer, of Streamline Engineering, as designer of the project, will assist in permitting and bid tours, will provide construction subcontractor oversight and engineering inspections, and will develop asbuilt drawings and a post-construction longitudinal profile of the affected stream reach.

The Qualified Biologist will lead dewatering and species relocation, with assistance from the Grantee Ecologist, Grantee Project Coordinator, Grantee Field Technician, and Grantor Project Manager.

The contractor constructing the project will be selected during a competitive bid process according to the Grantee's Construction Procurement Policy, and will perform actual construction activities, including barrier removal, habitat structure placement, and erosion control.

Subcontractor, Contractor Compliance and Monitoring Incorporated, will perform labor compliance monitoring to comply with prevailing wage requirements.

Materials: Grantee materials charges include the California Department of Fish and Wildlife 1602 permit required for instream work, mileage required for travel to and from the project site, and printing costs which cover printing of drawings and bid packages
All other materials will be purchased by the construction contractor, who will be selected through a competitive bidding process. Construction materials include the following: Mobilization costs - for bringing equipment and materials to and from the project site; mileage for picking up materials, going to the quarry to pick out the appropriate boulders and the daily drive to the work site; equipment rental of a front loader, excavator, and dump truck for removing dam materials, transporting boulders and wood materials to the job sites, placing the boulders, logs and root wads in the stream channel, generator, wood drills, rock drill and small equipment; materials to construct the project include boulders, redwood logs, rootwads, with rebar, epoxy allthread, flat washers, nuts, rebar, 5/8 inch cable and cable clamps are used for anchoring the log and root wads to the boulders, drill bits need to be replaced regularly during anchoring for anchoring; dewatering materials include sand bags and block net material used for constructing coffer dams, polyvinylchloride pipe is needed to pump water around the work sites; erosion control materials include grass seed, rice straw, erosion control blanket and pins for providing cover over the soil that will be exposed as a result of the project.

Tasks: Task 1 Project Management. The Grantee Project Manager will perform all duties related to contract administration, bid packet development and bid tour organization, subcontractor management, invoicing, and reporting. The Grantee Executive Director will review contracts and invoices, and assist in landowner communications and public outreach.

Task 2 Permitting. The Grantee Project Manager will develop the 1602 permit, County Grading Exemption, and all permitting information required for dewatering and species relocation. The Grantee Lead Scientist will assist in permit application development.

Task 3 Biological Surveys. The Grantee Ecologist and Qualified Biologist will perform all biological surveys as required for California Environmental Quality Act and permit compliance.

Task 4 Project Construction. The Grantee Project Manager will oversee subcontractors engaged in project construction, including Streamline Engineering, and the Qualified Biologist. As the Project Engineer, Streamline Engineering will provide Engineering oversight for the project.

Deliverables: Task 1 Project Management includes writing monthly, annual and final reports.

Task 2 Permitting involves securing the 1602 permit and a county grading exemption.

Task 3 Biological surveys involves conducting and writing reports for biological survey, including: protected species habitat assessment and relocation plan, and the final report of findings with data sheets.

Task 4 Project Construction involves submitting as-built construction plans, post longitudinal profile, and pre and post construction photo documentation to demonstrate successful dam removal and reestablishment of fish passage flows.

Timelines:

1. Task 1 – Project Management, extends from June 01, 2018 to March 31, 2020. Activites related to the bid tour will be completed by May 31, 2019. Subcontractor management, invoicing, and reporting will be ongoing throughout the grant agreement period.
2. Task 2 – Permitting will occur from June 01, 2018 to May 31, 2019. All permits for project construction will be in place by May 31, 2019.
3. Task 3 – Biological Surveys will be conducted from March 01, 2019 to October 31, 2019 A protected species habitat assessment and relocation plan will be submitted for approval by May 31, 2019. Biological surveys will be conducted prior to and during construction, with a final report (including data sheets) to be submitted after the completion of construction in March 2020.
4. Task 4 – Project Construction will occur from August 01, 2019 to February 28, 2020. All tasks related to the dam removal and installation of wood habitat, and post construction erosion control will be completed by October 15, 2019. Revegetation (willow sprigging) will be conducted that winter, not later January 31, 2020. A post-longitudinal profile will be completed by February 28, 2020.
5. The construction work window for this project will be from July 1 through October 15.

Additional Requirements: The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a “notice to proceed” letter has been received from the Grantor Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of Grantor.

Staging or storage areas for equipment, materials, fuels, lubricants, and solvents, will be located outside of the stream's high water channel and associated riparian area where it cannot enter the stream channel. Stationary equipment such as motors, pumps, generators, compressors, and welders located within the dry portion of the stream channel or adjacent to the stream, will be positioned over drip-pans. Vehicles will be moved out of the normal high water area of the stream prior to refueling and lubricating. The grantee shall ensure that contamination of

habitat does not occur during such operations. Prior to the onset of work, the Grantee shall provide to Grantor a plan to allow a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish and Wildlife Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other native aquatic species from the project area. If the project requires dewatering of the site and the relocation of listed aquatic species, the Grantee will implement the following measures to minimize harm and mortality to listed species as well as other native aquatic species:

- Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year.

- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the Grantor Project Manager and pursuant to conditions in the USACE Regional General Permit, NMFS Biological Opinion, and project's Lake and Streambed Alteration Agreement (1600 permit).

- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the California Salmonid Stream Habitat Restoration Manual.

- Only qualified fisheries biologist that are approved by USFWS and permitted by CDFW under a California Endangered Species Act (CESA) Memorandum of Understanding (MOU) shall handle and relocate CESA listed species.

- All electrofishing shall be performed by a qualified fisheries biologist under the supervision of CDFW and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

- NMFS Approved fisheries biologists will provide fish relocation data via the Grantee to the Grantor Project Manager on a form provided by Grantor.

The bridge (culvert) design and installation will meet flow carrying capacity required for a 100-year flood event as identified by specifications determined by National Oceanic and Atmospheric Administration (NOAA) Fisheries and the Grantor, for adult and juvenile salmonid fish passage. The project will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and criteria for fish passage as described in Volume II, Part IX, of the California Salmonid Stream Habitat Restoration Manual. The engineered plans for the bridge (culvert) installation shall be visually reviewed and authorized by NOAA Fisheries or Grantor engineers prior to commencement of work.

All habitat improvements will follow techniques described in the California Salmonid Stream Habitat Restoration Manual, Volume I, and Volume II Part XI and Part XII. The Grantee/landowner will maintain the new crossing, inspect the crossing in a timely manner and remove debris as necessary during the storm season.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Manager. All habitat improvements will follow techniques described in the California Salmonid Stream Habitat Restoration Manual.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Camp Meeker (3812248) OR Cazadero (3812351) OR Guerneville (3812258) OR Healdsburg (3812257) OR Duncans Mills (3812341) OR Sebastopol (3812247) OR Bodega Head (3812331) OR Valley Ford (3812238) OR Two Rock (3812237))

Possible species within the Camp Meeker quadrangle and surrounding quads for 725596 Iron Horse Vineyards Dam Removal, T07N R09W S7, Sonoma County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
Baker's goldfields *Lasthenia californica ssp. bakeri*	PDAST5L0C4	None	None	G3T1	S1	1B.2
Baker's larkspur *Delphinium bakeri*	PDRAN0B050	Endangered	Endangered	G1	S1	1B.1
Baker's manzanita *Arctostaphylos bakeri ssp. bakeri*	PDERI04221	None	Rare	G2T1	S1	1B.1
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	PDPLM0C0E1	None	None	G4T2	S2	1B.1
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S2	
black swift *Cypseloides niger*	ABNUA01010	None	None	G4	S2	SSC
Blasdale's bent grass *Agrostis blasdalei*	PMPOA04060	None	None	G2	S2	1B.2
Blennosperma vernal pool andrenid bee *Andrena blennospermatis*	IIHYM35030	None	None	G2	S2	
blue coast gilia *Gilia capitata ssp. chamissonis*	PDPLM040B3	None	None	G5T2	S2	1B.1
bluff wallflower *Erysimum concinnum*	PDBRA160E3	None	None	G3	S2	1B.2
bristly sedge *Carex comosa*	PMCYP032Y0	None	None	G5	S2	2B.1
brownish beaked-rush *Rhynchospora capitellata*	PMCYP0N080	None	None	G5	S1	2B.2
bumblebee scarab beetle *Lichnanthe ursina*	IICOL67020	None	None	G2	S2	
Burke's goldfields *Lasthenia burkei*	PDAST5L010	Endangered	Endangered	G1	S1	1B.1
burrowing owl *Athene cunicularia*	ABNSB10010	None	None	G4	S3	SSC
California beaked-rush *Rhynchospora californica*	PMCYP0N060	None	None	G1	S1	1B.1
California freshwater shrimp *Syncaris pacifica*	ICMAL27010	Endangered	Endangered	G2	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
California giant salamander *Dicamptodon ensatus*	AAAAH01020	None	None	G3	S2S3	SSC
California linderiella *Linderiella occidentalis*	ICBRA06010	None	None	G2G3	S2S3	
California red-legged frog *Rana draytonii*	AAABH01022	Threatened	None	G2G3	S2S3	SSC
California tiger salamander *Ambystoma californiense*	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Coastal and Valley Freshwater Marsh *Coastal and Valley Freshwater Marsh*	CTT52410CA	None	None	G3	S2.1	
coastal bluff morning-glory *Calystegia purpurata ssp. saxicola*	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
Coastal Brackish Marsh *Coastal Brackish Marsh*	CTT52200CA	None	None	G2	S2.1	
Coastal Terrace Prairie *Coastal Terrace Prairie*	CTT41100CA	None	None	G2	S2.1	
coastal triquetrella *Triquetrella californica*	NBMUS7S010	None	None	G2	S2	1B.2
coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	PDAST4R065	None	None	G5T1T2	S1S2	1B.2
Contra Costa goldfields *Lasthenia conjugens*	PDAST5L040	Endangered	None	G1	S1	1B.1
Crystal Springs lessingia *Lessingia arachnoidea*	PDAST5S0C0	None	None	G2	S2	1B.2
Cunningham Marsh cinquefoil *Potentilla uliginosa*	PDROS1B4A0	None	None	GH	SH	1A
dark-eyed gilia *Gilia millefoliata*	PDPLM04130	None	None	G2	S2	1B.2
Dorr's Cabin jewelflower *Streptanthus morrisonii ssp. hirtiflorus*	PDBRA2G0S2	None	None	G2T1	S1	1B.2
dwarf downingia *Downingia pusilla*	PDCAM060C0	None	None	GU	S2	2B.2
dwarf soaproot *Chlorogalum pomeridianum var. minus*	PMLIL0G042	None	None	G5T3	S3	1B.2
eulachon *Thaleichthys pacificus*	AFCHB04010	Threatened	None	G5	S3	
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
fragrant fritillary *Fritillaria liliacea*	PMLIL0V0C0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Franciscan onion *Allium peninsulare var. franciscanum*	PMLIL021R1	None	None	G5T1	S1	1B.2
Franciscan thistle *Cirsium andrewsii*	PDAST2E050	None	None	G3	S3	1B.2
fringed myotis *Myotis thysanodes*	AMACC01090	None	None	G4	S3	
Giuliani's dubiraphian riffle beetle *Dubiraphia giulianii*	IICOL5A020	None	None	G1G3	S1S3	
globose dune beetle *Coelus globosus*	IICOL4A010	None	None	G1G2	S1S2	
golden larkspur *Delphinium luteum*	PDRAN0B0Z0	Endangered	Rare	G1	S1	1B.1
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
Greene's narrow-leaved daisy *Erigeron greenei*	PDAST3M5G0	None	None	G3	S3	1B.2
Gualala roach *Lavinia symmetricus parvipinnis*	AFCJB19025	None	None	G4T1T2	S2S3	SSC
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
Hoffman's bristly jewelflower *Streptanthus glandulosus ssp. hoffmanii*	PDBRA2G0J4	None	None	G4T2	S2	1B.3
holly-leaved ceanothus *Ceanothus purpureus*	PDRHA04160	None	None	G2	S2	1B.2
Jepson's leptosiphon *Leptosiphon jepsonii*	PDPLM09140	None	None	G3	S3	1B.2
legenere *Legenere limosa*	PDCAM0C010	None	None	G2	S2	1B.1
long-eared myotis *Myotis evotis*	AMACC01070	None	None	G5	S3	
longfin smelt *Spirinchus thaleichthys*	AFCHB03010	Candidate	Threatened	G5	S1	SSC
many-flowered navarretia *Navarretia leucocephala ssp. plieantha*	PDPLM0C0E5	Endangered	Endangered	G4T1	S1	1B.2
Marin hesperian *Vespericola marinensis*	IMGASA4140	None	None	G2	S2	
Marin knotweed *Polygonum marinense*	PDPGN0L1C0	None	None	G2Q	S2	3.1
marsh microseris *Microseris paludosa*	PDAST6E0D0	None	None	G2	S2	1B.2
Mendocino dodder *Cuscuta pacifica var. papillata*	PDCUS011A2	None	None	G5T1	S1	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Methuselah's beard lichen *Usnea longissima*	NLLEC5P420	None	None	G4	S4	4.2
mimic tryonia (=California brackishwater snail) *Tryonia imitator*	IMGASJ7040	None	None	G2	S2	
minute pocket moss *Fissidens pauperculus*	NBMUS2W0U0	None	None	G3?	S2	1B.2
monarch - California overwintering population *Danaus plexippus pop. 1*	IILEPP2012	None	None	G4T2T3	S2S3	
Morrison's jewelflower *Streptanthus morrisonii ssp. morrisonii*	PDBRA2G0S3	None	None	G2T1?	S1?	1B.2
Myrtle's silverspot butterfly *Speyeria zerene myrtleae*	IILEPJ608C	Endangered	None	G5T1	S1	
Napa false indigo *Amorpha californica var. napensis*	PDFAB08012	None	None	G4T2	S2	1B.2
narrow-anthered brodiaea *Brodiaea leptandra*	PMLIL0C022	None	None	G3?	S3?	1B.2
Navarro roach *Lavinia symmetricus navarroensis*	AFCJB19023	None	None	G4T1T2	S2S3	SSC
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
North Coast semaphore grass *Pleuropogon hooverianus*	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Northern Coastal Salt Marsh *Northern Coastal Salt Marsh*	CTT52110CA	None	None	G3	S3.2	
Northern Hardpan Vernal Pool *Northern Hardpan Vernal Pool*	CTT44110CA	None	None	G3	S3.1	
Northern Vernal Pool *Northern Vernal Pool*	CTT44100CA	None	None	G2	S2.1	
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G4?	S1S2	
Oregon polemonium *Polemonium carneum*	PDPLM0E050	None	None	G3G4	S2	2B.2
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
oval-leaved viburnum *Viburnum ellipticum*	PDCPR07080	None	None	G4G5	S3?	2B.3
Pacific gilia *Gilia capitata ssp. pacifica*	PDPLM040B6	None	None	G5T3	S2	1B.2
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
pappose tarplant *Centromadia parryi ssp. parryi*	PDAST4R0P2	None	None	G3T2	S2	1B.2

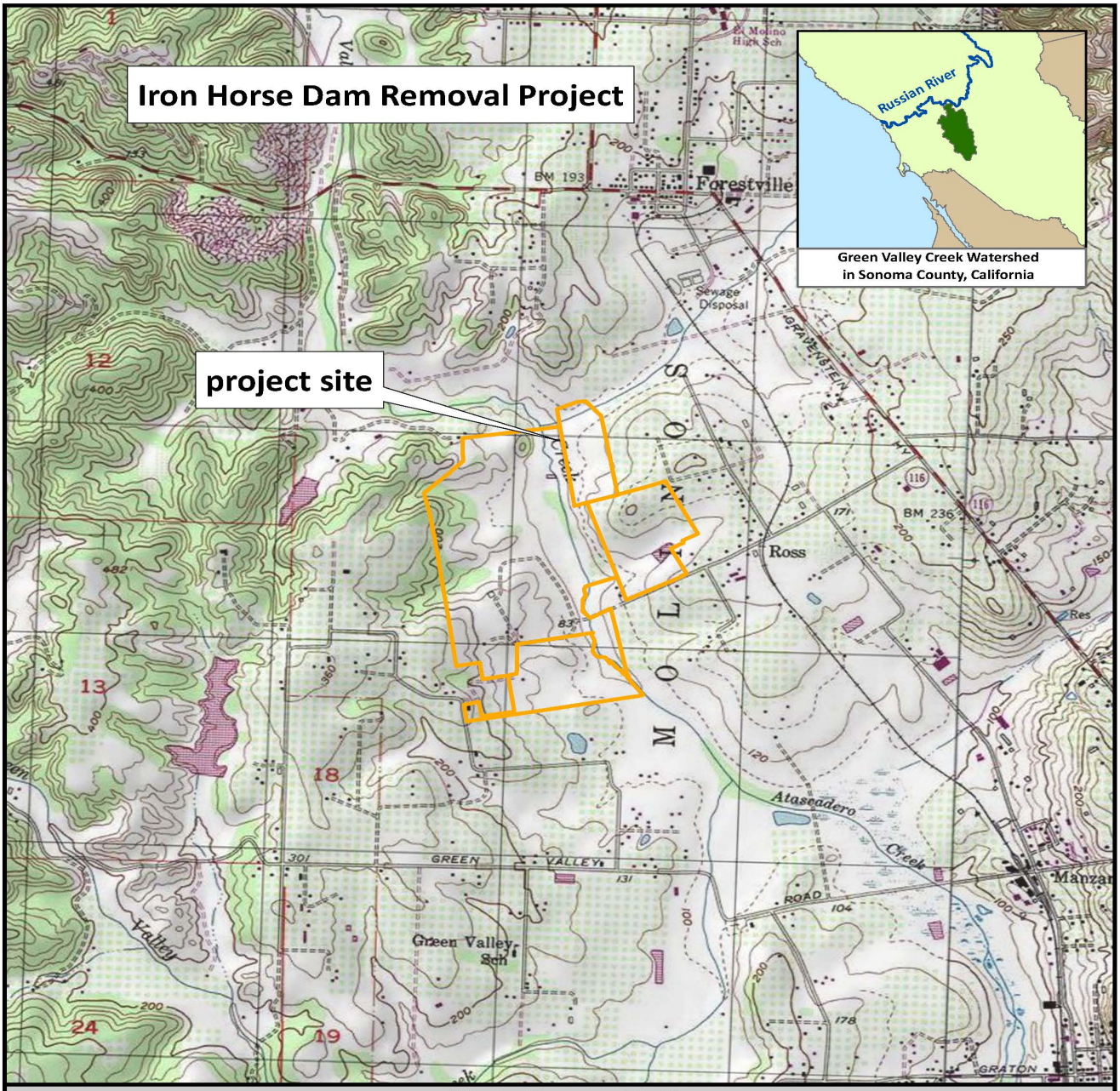
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Pennell's bird's-beak *Cordylanthus tenuis ssp. capillaris*	PDSCR0J0S2	Endangered	Rare	G4G5T1	S1	1B.2
perennial goldfields *Lasthenia californica ssp. macrantha*	PDAST5L0C5	None	None	G3T2	S2	1B.2
Peruvian dodder *Cuscuta obtusiflora var. glandulosa*	PDCUS01111	None	None	G5T4T5	SH	2B.2
pink sand-verbena *Abronia umbellata var. breviflora*	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Pitkin Marsh lily *Lilium pardalinum ssp. pitkinense*	PMLIL1A0H3	Endangered	Endangered	G5T1	S1	1B.1
Pitkin Marsh paintbrush *Castilleja uliginosa*	PDSCR0D380	None	Endangered	GXQ	SX	1A
Point Reyes checkerbloom *Sidalcea calycosa ssp. rhizomata*	PDMAL11012	None	None	G5T2	S2	1B.2
Point Reyes horkelia *Horkelia marinensis*	PDROS0W0B0	None	None	G2	S2	1B.2
Point Reyes salty bird's-beak *Chloropyron maritimum ssp. palustre*	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
purple-stemmed checkerbloom *Sidalcea malviflora ssp. purpurea*	PDMAL110FL	None	None	G5T1	S1	1B.2
red-bellied newt *Taricha rivularis*	AAAAF02020	None	None	G4	S2	SSC
rhinoceros auklet *Cerorhinca monocerata*	ABNNN11010	None	None	G5	S3	WL
Rincon Ridge ceanothus *Ceanothus confusus*	PDRHA04220	None	None	G1	S1	1B.1
Rincon Ridge manzanita *Arctostaphylos stanfordiana ssp. decumbens*	PDERI041G4	None	None	G3T1	S1	1B.1
rose leptosiphon *Leptosiphon rosaceus*	PDPLM09180	None	None	G1	S1	1B.1
round-headed beaked-rush *Rhynchospora globularis*	PMCYP0N0W0	None	None	G4	S1	2B.1
Russian River tule perch *Hysterocarpus traski pomo*	AFCQK02011	None	None	G5T4	S4	SSC
saline clover *Trifolium hydrophilum*	PDFAB400R5	None	None	G2	S2	1B.2
San Bruno elfin butterfly *Callophrys mossii bayensis*	IILEPE2202	Endangered	None	G4T1	S1	
San Francisco Bay spineflower *Chorizanthe cuspidata var. cuspidata*	PDPGN04081	None	None	G2T1	S1	1B.2
San Francisco owl's-clover *Triphysaria floribunda*	PDSCR2T010	None	None	G2?	S2?	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Santa Cruz clover *Trifolium buckwestiorum*	PDFAB402W0	None	None	G2	S2	1B.1
Sebastopol meadowfoam *Limnanthes vinculans*	PDLIM02090	Endangered	Endangered	G1	S1	1B.1
serpentine daisy *Erigeron serpentinus*	PDAST3M5M0	None	None	G2	S2	1B.3
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	PDASTE5011	None	None	G4T3	S2	1B.2
small groundcone *Kopsiopsis hookeri*	PDORO01010	None	None	G4?	S1S2	2B.3
Sonoma alopecurus *Alopecurus aequalis var. sonomensis*	PMPOA07012	Endangered	None	G5T1	S1	1B.1
Sonoma spineflower *Chorizanthe valida*	PDPGN040V0	Endangered	Endangered	G1	S1	1B.1
Sonoma sunshine *Blennosperma bakeri*	PDAST1A010	Endangered	Endangered	G1	S1	1B.1
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
steelhead - central California coast DPS *Oncorhynchus mykiss irideus*	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
swamp harebell *Campanula californica*	PDCAM02060	None	None	G3	S3	1B.2
The Cedars buckwheat *Eriogonum cedrorum*	PDPGN087A0	None	None	G1	S1	1B.3
The Cedars fairy-lantern *Calochortus raichei*	PMLIL0D1L0	None	None	G2	S2	1B.2
The Cedars manzanita *Arctostaphylos bakeri ssp. sublaevis*	PDERI04222	None	Rare	G2T2	S2	1B.2
thin-lobed horkelia *Horkelia tenuiloba*	PDROS0W0E0	None	None	G2	S2	1B.2
Thurber's reed grass *Calamagrostis crassiglumis*	PMPOA17070	None	None	G3Q	S2	2B.1
Tidestrom's lupine *Lupinus tidestromii*	PDFAB2B3Y0	Endangered	Endangered	G1	S1	1B.1
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G3G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
tufted puffin *Fratercula cirrhata*	ABNNN12010	None	None	G5	S1S2	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
two-fork clover *Trifolium amoenum*	PDFAB40040	Endangered	None	G1	S1	1B.1
Vine Hill ceanothus *Ceanothus foliosus var. vineatus*	PDRHA040D6	None	None	G3T1	S1	1B.1
Vine Hill clarkia *Clarkia imbricata*	PDONA050K0	Endangered	Endangered	G1	S1	1B.1
Vine Hill manzanita *Arctostaphylos densiflora*	PDERI040C0	None	Endangered	G1	S1	1B.1
western bumble bee *Bombus occidentalis*	IIHYM24250	None	None	G2G3	S1	
western leatherwood *Dirca occidentalis*	PDTHY03010	None	None	G2	S2	1B.2
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western red bat *Lasiurus blossevillii*	AMACC05060	None	None	G5	S3	SSC
western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
white beaked-rush *Rhynchospora alba*	PMCYP0N010	None	None	G5	S2	2B.2
white-flowered rein orchid *Piperia candida*	PMORC1X050	None	None	G3	S3	1B.2
white-tailed kite *Elanus leucurus*	ABNKC06010	None	None	G5	S3S4	FP
whiteworm lichen *Thamnolia vermicularis*	NLTES43860	None	None	G3G5	S1	2B.1
woolly-headed gilia *Gilia capitata ssp. tomentosa*	PDPLM040B9	None	None	G5T1	S1	1B.1
woolly-headed spineflower *Chorizanthe cuspidata var. villosa*	PDPGN04082	None	None	G2T2	S2	1B.2

Record Count: 139

Project Location Topographic Map



Project Title: Arundo Free Watershed Campaign

Introduction

The Ventura River Watershed Council, as part of the Arundo-Free Watershed Campaign, "seeks to remove, and keep at bay" the invasive plant (giant reed, *Arundo donax*). The proposed project carries out the mission of the campaign by completing the control of giant reed in the upper San Antonio Creek watershed, which began in 2010. The project also targets castor bean, another invasive non-native plant.

Retreatment of giant reed and castor bean is planned from the San Antonio Creek Watershed headwaters to the downstream (southwest end) of Soule Park Golf Course. The District conducted initial non-native plant control in this 212-acre project area in May 2010, with Proposition 50 IRWM Implementation grant funds through the State Water Resources Control Board. Retreatments occurred from late 2010 through late 2016, with the last six treatments funded in part by a 2012 CDFW FRGP grant. This Project proposes nine non-native plant retreatments over a three-year period from fall 2018 through spring 2021. The Project will retreat the estimated remaining six acres of target plants scattered throughout the original 212-acre project area. Work will focus on giant reed and castor bean, although the latter is not expected to reach full control due to the extensive seed bank present. Giant reed requires several more years of retreatment to achieve full control with the more effective herbicides proposed in this project. Natural recruitment is expected to revegetate areas where the non-native species have been removed; no planting is proposed as part of this project.

Giant reed, and to a lesser extent castor bean, have increased in cover and range within the Ventura River and San Antonio Creek watersheds especially since the 1960's. Giant reed biomass negatively affects physical and biological processes in wetlands and streams. Giant reed removal decreases erosion potential by reducing biomass bulking during storm flows, and reduces reed material disposal costs for local beach communities. Removal benefits water quantity because giant reed consumes more water and provides less shade than native riparian plants. Giant reed removal decreases fire and flood hazards in river ecosystems. The woody stems and leaves of giant reed are highly flammable even when green, increasing fire risk. Giant reed acts as a 'fuel ladder' resulting in intense crown fires that can destroy native trees and threaten nearby buildings. Giant reed outcompetes native plants following floods or fires, eventually forming dense monocultures devoid of most wildlife value.

The project area lies within an agricultural area with avocado orchards, and many native and non-native landscape trees which are suitable hosts for the polyphagous shot-hole borer (Euwallacea spp.). This nonnative beetle species is rapidly expanding its range in southern California, decimating orchards, riparian vegetation, and landscape trees. The borer creates tunnels in tree trunks where it cultivates a fungus (Fusarium euwallaceae), which together kill the host plant.

Castor bean is a reproductive host to the beetle, which can generate hundreds of new beetles prior to killing the castor bean plant. Therefore, control of the castor bean plants can limit the opportunities for this invasive beetle to spread.

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

Objective(s):

1. Address task "SC-06412-05 – Restore the riparian corridor through planting of native riparian vegetation and/or through removal of non-native vegetation" from the Steelhead Restoration and Management Plan for California by implementing the removal of giant reed and castor bean for the benefit of all life stages of steelhead in the San Antonio Creek watershed.

2. Complete control of non-native giant reed plants in the project area. Giant reed requires several more years of retreatment to achieve full control with the more effective herbicides proposed in this project. Natural recruitment is expected to revegetate areas where the non-native species have been removed; no planting is proposed as part of this project.

Project Description:

Location:
The project area is located within the Ojai Valley, approximately 12 miles north (inland) of the City of Ventura. The project area includes reaches of upper San Antonio Creek, McNell Creek, Thacher Creek, Unnamed Creek, and Reeves Creek. The downstream extent of the project area is the southwest end of the Soule Park Golf Course on San Antonio Creek. The project area continues upstream along San Antonio Creek through the Soule Park Golf Course beyond the confluence of San Antonio Creek and Thacher Creek. The confluence of McNell Creek and upper San Antonio Creek is located at upper San Antonio Creek's crossing of East Ojai Avenue (State Highway 150), and the McNell Creek project reach continues northeast approximately 3.7 miles into the boundaries of the Los Padres National Forest to its headwaters near Thacher School. From its confluence with San Antonio Creek, the Thacher Creek project reach continues approximately 4.2 miles northeast to Thacher School. The confluence of Thacher and Reeves Creeks occurs approximately 1.6 miles east of the eastern boundary of Soule Park, near McNell Road. In an easterly direction from its confluence with Thacher Creek, Reeves Creek follows the north side of Reeves Road and subsequently enters Wilsie Canyon. The project area along Reeves Creek extends approximately 1.5 miles from its confluence with Thacher Creek and ends at the eastern terminus of Reeves Road. The

project area along Unnamed Creek extends north approximately 1.2 miles from Reeves Creek.

Upper San Antonio Creek Watershed - 34.26287000, -119.13463000 -Center of the project

Project Set Up:

The Ventura County Watershed Protection District (District) will be responsible for implementation of the project and will carry out the administrative work required. Tasks will include preparation and submittal of quarterly reports and invoices, contracting for the retreatments and biological monitoring, obtaining extensions of provisional landowner access agreements, preparation of close-out documents, permit work, and other administrative work required to successfully carry out this project. Personnel to be included for this project will include the following: Engineer Manager – administrative oversight; Planner – preparation of quarterly and final reports, contracting, permit work, and project management; Engineering Tech – design and specifications support; Staff Services Specialist – preparation and submittal of quarterly reports and final reports, and invoices and grant management; Maintenance Worker – construction inspection; Real Property Agent – obtaining extensions of provisional landowner access agreements; and Public Works Inspector – construction inspection.

The sub-contractor for the retreatment work will be the California Conservation Corps (CCC) based in the Camarillo Center. It is expected that there will be a crew of 5 CCC members to perform the retreatment work, with oversight by the CCC Fish Habitat Specialist.

The sub-contractor for the biological monitoring will be BioResource Consultants Inc. (BRC), based in Ojai, CA. The contract will include one biologist to conduct wildlife surveys, permit and specification compliance, worker training, and reporting.

Materials:

- Herbicides including Roundup Custom, and Habitat to control regrowth of non-native plants;
- Blaz-on™ Blue Dye to identify treated plant stalks;
- Daubers to apply the chemicals;
- Tyveks, gloves, and safety glasses (Herbicide rated) for protection of crew during treatment.
- Cutting equipment such as chain saws, loppers, and power brush cutters
- Chipper rental
- Tipping fees at a green waste recycler

Tasks:

Task 1: Project Administration and Reporting
This task includes managing the grant agreement including compliance with grant requirements, preparation and submittal of supporting grant documents, and preparation and submittal of invoices. This task also includes preparation and submittal of quarterly progress reports detailing work completed in the prior quarter, and preparation and submittal of a Final Project Completion Report.

Task 2: Real Estate Agreements
This task includes obtaining Grants of Temporary Easement and/or executing Amendments to extend the term of existing Grants of Temporary Easement for the parcels to be treated for non-native giant reed and castor bean plants within the project area boundaries. County policy requires offering monetary compensation to each landowner.

Task 3: Environmental Documentation and Permitting
CEQA environmental review for the project (Initial Study and Mitigated Negative Declaration, SCH# 2009061067) was completed as part of the Upper San Antonio Creek Watershed Giant Reed Removal Project. The Notice of Determination was filed on October 8, 2009. On May 19, 2014, CDFW provided an "operation by law" authorization letter to the District to conduct giant reed removal work in the project area under Lake or Streambed Alteration Notification No. 1600-2014-0022-R5. However, this authorization expires on May 1, 2019, so the District will need to apply for a Streambed Alteration Agreement to cover project work through the year 2021. No permit from the U.S. Army Corps of Engineers is required under Section 404 of the Clean Water Act, since the project activity involves hand-clearing and herbicide application with no ground disturbance.

Task 4: Construction Contracting
This task includes preparing and executing a contract with the California Conservation Corps to conduct the non-native giant reed and castor bean plant removal within the project boundaries. Also included in this task is the preparation and execution of a contract with BioResource Consultants, Inc. to conduct pre-work biological surveys and biological and compliance monitoring of the non-native plant removal activities.

Task 5: Implementation and Monitoring
This task entails implementation and monitoring of the invasive species removal work. Invasive giant reed and castor bean plants will be removed within the 212-acre project area along San Antonio Creek and its tributaries, Reeves Creek, McNell Creek, Thacher Creek, and Unnamed Creek. The project includes nine retreatments scheduled to occur approximately three times per year for three years from September 2018 through May 2021.

A "cut and daub" treatment method will be used to remove the targeted giant reed. All live giant reed regrowth material will be cut with hand held equipment such as chain saws,

loppers and power brush cutters to a maximum of four inches above grade level. A combination of Roundup Custom (glyphosate) and Habitat (imazapyr), which are approved and labeled for use near and in open water, will be applied to the cambium exposed by the cut. The herbicide application will be conducted within approximately two minutes of cutting by painting the cut surface with a cloth-covered wand or a sponge dauber in a manner that will maximize herbicide absorption into the wound. A colorant, such as Blaz-on®, will be added to the herbicide solution to identify treated plant material. All cut plant material will be taken off-site either by hand or with a small loader to a haul truck, which will be parked at the closest point of a road that provides access to the targeted removal site. The haul truck will then transport the cut plant material to a chipping site in Soule Park.

Castor bean treatments methods will follow the same procedure and herbicide application as described above for giant reed. To minimize seed dispersal during project activities, all castor bean seed heads shall be removed with hand-held mechanical equipment (such as clippers or loppers) and be bagged to prevent inadvertent seed dispersal. Castor bean seedlings and small plants less than two feet tall will be hand removed by cutting the stem just below the ground surface. All castor bean stems and leaves will be passed through a shredder to produce 1-inch or smaller chips, prior to being hauled to a green waste recycling facility for composting. Castor bean seed heads will also be composted to ensure seed kill.

Prior to any site-specific activities, qualified monitors will survey the general area to insure that no people or wildlife are present. If requested by the property owners, the District will provide notification prior to each retreatment application. Herbicide applications will be completed or supervised on site by a Pest Control Advisor (PCA) who holds either a Qualified Applicator License (QAL) or a Qualified Applicator Certificate (QAC) from the California Department of Pesticide Regulation. The PCA will prepare a written recommendation for herbicide use for the District, and will submit it to the Ventura County Agricultural Commissioner for review and approval prior to the start of work. While the proposed herbicides are not restricted materials, all work conducted for the District must have a PCA recommendation. The supervisor will additionally ensure that specific safety measures and manufacturer specifications are followed, and that the product label requirements are implemented.

All herbicide use will follow the Ventura County Application Protocol adopted July 2001 and amended October 15, 2009. To date, implementation of these protocols for retreatment have successfully prevented potential impacts from herbicide applications; glyphosate was not detected in surface water adjacent to targeted removal areas during post application water quality monitoring. Water quality monitoring is not warranted for this proposed project because of the small amount of herbicide projected for use and negative findings for glyphosate in other similar projects.

A qualified biologist approved by the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife will be present for project activities. The biologist will be familiar with the wildlife species and other sensitive biological resources of the project

area, be qualified to recognize potential effects to these resources, and ensure that all State and/or federal wetland/riparian and special status-species protection guidelines, as applicable, are followed. The biologist will be responsible for surveying targeted creek reaches and their surrounding areas prior to the start of work activities, and moving any identified wildlife out of harm's way, to the extent practicable. The biologist will additionally have the authority to stop or otherwise re-direct project related activities in the event that sensitive biological resources are identified. A qualified District inspector or the biologist will monitor all giant reed and castor bean removal activities. The inspector and biologist will ensure compliance with the project specifications, protocols, permit conditions, and best management practices. It is probable that the consultant biologist may act also as inspector for some of the retreatments.

Deliverables:

Task 1: Project Administration and Reporting

a. GIS maps with metadata;
b. Map of project area;
c. Invoices;
d. Quarterly Progress Reports;
e. Final Project Completion Report

Task 2: Real Estate Agreements - Temporary easement agreements and amendments

Task 3: Environmental Documentation and Permitting – all permits

Task 4: Construction Contracting - Executed contracts with California Conservation Corps and BioResource Consultants, Inc.

Task 5: Implementation and Monitoring

a. Photographs of before, during and after invasive species removal;
b. Compliance Status Reports quantifying invasive species removal results

Timelines:

Task 1: Project Administration and Reporting- June 2021
Task 2: Real Estate Agreements- December 2019
Task 3: Environmental Documentation and Permitting- June 2019
Task 4: Construction Contracting- September 2020
Task 5: Implementation and Monitoring-June 2021
Third Trimester 2018: First Retreatment
First Trimester 2019: Second Retreatment
Second Trimester 2019: Third Retreatment
Third Trimester 2019: Fourth Retreatment
First Trimester 2020: Fifth Retreatment
Second Trimester 2020: Sixth Retreatment
Third Trimester 2020: Seventh Retreatment
First Trimester 2021: Eighth Retreatment
Second Trimester 2021: Ninth Retreatment

Additional Requirements:

1. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.* Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

2. No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

3. All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife Aquatic Invasive Species Decontamination Protocol.

4. During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Saticoy (3411932) OR Santa Paula Peak (3411941) OR Ojai (3411942) OR Matilija (3411943) OR Santa Paula (3411931) OR Ventura (3411933) OR Camarillo (3411921) OR Oxnard (3411922))

Possible species within the Saticoy quadrangle and surrounding quads for 725586 Arundo Free Watershed Campaign, T02N R22W S13, Ventura County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
aphanisma *Aphanisma blitoides*	PDCHE02010	None	None	G3G4	S2	1B.2
arroyo chub *Gila orcuttii*	AFCJB13120	None	None	G2	S2	SSC
Baja navarretia *Navarretia peninsularis*	PDPLM0C0L0	None	None	G3	S2	1B.2
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S2	
Belding's savannah sparrow *Passerculus sandwichensis beldingi*	ABPBX99015	None	Endangered	G5T3	S3	
Blochman's dudleya *Dudleya blochmaniae ssp. blochmaniae*	PDCRA04051	None	None	G3T2	S2	1B.1
Braunton's milk-vetch *Astragalus brauntonii*	PDFAB0F1G0	Endangered	None	G2	S2	1B.1
burrowing owl *Athene cunicularia*	ABNSB10010	None	None	G4	S3	SSC
California black rail *Laterallus jamaicensis coturniculus*	ABNME03041	None	Threatened	G3G4T1	S1	FP
California condor *Gymnogyps californianus*	ABNKA03010	Endangered	Endangered	G1	S1	FP
California horned lark *Eremophila alpestris actia*	ABPAT02011	None	None	G5T4Q	S4	WL
California least tern *Sternula antillarum browni*	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
California legless lizard *Anniella sp. 1*	ARACC01070	None	None	G3G4	S3S4	SSC
California red-legged frog *Rana draytonii*	AAABH01022	Threatened	None	G2G3	S2S3	SSC
California satintail *Imperata brevifolia*	PMPOA3D020	None	None	G4	S3	2B.1
California Walnut Woodland *California Walnut Woodland*	CTT71210CA	None	None	G2	S2.1	
chaparral nolina *Nolina cismontana*	PMAGA080E0	None	None	G3	S3	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
chaparral ragwort *Senecio aphanactis*	PDAST8H060	None	None	G3	S2	2B.2
coast horned lizard *Phrynosoma blainvillii*	ARACF12100	None	None	G3G4	S3S4	SSC
coast patch-nosed snake *Salvadora hexalepis virgultea*	ARADB30033	None	None	G5T4	S2S3	SSC
Coastal and Valley Freshwater Marsh *Coastal and Valley Freshwater Marsh*	CTT52410CA	None	None	G3	S2.1	
coastal California gnatcatcher *Polioptila californica californica*	ABPBJ08081	Threatened	None	G4G5T2Q	S2	SSC
coastal whiptail *Aspidoscelis tigris stejnegeri*	ARACJ02143	None	None	G5T5	S3	SSC
conejo buckwheat *Eriogonum crocatum*	PDPGN081G0	None	Rare	G1	S1	1B.2
Coulter's goldfields *Lasthenia glabrata ssp. coulteri*	PDAST5L0A1	None	None	G4T2	S2	1B.1
Coulter's saltbush *Atriplex coulteri*	PDCHE040E0	None	None	G3	S1S2	1B.2
Crotch bumble bee *Bombus crotchii*	IIHYM24480	None	None	G3G4	S1S2	
Davidson's saltscale *Atriplex serenana var. davidsonii*	PDCHE041T1	None	None	G5T1	S1	1B.2
Dulzura pocket mouse *Chaetodipus californicus femoralis*	AMAFD05021	None	None	G5T3	S3	SSC
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Gerry's curly-leaved monardella *Monardella sinuata ssp. gerryi*	PDLAM18163	None	None	G3T1	S1	1B.1
globose dune beetle *Coelus globosus*	IICOL4A010	None	None	G1G2	S1S2	
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
late-flowered mariposa-lily *Calochortus fimbriatus*	PMLIL0D1J2	None	None	G3	S3	1B.3
least Bell's vireo *Vireo bellii pusillus*	ABPBW01114	Endangered	Endangered	G5T2	S2	
mesa horkelia *Horkelia cuneata var. puberula*	PDROS0W045	None	None	G4T1	S1	1B.1
Mexican long-tongued bat *Choeronycteris mexicana*	AMACB02010	None	None	G4	S1	SSC
Mexican malacothrix *Malacothrix similis*	PDAST660D0	None	None	G2G3	SH	2A

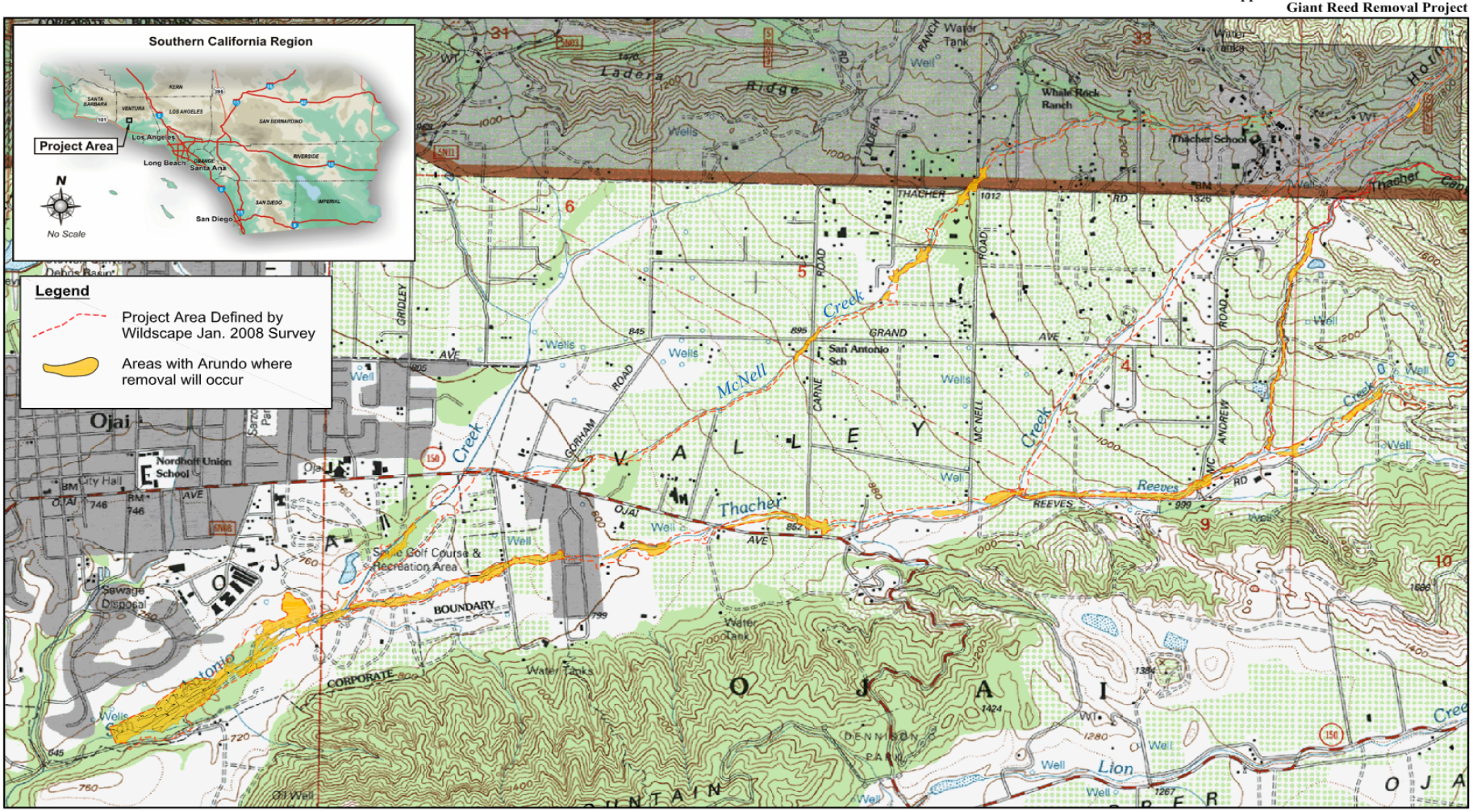
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Miles' milk-vetch *Astragalus didymocarpus var. milesianus*	PDFAB0F2X3	None	None	G5T2	S2	1B.2
mimic tryonia (=California brackishwater snail) *Tryonia imitator*	IMGASJ7040	None	None	G2	S2	
monarch - California overwintering population *Danaus plexippus pop. 1*	IILEPP2012	None	None	G4T2T3	S2S3	
Ojai fritillary *Fritillaria ojaiensis*	PMLIL0V0N0	None	None	G2?	S2?	1B.2
Ojai navarretia *Navarretia ojaiensis*	PDPLM0C130	None	None	G2	S2	1B.1
Orcutt's pincushion *Chaenactis glabriuscula var. orcuttiana*	PDAST20095	None	None	G5T1T2	S1	1B.1
pale-yellow layia *Layia heterotricha*	PDAST5N070	None	None	G2	S2	1B.1
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
Plummer's mariposa-lily *Calochortus plummerae*	PMLIL0D150	None	None	G4	S4	4.2
Robinson's pepper-grass *Lepidium virginicum var. robinsonii*	PDBRA1M114	None	None	G5T3	S3	4.3
salt marsh bird's-beak *Chloropyron maritimum ssp. maritimum*	PDSCR0J0C2	Endangered	Endangered	G4?T1	S1	1B.2
salt spring checkerbloom *Sidalcea neomexicana*	PDMAL110J0	None	None	G4	S2	2B.2
San Bernardino ringneck snake *Diadophis punctatus modestus*	ARADB10015	None	None	G5T2T3Q	S2?	
sandy beach tiger beetle *Cicindela hirticollis gravida*	IICOL02101	None	None	G5T2	S2	
Sanford's arrowhead *Sagittaria sanfordii*	PMALI040Q0	None	None	G3	S3	1B.2
Santa Ana sucker *Catostomus santaanae*	AFCJC02190	Threatened	None	G1	S1	
Santa Monica grasshopper *Trimerotropis occidentiloides*	IIORT36300	None	None	G1G2	S1S2	
south coast gartersnake *Thamnophis sirtalis ssp.*	ARADB3613F	None	None	G5T1T2	S1S2	SSC
south coast saltscale *Atriplex pacifica*	PDCHE041C0	None	None	G4	S2	1B.2
Southern California Coastal Lagoon *Southern California Coastal Lagoon*	CALE1220CA	None	None	GNR	SNR	
southern California legless lizard *Anniella stebbinsi*	ARACC01060	None	None	G3	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Southern California Steelhead Stream *Southern California Steelhead Stream*	CARE2310CA	None	None	GNR	SNR	
Southern Coast Live Oak Riparian Forest *Southern Coast Live Oak Riparian Forest*	CTT61310CA	None	None	G4	S4	
Southern Coastal Salt Marsh *Southern Coastal Salt Marsh*	CTT52120CA	None	None	G2	S2.1	
Southern Riparian Scrub *Southern Riparian Scrub*	CTT63300CA	None	None	G3	S3.2	
Southern Sycamore Alder Riparian Woodland *Southern Sycamore Alder Riparian Woodland*	CTT62400CA	None	None	G4	S4	
southwestern willow flycatcher *Empidonax traillii extimus*	ABPAE33043	Endangered	Endangered	G5T2	S1	
steelhead - southern California DPS *Oncorhynchus mykiss irideus*	AFCHA0209J	Endangered	None	G5T1Q	S1	
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
two-striped gartersnake *Thamnophis hammondii*	ARADB36160	None	None	G4	S3S4	SSC
umbrella larkspur *Delphinium umbraculorum*	PDRAN0B1W0	None	None	G3	S3	1B.3
unarmored threespine stickleback *Gasterosteus aculeatus williamsoni*	AFCPA03011	Endangered	Endangered	G5T1	S1	FP
Ventura Marsh milk-vetch *Astragalus pycnostachyus var. lanosissimus*	PDFAB0F7B1	Endangered	Endangered	G2T1	S1	1B.1
Verity's dudleya *Dudleya verityi*	PDCRA040U0	Threatened	None	G1	S1	1B.1
western mastiff bat *Eumops perotis californicus*	AMACD02011	None	None	G5T4	S3S4	SSC
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
white rabbit-tobacco *Pseudognaphalium leucocephalum*	PDAST440C0	None	None	G4	S2	2B.2
white-tailed kite *Elanus leucurus*	ABNKC06010	None	None	G5	S3S4	FP
white-veined monardella *Monardella hypoleuca ssp. hypoleuca*	PDLAM180A3	None	None	G4T3	S3	1B.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
woven-spored lichen	NLTEST7980	None	None	G3	S1	3
Texosporium sancti-jacobi						
yellow warbler	ABPBX03010	None	None	G5	S3S4	SSC
Setophaga petechia						

Record Count: 83

Project Location Topographic Map



Prepared by Aspen Environmental Group

1" = 1,500'
Date: August 25, 2009
File: 1085-27projectmap5.dwg

NORTH

0 750 1,500 3,000
Graphical Scale Feet

Figure A.4-1
Proposed Project Area

APPENDIX B

MITIGATION MEASURES, MONITORING AND REPORTING PROGRAM FOR THE 2017 FISHERIES HABITAT RESTORATION PROJECT

SECTION 1: MITIGATION

General mitigation measures are implemented for all action items. Specific mitigation measures are identified for the various species found at or near the project site. A CDFW grant manager is assigned to each action item and is responsible for ensuring the general and specific mitigation measures are implemented.

I. AESTHETICS

No specific mitigation measures are required to protect aesthetics.

II. AGRICULTURE RESOURCES

No specific mitigation measures are required to protect agricultural resources.

III. AIR QUALITY

No specific mitigation measures are required to protect air quality.

IV. BIOLOGICAL RESOURCES

A. General Measures for Protection of Biological Resources

1) Timing. To avoid impacts to aquatic habitat the activities carried out in the restoration program typically occur during the summer dry season where flows are low or streams are dry.

    a) Work around streams is restricted to the period of June 15 through November 1 or the first significant rainfall, whichever comes first. Actual project start and end dates, within this timeframe, are at the discretion of the Department of Fish and Wildlife (i.e. on the Shasta River projects must be completed between July 1 and September 15 to avoid impacts to immigrating and emigrating salmonids). This is to take advantage of low stream flow and avoid the spawning and egg/alevin incubation period of salmon and steelhead.

    b) Upslope work generally occurs during the same period as stream work. Road decommissioning and other sediment reduction activities are dependent on soil moisture content. Non jurisdictional upslope projects do not have seasonal restrictions in the Incidental Take Statement but work may be further restricted at some sites to allow soils to dry out adequately.

In some areas equipment access and effectiveness is constrained by wet conditions.

c) The approved work window for individual work sites will be further constrained as necessary to avoid the nesting or breeding seasons of birds and terrestrial animals. At most sites with potential for raptor (including northern spotted owls) and migratory bird nesting, if work is conditioned to start after July 9, potential impacts will be avoided and no surveys will be required. For work sites that might contain nesting marbled murrelets, the starting date will be September 16 in the absence of surveys. The work window at individual work sites could be advanced if surveys determine that nesting birds will not be impacted.

d) For restoration work that may affect swallow nesting habitat (such as removal or modification of bridges, culverts or other structures that show evidence of past swallow nesting activities), construction shall occur after August 31 to avoid the swallow nesting period. Suitable nesting habitat shall be netted prior to the breeding season to prevent nesting. Netting shall be installed before any nesting activity begins, generally prior to March 1. Swallows shall be excluded from areas where construction activities cause nest damage or abandonment.

e) All project activities shall be confined to daylight hours.

2) Projects shall not disturb or dewater more than 500 feet of contiguous stream reach.

3) During all activities at project work sites, all trash that may attract predators shall be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas.

4) Staging/storage areas for equipment, materials, fuels, lubricants, and solvents, will be located outside of the stream's high water channel and associated riparian area where it cannot enter the stream channel. Stationary equipment such as motors, pumps, generators, compressors, and welders located within the dry portion of the stream channel or adjacent to the stream, will be positioned over drip-pans. Vehicles will be moved out of the normal high water area of the stream prior to refueling and lubricating. The grantee shall ensure that contamination of habitat does not occur during such operations. Prior to the onset of work, CDFW shall ensure that the grantee has prepared a plan to allow a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

5) The number of access routes, number and size of staging areas, and the total area of the work site activity shall be limited to the minimum necessary to complete the restoration action while minimizing riparian disturbance without

affecting less stable areas, which may increase the risk of channel instability. Existing roads shall be used to access work sites as much as practicable.

6) The access and work area limits shall be identified with brightly colored flagging or fencing. Flagging and fencing shall be maintained in good repair for the duration of project activities. All areas beyond the identified work area limits shall not be disturbed.

7) Any construction debris shall be prevented from falling into the stream channel. Any material that does fall into a stream during construction shall be immediately removed in a manner that has minimal impact to the streambed and water quality.

8) Where feasible, the construction shall occur from the bank, or on a temporary pad underlain with filter fabric.

9) Any work within the stream channel shall be performed in isolation from the flowing stream and erosion protection measures shall be in place before work begins.

   a) Prior to dewatering, 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 invertebrates shall be determined.

   b) If there is any flow when work will be done, the grantee shall construct coffer dams upstream and downstream of the excavation site and divert all flow from upstream of the upstream dam to downstream of the downstream dam.

   c) No heavy equipment shall operate in the live stream, except as may be necessary to construct coffer dams to divert stream flow and isolate the work site.

   d) Coffer dams may be constructed with clean river run gravel or sand bags, and may be sealed with sheet plastic. Upon project completion, sand bags and any sheet plastic shall be removed from the stream. Clean river run gravel may be left in the stream channel, provided it does not impede stream flow or fish passage, and conforms to natural channel morphology without significant disturbance to natural substrate.

   e) Dewatering shall be coordinated with a qualified fisheries biologist to perform fish and wildlife relocation activities.

   f) The length of the dewatered stream channel and the duration of the dewatering shall be kept to a minimum and shall be expected to be less than 300 contiguous feet or 500 total feet per site.

   g) When bypassing stream flow around work area, stream flow below the construction site shall be maintained similar to the unimpeded flow at all times.

h) The work area shall be periodically pumped dry of seepage. Pumps shall be placed in flat areas, away from the stream channel. Pumps shall be secured by tying off to a tree or staked in place to prevent movement by vibration. Pump intakes shall be covered with 0.125 inch mesh to prevent entrainment of fish or amphibians that failed to be removed. Pump intakes shall be periodically checked for impingement of fish or amphibians, and shall be relocated according to the approved measured outlined for each species bellow.

i) If necessary, flow shall be diverted around the work site, either by pump or by gravity flow, the suction end of the intake pipe shall be fitted with fish screens meeting CDFW and NOAA criteria to prevent entrainment or impingement of small fish. Any turbid water pumped from the work site itself to maintain it in a dewatered state shall be disposed of in an upland location where it will not drain directly into any stream channel.

j) Fish shall be excluded from the work area by blocking the stream channel above and below the work area with fine-meshed net or screen. Mesh shall be no greater than 1/8-inch diameter. The bottom edge of the net or screen shall be completely secured to the channel bed to prevent fish from reentering the work area. Exclusion screening shall be placed in areas of low water velocity to minimize fish impingement. Screens shall be regularly checked and cleaned of debris to permit free flow of water.

10) Where the disturbance to construct coffer dams to isolate the work site would be greater than to complete the action (for example, placement of a single boulder cluster), the action shall be carried out without dewatering and fish relocation. Furthermore, measures shall be put in place immediately downstream of the work site to capture suspended sediment. This may include installation of silt catchment fences across the stream, or placement of a filter berm of clean river gravel. Silt fences and other non-native materials will be removed from the stream following completion of the activity. Gravel berms may be left in the stream channel provided it does not impede stream flow or fish passage, and conforms to natural channel morphology without significant disturbance to natural substrate.

11) Best management practices associated with fish screens and measures to minimize effects to salmonids associated with fish screen construction, maintenance, and repair are presented below:

a) Screening projects shall only take place on diversions with a capacity of 60 cfs or less. Screening larger diversions shall require separate consultation. Fish screens shall be operated and maintained in compliance with current law, including Fish and Game Code, and CDFW fish screening criteria.

b) Notwithstanding Fish and Game Code section 6027, fish screens and bypass pipes or channels shall be in-place and maintained in working order at all times water is being diverted.

c) If a screen site is dewatered for repairs or maintenance when targeted fish species are likely to be present, measures shall be taken to minimize harm and mortality to targeted species resulting from fish relocation and dewatering activities. The responsible party shall notify CDFW before the project site is de-watered and streamflow diverted. The notification shall provide a reasonable time for personnel to supervise the implementation of a water diversion plan and oversee the safe removal and relocation of salmonids and other fish life from the project area. If the project requires site dewatering and fish relocation, the responsible party shall implement the dewatering and relocation measures as described in this document to minimize harm and mortality to listed species.

d) If a fish screen is removed for cleaning or repair, measures shall be undertaken to ensure juvenile fish are not passively entrained into the diversion canal. The area shall be isolated, cleared of fish, and dewatered prior to screen maintenance or replacement. If dewatering the work area is infeasible, then the area in front of the screen shall be cleared of fish utilizing a seine net that remains in place until the project is complete. In the case of a damaged screen, a replacement screen shall be installed immediately or the diversion shut down until a screen is in place.

e) Fish screens shall be inspected and maintained regularly (not less than two times per week) to ensure that they are functioning as designed and meeting CDFW fish screening criteria. During the diversion season, screens shall be visually inspected while in operation to ensure they are performing properly. Outside the diversion season when the screening structure is dewatered, the screen and associated diversion structure shall be more thoroughly evaluated.

f) Existing roads shall be used to access screen sites with vehicles and/or equipment whenever possible. If it is necessary to create access to a screen site for repairs or maintenance, access points shall be identified at stable stream bank locations that minimize riparian disturbance.

g) Sediment and debris removal at a screen site shall take place as often as needed to ensure that screening criteria are met. Sediment and debris shall be removed and disposed at a location where it will not re-enter the water course.

h) Stationary equipment used in performing screen maintenance and repairs, such as motors, pumps, generators, and welders, located within or adjacent to a stream shall be positioned over drip pans.

i) Equipment which is used to maintain and/or repair fish screens shall be in good condition and checked and maintained on a daily basis to prevent

leaks of materials that could be deleterious to aquatic life, wildlife, or riparian habitat.

j) To the extent possible repairs to a fish screen or screen site shall be made during a period of time when the target species of fish are not likely to be present (for example, in a seasonal creek, repair work should be performed when the stream is dry).

k) Equipment used to maintain and/or repair fish screens shall not operate in a flowing stream except as may be necessary to construct coffer dams to divert stream flow and isolate the work site.

l) Turbid water which is generated by screen maintenance or repair activities shall be discharged to an area where it will not re-enter the stream. If the CDFW determines that turbidity/siltation levels resulting from screen maintenance or repair activities constitute a threat to aquatic life, all activities associated with the turbidity/siltation shall cease until effective CDFW-approved sediment control devices are installed and/or abatement procedures are implemented.

12) Any equipment entering the active stream (for example, in the process of installing a coffer dam) shall be preceded by an individual on foot to displace wildlife and prevent them from being crushed.

13) If any non-special status wildlife are encountered during the course of construction, said wildlife shall be allowed to leave the construction area unharmed, and shall be flushed, hazed, or herded in a safe direction away from the project site. "Special status wildlife" is defined as any species that meets the definition of "endangered, rare, or threatened species" in section 15380, article 20 in Title 14 of the California Code of Regulations, also known as the "CEQA Guidelines".

14) Any red tree vole nests encountered at a work site shall be flagged and avoided during construction.

15) For any work sites containing western pond turtles, salamander, foothill yellow-legged frogs, or tailed frogs, the grantee shall provide to the CDFW grant manager for review and approval, a list of the exclusion measures that will be used at their work site to prevent take or injury to any individual pond turtles, salamanders, or frogs that could occur on the site. The grantee shall ensure that the approved exclusion measures are in place prior to construction. Any turtles or frogs found within the exclusion zone shall be moved to a safe location upstream or downstream of the work site, prior to construction.

16) All habitat improvements shall be done in accordance with techniques in the *California Salmonid Stream Habitat Restoration Manual*. The most current version of the manual is available at: http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp.

17) The grantee shall have dependable radio or phone communication on-site to be able to report any accidents or fire that might occur.

18) Installation of bridges, culverts, or other structures shall be done so that water flow is not impaired and upstream and downstream passage of fish is assured at all times. Bottoms of temporary culverts shall be placed at or below stream channel grade.

19) Temporary fill shall be removed in its entirety prior to close of work-window.

B. Specific Measures for Endangered, Rare, or Threatened Species That Could Occur at Specific Work Sites

1) Rare Plants

The work sites for the 2017 FHR project are within the range of a variety of rare plant species. The plant species found on a State or Federal special status list that might be associated with the 2017 FHR project, was determined from a search of CDFW's Natural Diversity Database. Because of the large number of widely scattered work sites proposed, it is not feasible to survey individual work sites in advance and still be able to implement the restoration projects, due to time limits on the availability of restoration funds. Lists of special status plant species that might occur at individual work sites are presented in Appendix A. Past experience with grant projects from previous years has shown that the potential for adverse impacts on rare plants at salmonid restoration work sites is very low. Few sites surveyed for rare plants between 1999 and 2012 were found to have rare plant colonies; disturbance of rare plants was avoided in all cases. In order to avoid impacts to rare plants during the 2017 FHR project, the following mitigation measures will be implemented:

a) CDFW or another qualified biological consultant shall survey all work sites for rare plants prior to any ground disturbing activities. Rare plant surveys will be conducted following the "Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities" (CDFW, 2009). These guidelines are available in Appendix C or on the web at: https://www.wildlife.ca.gov/Conservation/Plants.

b) If any special status plant species are identified at a work site, CDFW shall require one or more of the following protective measures to be implemented before work can proceed:

i. Fencing to prevent accidental disturbance of rare plants during construction,

ii. On-site monitoring by a qualified biologist during construction to assure that rare plants are not disturbed, or

iii. Redesign of proposed work to avoid disturbance of rare plants.

c) Plant surveys will also include any host plants for butterflies identified as occurring in the area either in the CNDDB or the official species list. These host plants are as follows for each butterfly:

Butterfly	Host plant
Mission blue butterfly (*Icaricia icarioides missionensis*) - Endnagered	Silver Bush Lupine (*Lupinus albifrons*)
San Bruno elfin butterfly (*Callophrys mossii bayensis*) - Endangered	stonecrop (*Sedum spathulifolium*)
Callippe silverspot butterfly (*Speyeria callippe callippe*) - Endangered	Johnny jump up (*Viola pedunculata*)
Myrtle's silverspot (*Speyeria zerene myrtleae*) - Endangered	hookedspur violet (*Viola adunca*)
Bay checkerspot butterfly (*Euphydryas editha bayensis*) - Threatened	native plantain (*Plantago erecta*)

i. If any host plant species are identified at a work site, CDFW shall require one or more of the following protective measures to be implemented before work can proceed:

(a) Fencing to prevent accidental disturbance of larval host plants during construction,

(b) On-site monitoring by a qualified biologist during construction to assure that larval host plants are not disturbed, and

(c) Redesign of proposed work to avoid disturbance of larval host plants.

ii. If it becomes impossible to implement the project at a work site without impacts to larval host plants, then activity at that work site shall not proceed. If it becomes impossible to implement the project at a work site without potentially significant impacts to rare plants, then activity at that work site shall be discontinued.

iii. CDFW shall ensure that the grantee or responsible party is aware of these site-specific conditions, and shall inspect the work site before, during, and after completion of the action item.

2) Arroyo toad (*Anaxyrus californicus*)

Of the 35 work sites proposed as part of the 2017 FHR project, none of the sites shows the Arroyo Toad listed on the corresponding species list in Appendix A.

3) California freshwater shrimp (*Syncaris pacifica*)

Three of the 35 work sites proposed as part of the 2017 FHR project occurs within the range of California freshwater shrimp (CFS) (725499 Green Valley Creek 2017 Coho Instream Habitat Enhancement Project, 725591 Dempster Vineyard Dam Removal Project, 725596 Iron Horse Vineyards Dam Removal) (Appendix A). The range of the CFS includes Marin, Napa, and Sonoma counties, excluding the Gualala River watershed. Therefore, the potential for impacts to CFS shall be mitigated by complying with all of the mandatory terms and conditions associated with incidental take authorized by the U. S. Fish and Wildlife Service (USFWS), Biological Opinions (file no. 1-1-03-F-273 and 81420-2009-I-0748-1). CDFW proposes to implement the following measures to minimize adverse effects to the CFS and its habitat:

a) Project activities in potential shrimp habitat shall be restricted to the period between July 1 and November 1.

b) At least 15 days prior to the onset of activities, CDFW shall submit the name(s) and credentials of biologists who will conduct activities specified in the following measures to the USFWS. The grantee shall implement any additional conservation measures requested by CDFW and/or the USFWS.

c) CDFW shall be notified at least one week in advance of the date on which work will start in the stream, so that a qualified CDFW biologist can monitor activities at the work site. All work in the stream shall be stopped immediately if it is determined by CDFW that the work has the potential to adversely impact shrimp or its habitat. Work shall not recommence until CDFW is satisfied that there will be no impact on the shrimp.

d) Where appropriate, a USFWS-approved CDFW biologist will survey each site for shrimp before allowing work to proceed and prior to issuance of a Streambed Alteration Agreement. All overhanging vegetation, undercut banks, and tree roots will be surveyed with a butterfly net or fish net.

e) Prior to the onset of work at a work site that may contain shrimp, the USFWS-approved CDFW biologist shall conduct a training session for all construction personnel. At a minimum the training shall include a description of the shrimp and its habitat, the importance of the shrimp and its habitat, the general measures that are being implemented to conserve the shrimp as they relate to the work site, and the work site boundaries where construction may occur.

f) Only USFWS-approved biologists shall participate in the capture, handling, and monitoring of shrimp. CDFW shall report annually on the number of

capture, release and injuries/mortality and agrees to modify capture/release strategy with USFWS staff as needed to prevent adverse effects.

g) In site locations where shrimp are present, CDFW will require the grantee to implement the mitigation measures listed:

   i. Equipment work shall be performed only in riffle, shallow run, or dry habitats, avoiding low velocity pool and run habitats occupied by shrimp, unless shrimp are relocated according to the protocol described below. "Shallow" run habitat is defined as a run with a maximum water depth, at any point, less than 12 inches, and without undercut banks or vegetation overhanging into the water.

   ii. Hand placement of logs or rocks shall be permitted in pool or run habitat in stream reaches where shrimp are known to be present, only if the placement will not adversely affect shrimp or their habitat.

   iii. Care shall be taken during placement or movement of materials in the stream to prevent any damage to undercut stream banks and to minimize damage to any streamside vegetation. Streamside vegetation overhanging into pools or runs shall not be removed, trimmed, or otherwise modified.

   iv. No log or rock weirs (including vortex rock weirs), or check dams shall be constructed that would span the full width of the low flow stream channel. Vegetation shall be incorporated with any structures involving rocks or logs to enhance migration potential for shrimp.

   v. No dumping of dead trees, yard waste or brush shall occur in shrimp streams, which may result in oxygen depletion of aquatic systems.

h) If in the opinion of the USFWS-approved biologist, adverse effects to shrimp would be further minimized by moving shrimp away from the project site, the following procedure shall be used:

   i. A second survey shall be conducted within 24 hours of any construction activity and shrimp shall be relocated to the nearest suitable habitat. Shrimp shall be moved while in the net, or placed in buckets containing stream water. Stress and temperature monitoring of shrimp shall be performed by the USFWS-approved biologist. Numbers of shrimp and any mortalities or injuries shall be identified and recorded. Shrimp habitat is defined as reaches in low elevation (less than 116 m) and low gradient (less than one percent) streams where banks are structurally diverse with undercut banks, exposed fine root systems, overhanging woody debris or overhanging vegetation.

   ii. When no other habitat exists on a landowner's property, the shrimp shall be held in suitable containers with site water and released at the end of the day. Containers shall be placed in the shade.

i) If moving the shrimp out of the work area cannot be accomplished, and other avoidance measures have been deemed inappropriate, CDFW shall drop activities at the work site from the project.

j) A USFWS-approved CDFW biologist shall be present at the work site until such time as all removal of shrimp, instruction of workers, and habitat disturbance associated with the restoration project have been completed. The USFWS-approved biologist shall have the authority to halt any action that might result in the loss of any shrimp or its habitat. If work is stopped, the USFWS-approved biologist shall immediately notify CDFW and the USFWS.

k) If a work site is temporarily dewatered by pumping, intakes shall be completely screened with wire mesh no larger than 0.2 inch to prevent shrimp from entering the pump system. Water shall be released or pumped downstream at an appropriate rate to maintain downstream flows during construction. Upon completion of construction activities, any barriers to flow shall be removed in a manner that would allow flow with the least disturbance to the substrate.

l) A USFWS-approved biologist shall permanently remove from within the project work site, any individuals of exotic species, such as bullfrogs, centrarchid fishes, and non-native crayfish, to the maximum extent possible. The grantee shall have the responsibility that such removals are done in compliance with the California Department of Fish and Wildlife.

m) Invasive non-native vegetation that provides shrimp habitat and is removed as a result of Program activities shall be replaced with native vegetation that provides comparable habitat for the shrimp. Re-vegetated sites shall be irrigated as necessary until vegetation is established. Re-vegetated sites shall be monitored until shading and cover achieves 80% of pre-project shading and cover and for a minimum of 5 years.

4) California red-legged frog (*Rana draytonii*)

Of the 35 work sites proposed as part of the 2017 FHR project, 14 occur within the range of the California red-legged frog (CRLF). Activities proposed for (725499 Green Valley Creek 2017 Coho Instream Habitat Enhancement Project, 725505 Rockpile Creek Sediment Reduction & Instream Barrier Removal, 725512 Fish Passage and Off-Channel Habitat Restoration at Roy's Pools, 725514 Cachagua Creek Fish Passage Restoration Project - Valley Creek Park, 725516 Franchini Creek Sediment Reduction Project, 725521 Fish Passage Improvement at Crossing 9, Quiota Creek, 725547 Chorro Creek Ecological Reserve Floodplain Restoration Project, 725554 Floodplain and Instream Habitat Restoration on San Geronimo Creek, 725575 San Geronimo Valley Landowner Assistance Program- Restoring Coho Habitat, 725586 Arundo Free Watershed Campaign, 725591 Dempster Vineyard Dam Removal Project, 725593 2017 Tannery Creek Coho Instream Habitat Enhancement Project, 725596 Iron Horse Vineyards Dam Removal, and 725597 Alpine Creek Fish Passage Project) (Appendix A) will not remove or degrade CRLF habitat; however, precautions

shall be required at these sites to avoid the potential for take of CRLF while using heavy equipment. The potential for impacts to CRLF will be mitigated by complying with all of the mandatory terms and conditions associated with incidental take authorized by the USFWS, Biological Opinion (file no. 1-1-03-F-273, 81420-2009-I-0748-1, and 81440-2009-F-0387 for projects within the San Francisco District of the USACE, and file no. 2008-F-0441 for projects within the Los Angeles District of the USACE). CDFW shall implement the following measures to minimize adverse effects to the CRLF and its habitat:

a) Project activities in potential red-legged frog habitat shall be restricted to the period between July 1 and October 15.

b) At least 15 days prior to the onset of project activities, CDFW shall submit the names(s) and credentials of biologists who would conduct activities specified in the following measures. No project activities shall begin until CDFW has received written approval from the USFWS that the biologist(s) is qualified to conduct the work.

c) USFWS-approved biologist(s) who handle red-legged frogs shall ensure that their activities do not transmit diseases. To ensure that diseases are not conveyed between work sites by the USFWS-approved biologist, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force (http://www.fws.gov/ventura/docs/species/protocols/DAFTA.pdf) shall be followed at all times.

d) A CDFW monitoring plan shall be developed to determine the level of incidental take of the red-legged frog associated with the Restoration Program funded activities in the area. The monitoring plan must include a standardized mechanism to report any observations of dead or injured red-legged frog to the appropriate USACE and USFWS offices.

e) A USFWS-approved biologist shall survey the project site at least two weeks before the onset of activities. If red-legged frogs are found in the project area and these individuals are likely to be killed or injured by work activities, the USFWS-approved biologist will allow sufficient time to move them from the site before work activities resume. Only USFWS-approved biologists will participate in activities with the capture, handling, and monitoring of red-legged frogs.

f) Before any project-related activities, the approved biologist must identify appropriate areas to receive red-legged frog adults and tadpoles from the project areas. These areas must be in proximity to the capture site, contain suitable habitat, not be affected by project activities, and be free of exotic predatory species (i.e. bullfrogs, crayfish) to the best of the approved biologist's knowledge.

g) Prior to the onset of project activities, a USFWS-approved biologist shall conduct a training session for all construction personnel. At a minimum, the training shall include a description of the red-legged frog and its habitat, the importance of the red-legged frog and its habitat, the general measures that are

being implemented to conserve the red-legged frog as they relate to the project, and the boundaries within which the project may be accomplished. Brochures, books and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.

h) A USFWS-approved biologist shall be present at the work site until such time as removal of red-legged frogs, instruction of workers, and habitat disturbance has been completed. The USFWS-approved biologist shall have the authority to halt any action that might result in impacts that exceed the levels anticipated by the USACE and USFWS during review of the proposed action. If work is stopped, the USACE and the USFWS shall be notified immediately by the USFWS-approved biologist or on-site biological monitor.

i) If red-legged frogs are found and these individuals are likely to be killed or injured by work activities, the USFWS-approved biologists must be allowed sufficient time to move them from the site before work activities resume. The USFWS-approved biologist must relocate the red-legged frogs the shortest distance possible to one of the predetermined areas. The USFWS-approved biologist must maintain detailed records of any individuals that are moved (e.g., size, coloration, any distinguishing features, photographs (digital preferred) to assist in determining whether translocated animals are returning to the point of capture. Only red-legged frogs that are at risk of injury or death by project activities may be moved.

j) If a work site is to be temporarily dewatered by pumping, intakes shall be completely screened with wire mesh not larger than 0.125 inch to prevent red-legged frogs from entering the pump system. Water shall be released or pumped downstream at an appropriate rate to maintain down stream flows during construction activities and eliminate the possibility of ponded water. Upon completion of construction activities, any barriers to flow shall be removed in a manner that would allow flow to resume with the lease disturbance to the substrate.

k) Ponded areas shall be monitored for red-legged frogs that may become entrapped. Any entrapped red-legged frog shall be relocated to a pre-determined receiving area by a USFWS-approved biologist.

l) A USFWS-approved biologist will permanently remove from the project area, any individuals of exotic species, such as bullfrogs (*Rana catesbiana),* centrarchid fishes, and non-native crayfish to the maximum extent possible. The biologist will have the responsibility to ensure that their activities are in compliance with the Fish and Game Code.

m) The CDFW or USACE shall report any observation of the incidental take of red-legged frogs associated with the implementation of the Restoration Program projects in accordance with RGP78. The USFWS and the USACE must review the circumstances surrounding the incident to determine whether any patterns of repeated authorized or unauthorized activities are occurring that may indicate that additional protective measures are required. If, after completion of

the review, the USACE and the USFWS agree that additional protective measures are required and can be implemented within the existing scope of the action, the USACE must require the CDFW to implement the agreed-upon measures within a reasonable time frame; if the corrective actions cannot be implemented with the scope of the existing action, the USACE and USFWS will determine whether re-initiation of consultation is appropriate.

n) Despite term and condition i of this section (above), the USACE must immediately re-initiate formal consultation with the USFWS, pursuant to 7(a) (2) of the Endangered Species Act, if red-legged frogs are taken within the action area at or in excess of the incidental take anticipated in the Incidental Take Statement section of the U.S, Fish and Wildlife biological opinion (file no. 2008-F-0441), whether by project or by year.

o) If these mitigation measures cannot be implemented or the project activities proposed at a specific work site cannot be modified to prevent or avoid potential impacts to CRLF or its habitat, then project activity at that work site shall be discontinued.

5) California tiger salamander (*Ambystoma californiense)*

None of the proposed projects in the 2017 FHR project are within the range of the California tiger salamander.

6) Chinook salmon (*Oncorhynchus tshawytscha*), Coho salmon (*Oncorhynchus kisutch*), steelhead trout (*Oncorhynchus mykiss*), and coast cutthroat trout (*Oncorhynchus clarki clarki*)

While all of the work proposed under this program will enhance habitat for one or more of these species, all of the work sites proposed as part of the 2017 FHR project could involve instream work in their habitat (Appendix A). In order to avoid any potential for negative impacts to these species, the following measures will be implemented:

a) Project work within the wetted stream shall be limited to the period between June 15 and November 1, or the first significant rainfall, or which ever comes first. This is to take advantage of low stream flows and to avoid the spawning and egg/alevin incubation period of salmon and steelhead. Actual project start and end dates, within this timeframe, are at the discretion of the Department of Fish and Wildlife (i.e. on the Shasta River projects must be completed between July 1 and September 15 to avoid impacts to immigrating and emigrating salmonids). Whenever possible, the work period at individual sites shall be further limited to entirely avoid periods when salmonids are present (for example, in a seasonal creek, work will be confined to the period when the stream is dry).

b) Suitable large woody debris removed from fish passage barriers that is not used for habitat enhancement, shall be left within the riparian zone so as to provide a source for future recruitment of wood into the stream, reduce surface erosion, contribute to amounts of organic debris in the soil, encourage fungi, provide immediate cover for small terrestrial species and to speed recovery of native vegetation.

c) Prior to dewatering a construction site, fish and amphibian species shall be captured and relocated by CDFW personnel (or designated agents). The following measures shall be taken to minimize harm and mortality to listed salmonids resulting from fish relocation and dewatering activities:

i. Fish relocation and dewatering activities shall only occur between June 15 and November 1 of each year.

ii. Fish relocation shall be performed by a qualified fisheries biologist, with all necessary State and Federal permits. Captured fish shall be moved to the nearest appropriate site outside of the work area. A record shall be maintained of all fish rescued and moved. The record shall include the date of capture and relocation, the method of capture, the location of the relocation site in relation to the project site, and the number and species of fish captured and relocated. The record shall be provided to CDFW within two weeks of the completion of the work season or project, whichever comes first.

iii. Electrofishing shall be conducted by properly trained personnel following NOAA *Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act*, June 2000.

iv. Prior to capturing fish, the most appropriate release location(s) shall be determined. The following shall be determined:

i. Temperature: Water temperature shall be similar as the capture location.

ii. Habitat: There shall be ample habitat for the captured fish.

iii. Exclusions from work site: There shall be a low likelihood for the fish to reenter the work site or become impinged on exclusion net or screen.

v. The most efficient method for capturing fish shall be determined by the biologist. 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 dipnetting fish.

vi. Handling of salmonids shall be minimized. However, when handling is necessary, always wet hands or nets prior to touching fish.

vii. 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.

viii. Air and water temperatures shall be measured periodically. A thermometer shall be placed in holding containers and, if necessary, periodically conduct partial water changes to maintain a stable water temperature. If water temperature reaches or exceeds 18 °C, fish shall be released and rescue operations ceased.

ix. Overcrowding in containers shall be avoided by having at least two containers and segregating young-of-year (YOY) fish from larger age-classes to avoid predation. Larger amphibians, such as Pacific giant salamanders, shall be placed in the container with larger fish. If fish are abundant, the capturing of fish and amphibians shall cease periodically and shall be released at the predetermined locations.

x. Species and year-class of fish shall be visually estimated at time of release. The number of fish captured shall be counted and recorded. Anesthetization or measuring fish shall be avoided.

xi. If feasible, initial fish relocation efforts shall be performed 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. In many instances, additional fish will be captured that eluded the previous day's efforts.

xii. If mortality during relocation exceeds three percent, capturing efforts shall be stopped and the appropriate agencies shall be contacted immediately.

xiii. In regions of California with high summer temperatures, relocation activities shall be performed in the morning when the temperatures are cooler.

xiv. CDFW shall minimize the amount of wetted stream channel that is dewatered at each individual project site to the fullest extent possible.

xv. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

d) If these mitigation measures cannot be implemented, or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to anadromous salmonids or their habitat, then activity at that work site shall be discontinued.

7) Foothill yellow-legged frog (Rana boylii)

Of the 35 proposed projects in the 2017 FHR project, 32 are within range of the foothill yellow-legged frog (FYLF). Activities proposed for (725498 Skunk Train Coho Sediment Reduction and Fish Passage Improvement Project, 725499 Green Valley Creek 2017 Coho Instream Habitat Enhancement Project, 725504 Fish Creek Instream Habitat Enhancement Project, 725505 Rockpile Creek Sediment Reduction & Instream Barrier Removal, 725506 Dunn Creek Habitat Enhancement Project, 725512 Fish Passage and Off-Channel Habitat Restoration at Roy's Pools, 725515 Redwood Creek (HT) Instream Habitat Enhancement Project, 725516 Franchini Creek Sediment Reduction Project, 725527 James Creek Coho Stream Habitat Enhancement Project-Phase II, 725529 North Fork Noyo River-Dewarren Creek Coho Habitat Enhancement Project, 725530 Little Van Duzen Instream Habitat Enhancement Project, 725531 Coulborn & Sebbas Cks Sediment Reduction & Salmonid Habitat Enhancement, 725532 Middle Fork of North Fork Noyo River Coho Habitat Enhancement Project, 725533 North Fork Big River Coho Stream Habitat Enhancement Project - Phase II, 725544 Jordan Creek Instream Habitat Enhancement Project, 725548 Little North Fork Noyo Sediment Reduction and Coho Recovery Project, 725549 Upper Little North Fork Noyo Coho Habitat Enhancement Project, 725552 Little Springs Migration Barrier Removal, 725553 Fish Passage Improvement Project at 12th Street, 725554 Floodplain and Instream Habitat Restoration on San Geronimo Creek, 725564 Instream Habitat Enhancement of Salmon Creek, Humboldt Bay Tributary, 725567 Lower Mattole River and Estuary Riparian Enhancement Project, Phase 2, 725572 Hare Creek and Bunker Gulch Road Decommissioning Implementation Project, 725575 San Geronimo Valley Landowner Assistance Program- Restoring Coho Habitat, 725580 Freshwater Creek Off-Channel Habitat Enhancement Project, 725586 Arundo Free Watershed Campaign, 725591 Dempster Vineyard Dam Removal Project, 725592 Kelly Gulch Fisheries and Riparian Habitat Enhancement Phase I and III, 725593 2017 Tannery Creek Coho Instream Habitat Enhancement Project, 725596 Iron Horse Vineyards Dam Removal, 725597 Alpine Creek Fish Passage Project, and 725607 Dry Dock Restoration Road Decommissioning and Road to Trail Project) (Appendix A) will not remove or degrade FYLF habitat; however, precautions shall be required at these sites to avoid potential significant impacts to the FYLF while using heavy equipment. The potential for impacts to FYLFs will be mitigated by complying with all of the terms and conditions set forth in this section. CDFW shall implement the following measures to minimize adverse effects to the FYLF and its habitat:

a) Prior to start of work, all permits necessary to survey, handle, and relocate FYLFs shall be obtained. All best management practices, special conditions, mitigation and avoidance measures of any take permit obtained shall be complied with.
b) Within 3-5 days prior to entering or working near stream/riparian habitat within the foothill yellow-legged frog range, a qualified biologist shall

examine the project site to determine the presence and/or the potential for presence of FYLF adults, juveniles, tadpoles or egg masses within the project area and 300 feet upstream and downstream.

c) The biologist must be able to recognize all potential age classes of FYLFs relative to other amphibians in the project area.

d) The CDFW approved biologist(s) shall ensure that their activities do not transmit diseases. To ensure that diseases are not conveyed between work sites by the approved biologist, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force (http://www.fws.gov/ventura/docs/species/protocols/DAFTA.pdf) shall be followed at all times.

e) If any life stage of FYLFs are found, the biologist must consult with CDFW immediately by either telephone, facsimile, or e-mail, and provide a short description of existing conditions and observations, and a list of all species observed during the examination.

   i. Site-specific mitigation measures to avoid or minimize take and to avoid or minimize disturbance to FYLF habitat shall be developed and approved by the CDFW. Work shall not commence until the CDFW has provided written approval of the proposed mitigation measures and any permit to relocate FYLFs have been obtained.

f) The approved biologist will dispatch and remove from the project area, any individuals of exotic species, such as bullfrogs (*Lithobates catesbeianus*), centrarchid fishes, and non-native crayfish to the maximum extent possible. The biologist will have the responsibility to ensure that their activities are in compliance with the Fish and Game Code.

g) If these mitigation measures cannot be implemented or the project activities proposed at a specific work site cannot be modified to prevent or avoid potential impacts to FYLF or its habitat, then project activity at that work site shall be discontinued.

8) Least Bell's Vireo (*Vireo bellii pusillus*)

Of the 35 projects proposed as part of the 2017 FHR project, none are within the range of the least Bell's vireo.

9) Marbled murrelet (*Brachyrampus marmoratus*)

Eight of the 35 work sites proposed as part of the 2017 FHR project are in potentially suitable habitat for the marbled murrelet. Activities proposed for the sites (725504 Fish Creek Instream Habitat Enhancement Project, 725527 James Creek Coho Stream Habitat Enhancement Project-Phase II, 725533 North Fork Big River Coho Stream Habitat Enhancement Project - Phase II, 725544 Jordan Creek Instream Habitat Enhancement Project, 725572 Hare Creek and Bunker

Gulch Road Decommissioning Implementation Project, 725575 San Geronimo Valley Landowner Assistance Program- Restoring Coho Habitat, 725597 Alpine Creek Fish Passage Project, and 725607 Dry Dock Restoration Road Decommissioning and Road to Trail Project) (Appendix A) will not remove, degrade, or downgrade suitable marbled murrelet habitat. As a result, direct injury or mortality of murrelets is not an issue. The potential exists for noise from heavy equipment work at these sites to disrupt marbled murrelet nesting. To avoid this potential impact, the following mitigation measures shall be implemented:

a) Restoration work in areas considered by the Arcata and Ventura USFWS offices shall not be conducted within 0.25 mile of occupied or un-surveyed suitable marbled murrelet habitat between March 24 and September 15. Restoration work in areas considered by the Sacramento USFWS Office shall not be conducted within 0.25 mile of any occupied or un-surveyed suitable marbled murrelet habitat between November 1 and September 15.

b) The work window at individual work sites near suitable habitat may be modified, if protocol surveys determine that habitat quality is low and occupancy is very unlikely.

c) If these mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential adverse effects to marbled murrelet or their habitat, then activity at that work site shall be discontinued.

d) For projects contained in streams and watersheds included in a USFWS Habitat Conservation Plan the mitigation measures contained within those Habitat Conservation Plans shall be followed.

10) Northern spotted owl (*Strix occidentalis caurina*)

Of the 35 work sites proposed as part of the 2017 FHR project, 20 are in potentially suitable habitat for the northern spotted owl (725498 Skunk Train Coho Sediment Reduction and Fish Passage Improvement Project, 725504 Fish Creek Instream Habitat Enhancement Project, 725506 Dunn Creek Habitat Enhancement Project, 725515 Redwood Creek (HT) Instream Habitat Enhancement Project, 725527 James Creek Coho Stream Habitat Enhancement Project-Phase II, 725529 North Fork Noyo River-Dewarren Creek Coho Habitat Enhancement Project, 725530 Little Van Duzen Instream Habitat Enhancement Project, 725531 Coulborn & Sebbas Cks Sediment Reduction & Salmonid Habitat Enhancement, 725532 Middle Fork of North Fork Noyo River Coho Habitat Enhancement Project, 725533 North Fork Big River Coho Stream Habitat Enhancement Project - Phase II, 725544 Jordan Creek Instream Habitat Enhancement Project, 725548 Little North Fork Noyo Sediment Reduction and Coho Recovery Project, 725549 Upper Little North Fork Noyo Coho Habitat Enhancement Project, 725564 Instream Habitat Enhancement of Salmon Creek, Humboldt Bay Tributary, 725572 Hare Creek and Bunker Gulch Road

Decommissioning Implementation Project, 725575 San Geronimo Valley Landowner Assistance Program- Restoring Coho Habitat, 725580 Freshwater Creek Off-Channel Habitat Enhancement Project, 725592 Kelly Gulch Fisheries and Riparian Habitat Enhancement Phase I and III, 725593 2017 Tannery Creek Coho Instream Habitat Enhancement Project, and 725607 Dry Dock Restoration Road Decommissioning and Road to Trail Project) (Appendix A). None of the activities will remove, degrade, or downgrade northern spotted owl habitat. As a result, direct injury or mortality of owls is not likely. The potential exists for heavy equipment work at these sites to disturb spotted owl nesting. To avoid this potential effect, the following mitigation measures will be implemented:

a) Work with heavy equipment at any site within 0.25 miles of suitable habitat for the northern spotted owl shall not occur from November 1 to July 31 for projects in areas under the jurisdiction of the Sacramento USFWS Office and from November 1 to July 9 for projects in areas under the jurisdiction of the Arcata USFWS Office.

b) The work window at individual work sites may be advanced prior to July 9 or July 31 (corresponding to the different time constraints of the Sacramento and Arcata USFWS office), if protocol surveys determine that suitable habitat is unoccupied.

c) If these mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to northern spotted owls or their habitat, then activity at that work site shall be discontinued and CDFW must reinitiate consultation with USFWS.

d) For projects contained within streams and watersheds included in a USFWS Habitat Conservation Plan the mitigation measures contained within those Habitat Conservation Plans shall be followed.

11) Point Arena mountain beaver (*Aplodontia rufa nigra*)

Of the 35 projects proposed in the 2017 FHR project, none are within the range of the Point Arena mountain beaver.

12) San Francisco Garter snake (*Thamnophis sirtalis tetrataenia*)

Of the 35 projects proposed in the 2017 FHR project, one (725597 Alpine Creek Fish Passage Project) (Appendix A) is located within the range of the San Francisco garter snake (SFGS). None of the activities will remove, degrade, or downgrade SFGS habitat. The fully protected species status of the SFGS under Fish and Game Code Section 5050 does not allow for take or handling authorization of the SFGS. Under this statute, take of a fully protected species may not occur except for scientific or recovery purposes. “Take” is defined in Section 86 of the Fish and Game Code as catch, pursue, capture or attempt to

catch, pursue and capture. Thus, if any SFGSs are encountered during the project, all activities in the project site shall cease and CDFW shall be immediately notified. The SFGS shall be allowed to leave the area on its own volition and shall not be coaxed. Due to the SFGS's federal listing as endangered, the USFWS has issued minimization measures through the Biological Opinion (file no.: 08ESMF00-2016-F-0874). The following measures shall be implemented at the work site:

a) All work shall begin on or after June 15 and all work shall be completed by October 15 of each year.
b) All work is restricted to daylight hours (one hour after sunrise to sunset) with a 30 percent chance or less for rain to minimize the potential for injuring or killing any dispersing SFGSs.
c) A CDFW and USFWS approved qualified biologist shall be present during all work within SFGS habitat and will conduct preconstruction surveys and monitor for the SFGS prior to implementation of project activities. If SFGSs are identified at the project site, work will be halted. If the identified animal(s) do not leave the project area under their own volition, the USFWS and CDFW will be contacted to determine appropriate actions.
    i. A CDFW qualified biologist is an individual who shall have a minimum of five years of academic training and professional experience in biological sciences and related resource management activities with a minimum of two years conducting surveys for each species that may be present within the project area. Prior to start of work, CDFW shall submit name(s) and credentials of biologists who would implement the Biological Opinion. No project activity shall begin until CDFW has received written approval from the USFWS that the biologist(s) is qualified to conduct work.
d) A CDFW and USFWS approved qualified biologist shall conduct training for all persons employed on the project prior to performing project activities. Instruction shall consist of a presentation by the designated qualified biologist that includes a discussion of the biology and general behavior of any sensitive species (including SFGS) which may be in the area, how they may be encountered within the work area, and procedures to follow when they are encountered. The status of CESA-listed species including legal protection, penalties for violations and project-specific protective management measures shall be discussed. Interpretation shall be provided for non-English speaking workers, and the same instruction shall be provided for any new workers prior to on-site project activity. A wallet-sized cards or a factsheet handout containing this information shall be prepared and distributed for workers to carry on-site.

e) A CDFW and USFWS approved biological monitor will be on-site while all project activities are being conducted. The monitor will walk in front of equipment to ensure take of the SFGS does not occur.
f) Prior to work, all burrows will be flagged and avoided to prevent their collapse and potential take of the SFGS.
g) SFGSs shall be excluded from each project site. CDFW-approved exclusion fencing shall be installed around the construction site, staging areas, equipment stockpile areas and any areas where fill may be stockpiled. Exclusion fencing shall include escape funnels and the lower edge of the fence shall be buried at least four (4) inches to prevent burrowing animals from tunneling under the fence.
h) The fence encircling the staging area shall have one area through which the construction equipment and materials can enter and leave. This opening shall be secured by a snake-proof gate or flap. The flap will be made of erosion control fabric, buried along its bottom edge. When closed, loops at the top corners of the flap will be used to secure it to fence posts. The flap shall not be opened unless the qualified biologist or biological monitor is there to observe. The construction crew shall be instructed of the importance of keeping the flap closed at all other times.
i) The exclusion fencing shall remain in operating condition throughout the duration of the project. The CDFW-qualified biologist shall conduct daily inspections to ensure there are no gaps, tears or damage and the exclusion fencing retains its integrity. Maintenance of the fencing shall be conducted as needed throughout the work period. Any necessary repairs to the fencing shall be completed within 24 hours of the initial observance of the damage.
j) After installation of the fence barrier, the CDFW-approved qualified biologist shall conduct daily inspections of the project work area, and staging and stockpiling areas prior to the commencement of construction activities. If the CDFW-approved qualified biologist determines that sensitive species are not present within the work area, equipment or materials may be moved onto the work site and project activities may commence under the observation of the biological monitor or qualified biologist.
k) Immediately before removal and during all vegetation clearing, a qualified biologist shall visually survey the area to ensure that no SFGSs are present. All vegetation must be cleared by manual methods including rakes, weed eaters or chainsaws, or other manual methods. All cleared vegetation must be removed from the site, and disposed of properly.
l) In the event that SFGSs are found on the project site, vegetation removed at the site shall be placed directly into a disposal vehicle. Vegetation shall not be

piled on the ground unless it is later transferred, piece by piece, under the direct supervision of the qualified biologist.

m) Any parking and staging areas must be checked in advance by the qualified biologist prior to staging and parking of vehicles and equipment. All vehicles and equipment should be staged on already disturbed areas (e.g., existing roads and trails). Prior to moving vehicles and equipment operators shall check under vehicles and equipment that have been parked onsite for more than 10 minutes for presence of wildlife sheltering within and under them prior to use and shall notify the on-site biological monitor or qualified biologist if SFGSs are found.

n) All fueling and maintenance of vehicles and equipment should be more than 100 feet away from suitable aquatic habitat and maintained in a good working condition to prevent spills of hazardous chemicals. No herbicides should be used within 100 feet of suitable aquatic habitat.

o) If a SFGS is found on site, the construction contractor shall stop work and contact the USFWS and CDFW immediately and allow the SFGS to leave on its own volition.

p) Permittee shall not use temporary or permanent erosion control methods containing plastic monofilament or other plastic netting, including photo- or bio-degradable plastic because it may entangle SFGS. Loosely-woven jute netting, fiber rolls, and similar natural materials are acceptable alternatives.

q) Permittee shall not dump any litter within the project area. All waste shall be picked up daily and properly disposed of at an appropriate site. Upon completion of operations and/or onset of wet weather, all construction material and/or debris shall be removed from the work site to an area not subject to inundation. All removed vegetation and debris shall be disposed of according to State and local laws and ordinances.

r) The CDFW and USFWS approved biological monitor shall have the responsibility and authority of stopping the project if any crews or personnel are not complying with measures listed above.

13) Southwestern Willow flycatcher (*Empidonax traillii extimus*)

Of the 35 work sites proposed as part of the 2017 FHR project, none are in potentially suitable habitat for the southwestern willow flycatcher.

14) Tidewater goby (*Eucyclogobius newberryi*)

Of the 35 work sites proposed as part of the 2017 FHR project, none are in potentially suitable habitat for the tidewater goby.

15) Willow flycatcher (*Empidonax traillii)*

Of the 35 work sites proposed as part of the 2017 FHR project, one (725580 Freshwater Creek Off-Channel Habitat Enhancement Project) (Appendix A) is located in potentially suitable habitat for the Willow flycatcher. None of the activities proposed for these sites will significantly degrade existing willow flycatcher habitat, but the potential exists for the noise from heavy equipment work or harvesting of revegetation material at these sites to disrupt willow flycatcher nesting. To avoid this potential impact, the following mitigation measures will be implemented:

a) Heavy equipment work shall not begin within one quarter mile of any site with known or potential habitat for the willow flycatcher until after August 31.

b) Harvest of willow branches at any site with potential habitat for the willow flycatcher will not occur between May 1 and August 31.

c) The work window at individual work sites may be modified, if protocol surveys determine that nesting birds do not occur within 0.25 miles of the site during the breeding season.

d) No more than 1/3 of any willow plant shall be harvested annually. Care shall be taken during harvest not to trample or over harvest the willow sources.

e) CDFW shall ensure that the grantee or responsible party is aware of this site specific condition, and will inspect the work site before, during, and after completion of the action item.

f) If for some reason these mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to willow flycatcher or their habitat, then activity at that work site will be discontinued.

C. Riparian and re-vegetation

1) Planting of seedlings shall begin after December 1, or when sufficient rainfall has occurred to ensure the best chance of survival of the seedlings, but in no case after April 1.

2) Any disturbed banks shall be fully restored upon completion of construction. Revegetation shall be done using native species. Planting techniques can include seed casting, hydroseeding, or live planting methods using the techniques in Part XI of the *California Salmonid Stream Habitat Restoration Manual*.

3) Disturbed and compacted areas shall be re-vegetated with native plant species. The species shall be comprised of a diverse community structure that mimics the native riparian corridor. Planting ratio shall be 2:1 (two plants to every one removed).

4) Unless otherwise specified, the standard for success is 80 percent survival of plantings or 80 percent ground cover for broadcast planting of seed after a period of 3 years.

5) To ensure that the spread or introduction of invasive exotic plants shall be avoided to the maximum extent possible, equipment shall be cleaned of all dirt, mud, and plant material prior to entering a work site. When possible, invasive exotic plants at the work site shall be removed. Areas disturbed by project activities will be restored and planted with native plants.

6) Mulching and seeding shall be done on all exposed soil which may deliver sediment to a stream. Soils exposed by project operations shall be mulched to prevent sediment runoff and transport. Mulches shall be applied so that not less than 90% of the disturbed areas are covered. All mulches, except hydro-mulch, shall be applied in a layer not less than two (2) inches deep. Where feasible, all mulches shall be kneaded or tracked-in with track marks parallel to the contour, and tackified as necessary to prevent excessive movement. All exposed soils and fills, including the downstream face of the road prism adjacent to the outlet of culverts, shall be reseeded with a mix of native grasses common to the area, free from seeds of noxious or invasive weed species, and applied at a rate which will ensure establishment.

7) If erosion control mats are used in re-vegetation, they shall be made of material that decomposes. Erosion control mats made of nylon plastic, or other non-decomposing material shall not be used.

8) CDFW shall retain as many trees and brush as feasible, emphasizing shade producing and bank stabilizing trees and brush to minimize impacts to the riparian corridor.

9) If riparian vegetation is to be removed with chainsaws, the grantee shall use saws that operate with vegetable-based bar oil when possible.

10) Disturbed and decompacted areas shall be re-vegetated with native species specific to the project location that comprise a diverse community of woody and herbaceous species.

V. CULTURAL RESOURCES

Ground-disturbance will be required to implement the project at certain locations that, despite efforts to identify cultural resources, have the potential to affect these

resources. The procedure for a programmatic evaluation of archeological resources is provided in Appendix E. Potential for inadvertent impacts will be avoided through implementation of the following mitigation measures:

1) CDFW shall contract with an archaeologist(s) or other historic preservation professional that meets The Secretary of the Interior's Professional Qualifications Standards (36 CFR Part 61, and 48 FR 44716) to complete cultural resource surveys at any sites with the potential to be impacted prior to any ground disturbing activities. This work may be augmented with the aid of a Native American cultural resources specialist that is culturally affiliated with the project area. Cultural and paleontological resource surveys shall be conducted using standard protocols to meet CEQA Guideline requirements. Paleontological survey protocols are listed in Appendix D.

2) If cultural and/or paleontological resource sites are identified at a project location, CDFW will require one or more of the following protective measures to be implemented before work can proceed: a) fencing to prevent accidental disturbance of cultural resources during construction, b) on-site monitoring by cultural and/or paleontological resource professionals during construction to assure that cultural resources are not disturbed, c) redesign of proposed work to avoid disturbance of cultural resources.

3) CDFW shall report any previously unknown historic, archeological, and paleontological remains discovered at a project location to the USACE as required in the RGP.

4) CDFW shall ensure that the grantee or responsible party is aware of these site-specific conditions, and shall inspect the work site before, during, and after completion of the action item.

5) Inadvertent Discovery of Cultural Resources - If cultural resources, such as lithic debitage, ground stone, historic debris, building foundations, or bone, are discovered during ground-disturbance activities, work shall be stopped within 20 meters (66 feet) of the discovery, per the requirements of CEQA (January 1999 Revised Guidelines, Title 14 CCR 15064.5 (f)). Work near the archaeological finds shall not resume until an archaeologist that meets the Secretary of the Interior's Standards and Guidelines suited to the discovery, has evaluated the materials and offered recommendations for further action. Cultural materials not associated with human interments shall be documented and curated in place.

6) Inadvertent Discovery of Human Remains - If human remains are discovered during project construction, work shall stop at the discovery location, within 20 meters (66 feet), and any nearby area reasonably suspected to overlie adjacent to human remains (Public Resources Code, Section 7050.5). The county coroner shall be contacted to determine if the cause of death must be investigated. If the coroner determines that the remains are of Native American origin, it is necessary

to comply with state laws relating to the disposition of Native American burials, which fall within the jurisdiction of the Native American heritage Commission (NAHC) (Public Resources Code, Section 5097). The coroner will contact the NAHC. The descendants or most likely descendants of the deceased will be contacted, and work shall not resume until they have made a recommendation to the landowner or the person responsible for the excavation work for means of treatment and disposition, with appropriate dignity, of the human remains and any associated grave goods, as provided in Public Resources Code, Section 5097.98.

7) Procedures for treatment of an inadvertent discovery of human remains:

a) Immediately following discovery of known or potential human remains all ground-disturbing activities at the point of discovery shall be halted.

b) No material remains shall be removed from the discovery site, a reasonable exclusion zone shall be cordoned off.

c) The CDFW Grant Manager and property owner shall be notified and the CDFW Grant Manager shall contact the county coroner.

d) CDFW shall retain the services of a professional archaeologist to immediately examine the find and assist the process.

e) All ground-disturbing construction activities in the discovery site exclusion area shall be suspended.

f) The discovery site shall be secured to protect the remains from desecration or disturbance, with 24-hour surveillance, if prudent.

g) Discovery of Native American remains is a very sensitive issue, and all project personnel shall hold any information about such a discovery in confidence and divulge it only on a need-to-know basis, as determined by the CDFW.

h) The coroner has two working days to examine the remains after being notified. If the remains are Native American, the coroner has 24 hours to notify the NAHC in Sacramento (telephone 916/653-4082).

i) The NAHC is responsible for identifying and immediately notifying the Most Likely Descendant (MLD) of the deceased Native American.

j) The MLD may, with the permission of the landowner, or their representative, inspect the site of the discovered Native American remains and may recommend to the landowner and CDFW Grant Manager means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The descendants shall complete their inspection and make recommendations or preferences for treatment with 48 hours of being granted access to the site (Public Resource Code, Section 5097.98(a)). The recommendation may include the scientific removal and non-destructive or destructive analysis of human remains and items associated with Native American burials.

k) Whenever the NAHC is unable to identify a MLD, or the MLD identified fails to make a recommendation, or the landowner or his/her authorized representative rejects the recommendation of the MLD and mediation between the parties by the NAHC fails to provide measures acceptable to the landowner, the landowner or his/her authorized representatives shall re-inter the human remains and associated grave offerings with appropriate dignity on the property in a location not subject to further subsurface disturbance in accordance with Public Resource Code, Section 5097.98(e).

l) Following final treatment measures, the CDFW shall ensure that a report is prepared that describes the circumstances, nature and location of the discovery, its treatment, including results of analysis (if permitted), and final disposition, including a confidential map showing the reburial location. Appended to the report shall be a formal record about the discovery site prepared to current California standards on DPR 523 form(s). CDFW shall ensure that report copies are distributed to the appropriate California Historic Information Center, NAHC, and MLD.

8) Pursuant to RGP78 and in accordance to 36 C.F.R. Section 800.13, in the event of any discovery during construction of human remains, archeological deposits, or any other type of historic property, the CDFW shall notify the USACE archeological staff (Steve Dibble at 213-452-3849 or John Killeen at 213-452-3861) within 24 hours. Construction work shall be suspended immediately and shall not resume until USACE re-authorizes project construction.

9) If it becomes impossible to implement the project at a work site without disturbing cultural or paleontological resources, then activity at that work site shall be discontinued.

VI. GEOLOGY AND SOILS

There is no potential for a significant adverse impact to geology and soils; implementation of the restoration project will contribute to an overall reduction in erosion and sedimentation. Existing roads will be used to access work sites. Ground disturbance at most work sites will be minimal, except for road improvements or decommissioning. Road improvements and decommissioning will involve moving large quantities of soil from road fills and stream crossings to restore historic land surface profiles and prevent chronic erosion and sediment delivery to streams. In order to avoid temporary increases in surface erosion, the following mitigation measures will be implemented:

1) CDFW will implement the following measures to minimize harm to listed salmonids resulting from culvert replacement activities and other instream construction work:

a) All stream crossing replacement or modification designs, involving fish passage, shall be reviewed and approved by NOAA (or CDFW) engineers prior to onset of work.

b) If the stream in the project location was not passable to, or was not utilized by all life stages of, all covered salmonids prior to the existence of the road crossing, the project shall pass the life stages and covered salmonid species that historically did pass there. Retrofit culverts shall meet the fish passage criteria for the passage needs of the listed species and life stages historically passing through the site prior to the existence of the road crossing.

2) CDFW shall implement the following measures to minimize harm to listed salmonids resulting from road decommissioning activities:

a) Woody debris will be concentrated on finished slopes of decommissioned roads adjacent to stream crossings to reduce surface erosion; contribute to amounts of organic debris in the soil; encourage fungi; provide immediate cover for small terrestrial species; and to speed recovery of native forest vegetation.

b) Work sites shall be winterized at the end of each day to minimize the eroding of unfinished excavations when significant rains are forecasted. Winterization procedures shall be supervised by a professional trained in erosion control techniques and involve taking necessary measures to minimize erosion on unfinished work surfaces. Winterization includes the following: smoothing unfinished surfaces to allow water to freely drain across them without concentration or ponding; compacting unfinished surfaces where concentrated runoff may flow with an excavator bucket or similar tool, to minimize surface erosion and the formation of rills; and installation of culverts, silt fences, and other erosion control devices where necessary to convey concentrated water across unfinished surfaces, and trap exposed sediment before it leaves the work site.

3) Effective erosion control measures shall be in-place at all times during construction. Construction within the 5-year flood plain shall not begin until all temporary erosion controls (i.e., straw bales or silt fences that are effectively keyed-in) are in place down slope or down stream of project activities within the riparian area. Erosion control measures shall be maintained throughout the construction period. 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.

4) An adequate supply of erosion control materials (gravel, straw bales, shovels, etc.) shall be maintained onsite to facilitate a quick response to unanticipated storm events or emergencies.

5) Use erosion controls that protect and stabilize stockpiles and exposed soils to prevent movement of materials. 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.

6) When needed, instream grade control structures shall be utilized to control channel scour, sediment routing, and headwall cutting.

7) Temporary stockpiling of excavated material shall be minimized. However, excavated material shall be stockpiled in areas where it cannot enter the stream channel. Available sites at or near the project location shall be determined prior to the start of construction. If feasible, topsoil shall be conserved for reuse at project location or use in other areas.

8) For projects located within the USACE San Francisco District, an annual limit on the number of sediment-producing projects per HUC 10 watershed shall be implemented to ensure that potential sediment impacts will remain spatially isolated, thus minimizing cumulative turbidity effects. Sediment producing projects include instream habitat improvement, instream barrier removal, stream bank stabilization, fish passage improvement, upslope road work, and fish screen construction (unless the screen is located in a diversion ditch and is disconnected from the waterway). The limit of projects shall be as follows:

Square mile of HUC 10 watershed	Maximum number of instream and upslope projects per year
<50	2
51-100	3
101-150	4
151-250	5
251-350	6
351-500	9
>500	12

9) Each year, all instream projects shall be separated both upstream and downstream from other proposed instream projects by at least 1500 linear feet in fish bearing stream reaches. In non-fish bearing reaches, the distance separating sediment- producing projects will be 500 feet.

10) Upon project completion, all exposed soil present in and around the project site shall be stabilized within 7 days. Soils exposed by project operations shall be mulched to prevent sediment runoff and transport. Mulches shall be applied so that not less than 90% of the disturbed areas are covered. All mulches, except hydro-mulch, shall be applied in a layer not less than two (2) inches deep. Where feasible, all mulches shall be kneaded or tracked-in with track marks parallel to the contour, and tackified as necessary to prevent excessive movement. All exposed soils and fills, including the downstream face of the road

prism adjacent to the outlet of culverts, shall be reseeded with a mix of native grasses common to the area, free from seeds of noxious or invasive weed species, and applied at a rate which will ensure establishment.

11) Soil compaction shall be minimized by using equipment with a greater reach or that exerts less pressure per square inch on the ground, resulting in less overall area disturbed and less compaction of disturbed areas.

12) Disturbed soils shall be decompacted at project completion as heavy equipment exits the construction area.

13) At the completion of the project, soil compaction that is not an integral element of the design of a crossing should be de-compacted.

VII. GREENHOUSE GAS EMISSIONS

No specific mitigation measures are required. Re-vegetation practices will help offset the short term, less than significant, greenhouse gas emissions.

VIII. HAZARDS AND HAZARDOUS MATERIALS

The project will not create a significant hazard to the public or the environment. At work sites requiring the use of heavy equipment, there is a small risk of an accident upsetting the machine and releasing fuel, oil, and coolant, or of an accidental spark from equipment igniting a fire. The potential for these impacts will be reduced to a less than significant level through implementation of the following mitigation measures:

1) Heavy equipment that will be used in these activities will be in good condition and will be inspected for leakage of coolant and petroleum products and repaired, if necessary, before work is started.

2) When operating vehicles in wetted portions of the stream channel, or where wetland vegetation, riparian vegetation, or aquatic organisms may be destroyed, the responsible party shall, at a minimum, do the following:

   a) Check and maintain on a daily basis any vehicles to prevent leaks of materials that, if introduced to water, could be deleterious to aquatic life, wildlife, or riparian habitat;

   b) Take precautions to minimize the number of passes through the stream and to avoid increasing the turbidity of the water to a level that is deleterious to aquatic life; and

   c) Allow the work area to “rest” to allow the water to clear after each individual pass of the vehicle that causes a plume of turbidity above background levels,

resuming work only after the stream has reached the original background turbidity levels.

3) All equipment operators shall be trained in the procedures to be taken should an accident occur. Prior to the onset of work, CDFW shall ensure that the grantee has prepared a Spill Prevention/Response plan to help avoid spills and allow a prompt and effective response should an accidental spill occur. All workers shall be informed of the importance of preventing spills. Operators shall have spill clean-up supplies on site and be knowledgeable in their proper deployment.

4) All activities performed in or near a stream will have absorbent materials designed for spill containment and cleanup at the activity site for use in case of an accidental spill. In an event of a spill, work shall cease immediately. Clean-up of all spills shall begin immediately. The responsible party shall notify the State Office of Emergency Services at 1-800-852-7550 and the CDFW immediately after any spill occurs, and shall consult with the CDFW regarding clean-up procedures.

5) All fueling and maintenance of vehicles and other equipment and staging areas shall occur at least 65 feet from any riparian habitat or water body and place fuel absorbent mats under pump while fueling. The USACE and the CDFW will ensure contamination of habitat does not occur during such operations. Prior to the onset of work, the CDFW will ensure that the grantee has prepared a plan to allow a prompt and effective response to any accidental spills. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

6) Location of staging/storage areas for equipment, materials, fuels, lubricants, and solvents, will be located outside of the stream's high water channel and associated riparian area. The number of access routes, number and size of staging areas, and the total area of the work site activity shall be limited to the minimum necessary to complete the restoration action. To avoid contamination of habitat during restoration activities, trash will be contained, removed, and disposed of throughout the project.

7) Petroleum products, fresh cement, and other deleterious materials shall not enter the stream channel.

8) Stationary equipment such as motors, pumps, generators, compressors, and welders, located within the dry portion of the stream channel or adjacent to the stream, will be positioned over drip-pans.

9) No debris, soil, silt, sand, bark, slash, spoils, sawdust, rubbish, cement, concrete or washings thereof, asphalt, paint, or other coating material; oil or petroleum products; or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into, or placed where it may

be washed by rainfall or runoff into, waters of the state. When operations are completed, any excess materials or debris shall be removed from the work area and disposed of in a lawful manner.

10) All internal combustion engines shall be fitted with spark arrestors.

11) The grantee shall have an appropriate fire extinguisher(s) and fire fighting tools (shovel and axe at a minimum) present at all times when there is a risk of fire.

12) Vehicles shall not be parked in tall grass or any other location where heat from the exhaust system could ignite a fire.

13) The grantee shall follow any additional rules the landowner has for fire prevention.

14) The potential for mercury contamination is largely predicted by the presence of historic hydraulic gold mines and mercury (cinnabar) mines (California's Abandoned Mines: A Report on the Magnitude and Scope of the Issue in the State, DOC 2000). Therefore, only a few limited areas within the geographic scope of this grant program have any potential for gravels contaminated with elemental mercury, they are: Middle Klamath River, Salmon River, Scott River, and the Lower Middle and Upper Trinity River. (Though studies by the USGS failed to find significant levels of methyl mercury near these mines.)

    a) Given the limited geographical potential for encountering mercury contamination (from historic mining) within the geographic scope, and the limited number of projects within these areas that will either disturb the channel bottom or import gravels for instream restoration; the following avoidance and mitigation measure will be adhered to: any gravel imported from offsite shall be from a source known to not contain historic hydraulic gold mine tailings, dredger tailings, or mercury mine waste or tailings.

IX. HYDROLOGY AND WATER QUALITY

1) Instream work shall be conducted during the period of lowest flow.

2) Before work is allowed to proceed at a site, CDFW shall inspect the site to assure that turbidity control measures are in place.

3) The waste water from construction area shall be discharged to an upland location where it will not drain sediment-laden water back to stream channel.

4) For projects within the USACE San Francisco District, if instream work liberates a sediment wedge, 80% of the wedge shall be removed before the sediment is liberated. The required amount can be modified if NOAA or CDFW hydrologists or hydraulic engineers agree that removing a smaller amount will better protect and enhance fish habitat in the area of the project (e.g., leaving some sediment to replenish areas downstream that lack suitable substrate volume or quality).

5) To control erosion during and after project implementation, CDFW shall implement best management practices, as identified by the appropriate Regional Water Quality Control Board.

6) Sediment-laden water caused by construction activity shall be filtered before it leaves the right-of-way or enters the stream network or an aquatic resource area. Silt fences or other detention methods shall be installed as close as possible to culvert outlets to reduce the amount of sediment entering aquatic systems.

7) If CDFW determines that turbidity/siltation levels resulting from an activity or activities constitute a threat to aquatic life, all activities associated with the turbidity/siltation shall cease until effective CDFW approved sediment control devices are installed and/or abatement procedures are implemented.

8) Poured concrete shall be excluded from the wetted channel for a period of two weeks after it is poured. During that time the poured concrete shall be kept moist, and runoff shall not be allowed to enter flowing stream. Commercial sealants shall be applied to the poured concrete surface where concrete cannot be excluded from the stream flow for two weeks. If sealant is used, water shall be excluded from the site until the sealant is dry.

9) If the CDFW determines that turbidity/siltation levels resulting from an activity or activities constitute a threat to aquatic life, all activities associated with the turbidity/siltation shall cease until effective CDFW approved sediment control devices are installed and/or abatement procedures are implemented.

10) Prior to use, all equipment shall be cleaned to remove external oil, grease, dirt, or mud. Wash sites shall be located in upland locations so that dirty wash water does not flow into the stream channel or adjacent wetlands.

11) Water conservation projects that include water storage tanks and a Forbearance Agreement, for the purpose of storing winter water for summer use, require registration of water use pursuant to the Water Code §1228.3, and require consultation with CDFW and compliance with all lawful conditions required by CDFW. Diversions to fill storage facilities during the winter and spring months shall be made pursuant to a Small Domestic Use Appropriation (SDU) filed with the State Water Resources Control Board (SWRCB). CDFW will review the appropriation of water to ensure fish and wildlife resources are protected. The following conditions shall then be applied:

    a) Seasonal Restriction: No pumping is allowed when stream flow drops below 0.7 cubic feet per second (cfs) except as permitted by CDFW in the event of an emergency.

b) Bypass Flows: Pumping withdrawal rates shall not exceed 5% of stream flow. If CDFW determines that the streamflow monitoring data indicate that fisheries are not adequately protected, then the bypass flows are subject to revision by CDFW.

c) Cumulative Impacts: Pumping days shall be assigned to participating landowner(s) when streamflows drop below 1.0 cfs to prevent cumulative impacts from multiple pumps operating simultaneously.

d) Pump Intake Screens: Pump intake screens shall comply with the “2000 California Department of Fish and Game Screening Criteria”* for California streams that provide habitat for juvenile coho salmon, Chinook salmon and steelhead. The landowner shall be responsible for annual inspection and maintenance of screens. Additionally, the landowner shall be responsible for cleaning screens as needed to keep them free of debris and ensure that screen function complies with the criteria specifications.

e) These conditions do not authorize incidental take of any species, removal of riparian vegetation, or bed, bank, or channel alteration.

f) CDFW shall be granted access to inspect the pump system. Access is limited to the portion of the landowner's real property where the pump is located and those additional portions of the real property which must be traversed to gain access to the pump site. Landowners shall be given reasonable notice and any necessary arrangements will be made prior to requested access including a mutually-agreed-upon time and date. Notice may be given by mail or by telephone with the landowner or an authorized representative of the landowner. The landowner shall agree to cooperate in good faith to accommodate CDFW access.

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* Fish Screening Criteria are from "State of California Resources Agency Department of Fish and Game Fish Screening Criteria, June 19, 2000." The "approach velocity" shall be calculated according to Section 2C "Screens which are not Self Cleaning."

X. LAND USE AND PLANNING

No specific mitigation measures are required for land use and planning.

XI. MINERAL RESOURCES

No specific mitigation measures are required for mineral resources.

XII. NOISE

Personnel shall wear hearing protection while operating or working near noisy equipment (producing noise levels ≥85 db, including chain saws, excavators, and back hoes). No other specific mitigation measures are required for noise.

XIII. POPULATION AND HOUSING

No specific mitigation measures are required for population and housing.

XIV. PUBLIC SERVICES

No specific mitigation measures are required for public services.

XV. RECREATION

No specific mitigation measures are required for recreation.

XVI. TRANSPORTATION/TRAFFIC

The project will not affect transportation/traffic, because erosion control and culvert replacement projects will occur in wildland/rural sites with very little use. There is a potential that culvert replacement at some work sites could temporarily interfere with emergency access. This potential impact will be avoided through implementation of the following mitigation measure at any sites where emergency access might be necessary:

1) During excavation for culvert replacement, the grantee shall provide a route for traffic around or through the construction site.

XVII. TRIBAL CULTURAL RESOURCES

The project will not cause adverse change in the significance of a tribal cultural resource. The project will not change the land use.

Mitigation measures stated in Section V: Cultural Resources above indicate the procedures that will be followed to minimize any impacts to and protect tribal cultural resources. If it becomes impossible to implement the project at a work site without impacting the significance of tribal cultural resources, then activity at that work site shall be discontinued.

XVIII. UTILITIES AND SERVICE SYSTEMS

No specific mitigation measures are required for utilities and service systems.

SECTION 2: MONITORING AND REPORTING

CDFW shall implement the following measures to ensure that individual restoration projects authorized annually through the RGP (RGP12 and RGP78) will minimize take of listed salmonids, monitor and report take of listed salmonids, and to obtain specific information to account for the effects and benefits of salmonid restoration projects authorized through the RGP.

1) CDFW shall provide USACE, NOAA, and USFWS notification of projects that are authorized through the RGP. The notification shall be submitted at least 90 days prior to project implementation and must contain specific project information including; name of project, type of project, location of project including hydrologic unit code (HUC), creek, watershed, city or town, and county.

2) CDFW Grant Manager shall inspect the work site before, during, and after completion of the action item, to ensure that all necessary mitigation measures to avoid impacts are properly implemented.

3) CDFW shall perform implementation monitoring immediately after the restoration activity is completed to ensure that projects are completed as designed.

4) CDFW shall perform effectiveness/validation monitoring on at least 10 percent of restoration projects funded annually. A random sample, stratified by project type and region, shall be chosen from the pool of new restoration projects approved for funding each year. Pre-treatment monitoring shall be performed for newly selected projects, and post-treatment monitoring will be performed within three years following project completion.

5) Current monitoring forms and instructions used by CDFW for the implementation monitoring and effectiveness monitoring are found in the California Salmonid Stream Habitat Restoration Manual. CDFW shall submit a copy of the annual report, no later than March 1 annually to NOAA.

6) The CDFW annual report to NOAA shall include a summary of all restoration action items completed during the previous year. The annual report shall include a summary of the specific type and location of each project, stratified by individual project, 5th field HUC and affected species and evolutionary significant unit (ESU)/Distinct Population Segment (DPS). The report shall include the following project-specific summaries, stratified at the individual project, 5th field HUC, and ESU level:

   a) A summary detailing fish relocation activities; including the number and species of fish relocated and the number and species injured or killed. Any capture, injury, or mortality of adult salmonids or half-pounder steelhead shall be noted in the monitoring data and report. Any injuries or mortality from a fish

relocation site that exceeds 3.0% of the affected listed species shall have an explanation describing why.

b) The number and type of instream structures implemented within the stream channel.

c) The length of stream bank (feet) stabilized or planted with riparian species.

d) The number of culverts replaced or repaired, including the number of miles of restored access to unoccupied salmonid habitat.

e) The distance (miles) of road decommissioned.

f) The distance (feet) of aquatic habitat disturbed at each project site.

7) CDFW shall incorporate project data into a format compatible with the CDFW/NOAA/Pacific Fisheries Management Council Geographic Information System (GIS) database, allowing scanned project-specific reports and documents to be linked graphically within the GIS database.

8) For Marin, Monterey, Napa, San Mateo, Santa Clara, Santa Cruz, and Sonoma Counties, CDFW shall submit an annual report due by January 31 (RGP12) of each year of implemented projects to the U.S. Fish and Wildlife Service Office, 2800 Cottage Way, Sacramento, California 95825. The report must include:

a) A table documenting the number of California red-legged frogs killed, injured, and handled during each FHR project that utilizes the USACE authorization.

b) A summary of how the terms and conditions of the biological opinions (file no. 08ESMF00-2016-F-0874) and the protective measures by the USACE and CDFW worked.

c) Any suggestions of how the protective measures could be revised to improve conservation of this species while facilitating compliance with the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act).

9) For Los Angeles, Santa Barbara, San Luis Obispo, and Ventura Counties, CDFW shall submit an annual report due by January 31 (RGP12) and February 28 (RGP78) of each year of implemented projects to the U.S. Fish and Wildlife Service Office, 2493 Portola Road, Suite B, Ventura, California 93003. The report must include:

a) A table documenting the number of red-legged frogs killed, injured, and handled during each FHR project that utilizes the USACE authorization.

b) A summary of how the terms and conditions of the biological opinions (file no. 08EVEN00-2016-F-0093 and 2008-F-0441) and the protective measures by the USACE and CDFW worked.

c) Any suggestions of how these protective measures could be revised to improve conservation of this species while facilitating compliance with the Act.

10) CDFW shall submit annual reports on July 1 of each year to the 401 Program Managers of the State Water Resources Control Board and the appropriate Regional Water Quality Control Boards documenting work undertaken during the preceding year and identifying for all such work:

a) Project name and grant number;

b) Project purpose and brief description;

c) Name(s) of affected water body(ies);

d) Latitude/longitude in decimal degrees to at least four decimals;

e) For ongoing projects:

i. Project progress and schedule including initial ground disturbance, site clearing and grubbing, road construction, site construction, and the implementation status of construction storm water best management practices (BMPs).

a. If construction has not started, provide estimated start date and reasons for delay.

ii. Map showing general project progress.

iii. Mitigation for temporary impact status

a. Planned date of initiation and map showing locations of mitigation for temporary impacts to waters of the state and all upland areas of temporary disturbance which could result in a discharge to waters of the state.

b. If mitigation for temporary impacts has already commenced, provide a map and information concerning attainment of performance standards contained in the restoration plan.

iv. Restoration and enhancement status

a. Planned date of initiation of vegetation installation.

b. If installation is in progress, a map of what has been completed to date.

c. If the restoration site has been installed, provide a final map and information concerning attainment of performance standards contained in the individual project specifications.

f) For projects completed during the year:

i. The type(s) of receiving (affected) water body(ies) (e.g. at minimum: river/streambed, lake/reservoir, ocean/estuary/bay, riparian area, or wetland type); and

ii. The total quantity in acres of each type of receiving water body temporarily impacted, and permanently impacted;

iii. Pre- and post-photo documentation of all restoration sites, including revegetation sites.

iv. A report establishing that the performance standards outlined in the individual project specifications have been met.

v. Final map of all restoration areas.

vi. A report establishing that the performance standards outlined in the restoration plan have been met for each project site upland areas and/or waters of temporary disturbance.

g) For each water body type affected, the quantity of waters of the U.S. temporarily and permanently impacted. Fill/excavation discharges shall be reported in acres and fill/excavations discharges for channels, shorelines, riparian corridors, and other linear habitat shall also be reported in linear feet;

h) Actual construction start and end-dates;

i) Whether the project is on-going or completed.

j) Copies of reports documenting the following monitoring activities:

i. Post-project monitoring immediately after the activity is completed to ensure that projects are completed as designed; and

ii. Effectiveness monitoring on a random subset of 10% of the projects, within one to three years after project completion.

11) CDFW shall report any previously unknown historic archeological and paleontological remains discovered at a site to the USACE as required in the RGP. This information will also be provided to the Native American Heritage Commission, 915 Capitol Mall, Sacramento, CA 95814.

12) Pursuant to RGP78, CDFW shall monitor and maintain the structures or work conducted at a given site for at least three years after construction to ensure the integrity of the structure and successful growth of the planted vegetation.

13) CDFW shall allow representatives of USACE to inspect the authorized activities at any time deemed necessary to ensure that they are being or have been accomplished with the terms and conditions of the RGP.

14) Pursuant to RGP78, CDFW shall notify the USACE annually of the year's projects. If the USACE has not issued a Notice to Proceed (NTP) or identified any issues (verbal or written) within 60 days of receive the notifications, CDFW can proceed with project. The NTP may include site specific special conditions to avoid and minimize adverse impacts to waters of the U.S and shall be valid for the duration of the RGP78 unless there is a change in the project's scope of work.

Appendix C

Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities

State of California
CALIFORNIA NATURAL RESOURCES AGENCY
California Department of Fish and Wildlife
November 24, 2009[1]

INTRODUCTION AND PURPOSE

The conservation of special status native plants and their habitats, as well as natural communities, is integral to maintaining biological diversity. The purpose of these protocols is to facilitate a consistent and systematic approach to the survey and assessment of special status native plants and natural communities so that reliable information is produced and the potential of locating a special status plant species or natural community is maximized. They may also help those who prepare and review environmental documents determine when a botanical survey is needed, how field surveys may be conducted, what information to include in a survey report, and what qualifications to consider for surveyors. The protocols may help avoid delays caused when inadequate biological information is provided during the environmental review process; assist lead, trustee and responsible reviewing agencies to make an informed decision regarding the direct, indirect, and cumulative effects of a proposed development, activity, or action on special status native plants and natural communities; meet California Environmental Quality Act (CEQA)[2] requirements for adequate disclosure of potential impacts; and conserve public trust resources.

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE TRUSTEE AND RESPONSIBLE AGENCY MISSION

The mission of the California Department of Fish and Wildlife (CDFW) is to manage California's diverse wildlife and native plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. CDFW has jurisdiction over the conservation, protection, and management of wildlife, native plants, and habitat necessary to maintain biologically sustainable populations (Fish and Game Code §1802). CDFW, as trustee agency under CEQA §15386, provides expertise in reviewing and commenting on environmental documents and makes protocols regarding

[1] This document replaces the CDFW document entitled “Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened and Endangered Plants and Natural Communities.”
[2] http://ceres.ca.gov/ceqa/

potential negative impacts to those resources held in trust for the people of California.

Certain species are in danger of extinction because their habitats have been severely reduced in acreage, are threatened with destruction or adverse modification, or because of a combination of these and other factors. The California Endangered Species Act (CESA) provides additional protections for such species, including take prohibitions (Fish and Game Code §2050 *et seq.*). As a responsible agency, CDFW has the authority to issue permits for the take of species listed under CESA if the take is incidental to an otherwise lawful activity; CDFW has determined that the impacts of the take have been minimized and fully mitigated; and, the take would not jeopardize the continued existence of the species (Fish and Game Code §2081). Surveys are one of the preliminary steps to detect a listed or special status plant species or natural community that may be impacted significantly by a project.

DEFINITIONS

Botanical surveys provide information used to determine the potential environmental effects of proposed projects on all special status plants and natural communities as required by law (i.e., CEQA, CESA, and Federal Endangered Species Act (ESA)). Some key terms in this document appear in **bold font** for assistance in use of the document.

For the purposes of this document, **special status plants** include all plant species that meet one or more of the following criteria[3]:

- Listed or proposed for listing as threatened or endangered under ESA or candidates for possible future listing as threatened or endangered under the ESA (50 CFR §17.12).

- Listed[4] or candidates for listing by the State of California as threatened or endangered under CESA (Fish and Game Code §2050 *et seq.*). A species, subspecies, or variety of plant is **endangered** when the prospects of its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, disease, or other factors (Fish and Game Code §2062). A plant is **threatened** when it is likely to become endangered in the foreseeable future in the absence of special protection and management measures (Fish and Game Code §2067).

[3] Adapted from the East Alameda County Conservation Strategy available at http://www.fws.gov/sacramento/EACCS/Documents/080228_Species_Evaluation_EACCS.pdf

[4] Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata.

- Listed as rare under the California Native Plant Protection Act (Fish and Game Code §1900 *et seq*.). A plant is **rare** when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish and Game Code §1901).

- Meet the definition of rare or endangered under CEQA §15380(b) and (d). Species that may meet the definition of rare or endangered include the following:

  - Species considered by the California Native Plant Society (CNPS) to be "rare, threatened or endangered in California" (Lists 1A, 1B and 2);

  - Species that may warrant consideration on the basis of local significance or recent biological information[5];

  - Some species included on the California Natural Diversity Database's (CNDDB) *Special Plants, Bryophytes, and Lichens List* (California Department of Fish and Game 2008)[6].

- Considered a **locally significant species,** that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or a species occurring on an uncommon soil type.

Special status natural communities are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. These communities may or may not contain special status species or their habitat. The most current version of the Department's *List of California Terrestrial Natural Communities*[7] indicates which natural communities are of special status given the current state of the California classification.

Most types of wetlands and riparian communities are considered special status natural communities due to their limited distribution in California. These natural

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[5] In general, CNPS List 3 plants (plants about which more information is needed) and List 4 plants (plants of limited distribution) may not warrant consideration under CEQA §15380. These plants may be included on special status plant lists such as those developed by counties where they would be addressed under CEQA §15380. List 3 plants may be analyzed under CEQA §15380 if sufficient information is available to assess potential impacts to such plants. Factors such as regional rarity vs. statewide rarity should be considered in determining whether cumulative impacts to a List 4 plant are significant even if individual project impacts are not. List 3 and 4 plants are also included in the California Natural Diversity Database's (CNDDB) *Special Plants, Bryophytes, and Lichens List.* [Refer to the current online published list available at: http://www.dfg.ca.gov/biogeodata.] Data on Lists 3 and 4 plants should be submitted to CNDDB. Such data aids in determining or revising priority ranking.

[6] Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata.

[7] http://www.dfg.ca.gov/biogeodata/vegcamp/pdfs/natcomlist.pdf. The rare natural communities are asterisked on this list.

communities often contain special status plants such as those described above. These protocols may be used in conjunction with protocols formulated by other agencies, for example, those developed by the U.S. Army Corps of Engineers to delineate jurisdictional wetlands[8] or by the U.S. Fish and Wildlife Service to survey for the presence of special status plants[9].

BOTANICAL SURVEYS

Conduct botanical surveys prior to the commencement of any activities that may modify vegetation, such as clearing, mowing, or ground-breaking activities. It is appropriate to conduct a botanical field survey when:

- Natural (or naturalized) vegetation occurs on the site, and it is unknown if special status plant species or natural communities occur on the site, and the project has the potential for direct or indirect effects on vegetation; or

- Special status plants or natural communities have historically been identified on the project site; or

- Special status plants or natural communities occur on sites with similar physical and biological properties as the project site.

SURVEY OBJECTIVES

Conduct field surveys in a manner which maximizes the likelihood of locating special status plant species or special status natural communities that may be present. Surveys should be **floristic in nature**, meaning that every plant taxon that occurs on site is identified to the taxonomic level necessary to determine rarity and listing status. “Focused surveys” that are limited to habitats known to support special status species or are restricted to lists of likely potential species are not considered floristic in nature and are not adequate to identify all plant taxa on site to the level necessary to determine rarity and listing status. Include a list of plants and natural communities detected on the site for each botanical survey conducted. More than one field visit may be necessary to adequately capture the floristic diversity of a site. An indication of the prevalence (estimated total numbers, percent cover, density, etc.) of the species and communities on the site is also useful to assess the significance of a particular population.

[8] http://www.wetlands.com/regs/tlpge02e.htm

[9] U.S. Fish and Wildlife Service Survey Guidelines available at http://www.fws.gov/sacramento/es/survey-protocols-guidelines/es_survey.htm

SURVEY PREPARATION

Before field surveys are conducted, compile relevant botanical information in the general project area to provide a regional context for the investigators. Consult the CNDDB[10] and BIOS[11] for known occurrences of special status plants and natural communities in the project area prior to field surveys. Generally, identify vegetation and habitat types potentially occurring in the project area based on biological and physical properties of the site and surrounding ecoregion[12], unless a larger assessment area is appropriate. Then, develop a list of special status plants with the potential to occur within these vegetation types. This list can serve as a tool for the investigators and facilitate the use of reference sites; however, special status plants on site might not be limited to those on the list. Field surveys and subsequent reporting should be comprehensive and floristic in nature and not restricted to or focused only on this list. Include in the survey report the list of potential special status species and natural communities, and the list of references used to compile the background botanical information for the site.

SURVEY EXTENT

Surveys should be comprehensive over the entire site, including areas that will be directly or indirectly impacted by the project. Adjoining properties should also be surveyed where direct or indirect project effects, such as those from fuel modification or herbicide application, could potentially extend offsite. Pre-project surveys restricted to known CNDDB rare plant locations may not identify all special status plants and communities present and do not provide a sufficient level of information to determine potential impacts.

FIELD SURVEY METHOD

Conduct surveys using **systematic field techniques** in all habitats of the site to ensure thorough coverage of potential impact areas. The level of effort required per given area and habitat is dependent upon the vegetation and its overall diversity and structural complexity, which determines the distance at which plants can be identified. Conduct surveys by walking over the entire site to ensure thorough coverage, noting all plant taxa observed. The level of effort should be sufficient to provide comprehensive reporting. For example, one person-hour per eight acres per survey date is needed for a comprehensive field survey in grassland with medium diversity and moderate terrain[13], with additional time allocated for species identification.

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[10] Available at http://www.dfg.ca.gov/biogeodata/cnddb

[11] http://www.bios.dfg.ca.gov/

[12] Ecological Subregions of California, available at http://www.fs.fed.us/r5/projects/ecoregions/toc.htm

[13] Adapted from U.S. Fish and Wildlife Service kit fox survey guidelines available at http://www.fws.gov/sacramento/es/survey-protocols-guidelines/es_survey.htm

TIMING AND NUMBER OF VISITS

Conduct surveys in the field at the time of year when species are both evident and identifiable. Usually this is during flowering or fruiting. Space visits throughout the growing season to accurately determine what plants exist on site. Many times this may involve multiple visits to the same site (e.g. in early, mid, and late-season for flowering plants) to capture the floristic diversity at a level necessary to determine if special status plants are present[14]. The timing and number of visits are determined by geographic location, the natural communities present, and the weather patterns of the year(s) in which the surveys are conducted.

REFERENCE SITES

When special status plants are known to occur in the type(s) of habitat present in the project area, observe reference sites (nearby accessible occurrences of the plants) to determine whether those species are identifiable at the time of the survey and to obtain a visual image of the target species, associated habitat, and associated natural community.

USE OF EXISTING SURVEYS

For some sites, floristic inventories or special status plant surveys may already exist. Additional surveys may be necessary for the following reasons:

- Surveys are not current[15]; or
- Surveys were conducted in natural systems that commonly experience year to year fluctuations such as periods of drought or flooding (e.g. vernal pool habitats or riverine systems); or
- Surveys are not comprehensive in nature; or fire history, land use, physical conditions of the site, or climatic conditions have changed since the last survey was conducted[16]; or
- Surveys were conducted in natural systems where special status plants may not be observed if an annual above ground phase is not visible (e.g. flowers from a bulb); or

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[14] U.S. Fish and Wildlife Service Survey Guidelines available at http://www.fws.gov/sacramento/es/survey-protocols-guidelines/es_survey.htm

[15] Habitats, such as grasslands or desert plant communities that have annual and short-lived perennial plants as major floristic components may require yearly surveys to accurately document baseline conditions for purposes of impact assessment. In forested areas, however, surveys at intervals of five years may adequately represent current conditions. For forested areas, refer to "Guidelines for Conservation of Sensitive Plant Resources Within the Timber Harvest Review Process and During Timber Harvesting Operations", available at https://r1.dfg.ca.gov/Portal/LinkClick.aspx?fileticket=iPKkfYqe5i0=&tabid=949

[16] U.S. Fish and Wildlife Service Survey Guidelines available at http://www.fws.gov/sacramento/es/survey-protocols-guidelines/es_survey.htm

- Changes in vegetation or species distribution may have occurred since the last survey was conducted, due to habitat alteration, fluctuations in species abundance and/or seed bank dynamics.

NEGATIVE SURVEYS

Adverse conditions may prevent investigators from determining the presence of, or accurately identifying, some species in potential habitat of target species. Disease, drought, predation, or herbivory may preclude the presence or identification of target species in any given year. Discuss such conditions in the report.

The failure to locate a known special status plant occurrence during one field season does not constitute evidence that this plant occurrence no longer exists at this location, particularly if adverse conditions are present. For example, surveys over a number of years may be necessary if the species is an annual plant having a persistent, long-lived seed bank and is known not to germinate every year. Visits to the site in more than one year increase the likelihood of detection of a special status plant especially if conditions change. To further substantiate negative findings for a known occurrence, a visit to a nearby reference site may ensure that the timing of the survey was appropriate.

REPORTING AND DATA COLLECTION

Adequate information about special status plants and natural communities present in a project area will enable reviewing agencies and the public to effectively assess potential impacts to special status plants or natural communities[17] and will guide the development of minimization and mitigation measures. The next section describes necessary information to assess impacts. For comprehensive, systematic surveys where no special status species or natural communities were found, reporting and data collection responsibilities for investigators remain as described below, excluding specific occurrence information.

SPECIAL STATUS PLANT OR NATURAL COMMUNITY OBSERVATIONS

Record the following information for locations of each special status plant or natural community detected during a field survey of a project site.

[17] Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata. For Timber Harvest Plans (THPs) please refer to the "Guidelines for Conservation of Sensitive Plant Resources Within the Timber Harvest Review Process and During Timber Harvesting Operations", available at https://r1.dfg.ca.gov/Portal/LinkClick.aspx?fileticket=iPKkfYqe5i0=&tabid=949

- A detailed map (1:24,000 or larger) showing locations and boundaries of each special status species occurrence or natural community found as related to the proposed project. Mark occurrences and boundaries as accurately as possible. Locations documented by use of global positioning system (GPS) coordinates must include the datum[18] in which they were collected;

- The site-specific characteristics of occurrences, such as associated species, habitat and microhabitat, structure of vegetation, topographic features, soil type, texture, and soil parent material. If the species is associated with a wetland, provide a description of the direction of flow and integrity of surface or subsurface hydrology and adjacent off-site hydrological influences as appropriate;

- The number of individuals in each special status plant population as counted (if population is small) or estimated (if population is large);

- If applicable, information about the percentage of individuals in each life stage such as seedlings vs. reproductive individuals;

- The number of individuals of the species per unit area, identifying areas of relatively high, medium and low density of the species over the project site; and

- Digital images of the target species and representative habitats to support information and descriptions.

FIELD SURVEY FORMS

When a special status plant or natural community is located, complete and submit to the CNDDB a California Native Species (or Community) Field Survey Form[19] or equivalent written report, accompanied by a copy of the relevant portion of a 7.5 minute topographic map with the occurrence mapped. Present locations documented by use of GPS coordinates in map and digital form. Data submitted in digital form must include the datum[20] in which it was collected. If a potentially undescribed special status natural community is found on the site, document it with a Rapid Assessment or Relevé form[21] and submit it with the CNDDB form.

[18] NAD83, NAD27 or WGS84

[19] http://www.dfg.ca.gov/biogeodata

[20] NAD83, NAD27 or WGS84

[21] http://www.dfg.ca.gov/biogeodata/vegcamp/veg_publications_protocols.asp

VOUCHER COLLECTION

Voucher specimens provide verifiable documentation of species presence and identification as well as a public record of conditions. This information is vital to all conservation efforts. Collection of voucher specimens should be conducted in a manner that is consistent with conservation ethics, and is in accordance with applicable state and federal permit requirements (e.g. incidental take permit, scientific collection permit). Voucher collections of special status species (or suspected special status species) should be made only when such actions would not jeopardize the continued existence of the population or species.

Deposit voucher specimens with an indexed regional herbarium[22] no later than 60 days after the collections have been made. Digital imagery can be used to supplement plant identification and document habitat. Record all relevant permittee names and permit numbers on specimen labels. A collecting permit is required prior to the collection of State-listed plant species[23].

BOTANICAL SURVEY REPORTS

Include reports of botanical field surveys containing the following information with project environmental documents:

- **Project and site description**
  - o A description of the proposed project;
  - o A detailed map of the project location and study area that identifies topographic and landscape features and includes a north arrow and bar scale; and,
  - o A written description of the biological setting, including vegetation[24] and structure of the vegetation; geological and hydrological characteristics; and land use or management history.

[22] For a complete list of indexed herbaria, see: Holmgren, P., N. Holmgren and L. Barnett. 1990. Index Herbariorum, Part 1: Herbaria of the World. New York Botanic Garden, Bronx, New York. 693 pp. Or: http://www.nybg.org/bsci/ih/ih.html

[23] Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata.

[24] A vegetation map that uses the National Vegetation Classification System (http://biology.usgs.gov/npsveg/nvcs.html), for example *A Manual of California Vegetation*, and highlights any special status natural communities. If another vegetation classification system is used, the report should reference the system, provide the reason for its use, and provide a crosswalk to the National Vegetation Classification System.

- **Detailed description of survey methodology and results**

  - Dates of field surveys (indicating which areas were surveyed on which dates), name of field investigator(s), and total person-hours spent on field surveys;

  - A discussion of how the timing of the surveys affects the comprehensiveness of the survey;

  - A list of potential special status species or natural communities;

  - A description of the area surveyed relative to the project area;

  - References cited, persons contacted, and herbaria visited;

  - Description of reference site(s), if visited, and phenological development of special status plant(s);

  - A list of all taxa occurring on the project site. Identify plants to the taxonomic level necessary to determine whether or not they are a special status species;

  - Any use of existing surveys and a discussion of applicability to this project;

  - A discussion of the potential for a false negative survey;

  - Provide detailed data and maps for all special plants detected. Information specified above under the headings “Special Status Plant or Natural Community Observations,” and “Field Survey Forms,” should be provided for locations of each special status plant detected;

  - Copies of all California Native Species Field Survey Forms or Natural Community Field Survey Forms should be sent to the CNDDB and included in the environmental document as an Appendix. It is not necessary to submit entire environmental documents to the CNDDB; and,

  - The location of voucher specimens, if collected.

- **Assessment of potential impacts**

  - A discussion of the significance of special status plant populations in the project area considering nearby populations and total species distribution;

  - A discussion of the significance of special status natural communities in the project area considering nearby occurrences and natural community distribution;

- A discussion of direct, indirect, and cumulative impacts to the plants and natural communities;
- A discussion of threats, including those from invasive species, to the plants and natural communities;
- A discussion of the degree of impact, if any, of the proposed project on unoccupied, potential habitat of the species;
- A discussion of the immediacy of potential impacts; and,
- Recommended measures to avoid, minimize, or mitigate impacts.

QUALIFICATIONS

Botanical consultants should possess the following qualifications:

- Knowledge of plant taxonomy and natural community ecology;
- Familiarity with the plants of the area, including special status species;
- Familiarity with natural communities of the area, including special status natural communities;
- Experience conducting floristic field surveys or experience with floristic surveys conducted under the direction of an experienced surveyor;
- Familiarity with the appropriate state and federal statutes related to plants and plant collecting; and,
- Experience with analyzing impacts of development on native plant species and natural communities.

SUGGESTED REFERENCES

Barbour, M., T. Keeler-Wolf, and A. A. Schoenherr (eds.). 2007. Terrestrial vegetation of California (3rd Edition). University of California Press.

Bonham, C.D. 1988. Measurements for terrestrial vegetation. John Wiley and Sons, Inc., New York, NY.

California Native Plant Society. Most recent version. Inventory of rare and endangered plants (online edition). California Native Plant Society, Sacramento, CA. Online URL http://www.cnps.org/inventory.

California Natural Diversity Database. Most recent version. Special vascular plants, bryophytes and lichens list. Updated quarterly. Available at www.dfg.ca.gov.

Elzinga, C.L., D.W. Salzer, and J. Willoughby. 1998. Measuring and monitoring plant populations. BLM Technical Reference 1730-1. U.S. Dept. of the Interior, Bureau of Land Management, Denver, Colorado.

Leppig, G. and J.W. White. 2006. Conservation of peripheral plant populations in California. Madroño 53:264-274.

Mueller-Dombois, D. and H. Ellenberg. 1974. Aims and methods of vegetation ecology. John Wiley and Sons, Inc., New York, NY.

U.S. Fish and Wildlife Service. 1996. Guidelines for conducting and reporting botanical inventories for federally listed plants on the Santa Rosa Plain. Sacramento, CA.

U.S. Fish and Wildlife Service. 1996. Guidelines for conducting and reporting botanical inventories for federally listed, proposed and candidate plants. Sacramento, CA.

Van der Maarel, E. 2005. Vegetation Ecology. Blackwell Science Ltd., Malden, MA.

APPENDIX D

Procedure for the Programmatic Evaluation of Paleontological Resources for the Fisheries Habitat Restoration Project

There shall be three phases to the process of investigating paleontological resources: 1) project initiation where basic data will be compiled, reviewed and sorted to determine the next steps that need to be taken on any given project; 2) evaluation of individual projects that may encounter paleontological resources; and 3) mitigation planning to develop mitigation strategies for projects that have identified paleontological resources. The three phases are summarized below.

Project Initiation

The logistics and time needs for conducting paleontological evaluations shall be assessed in the project initiation phase. The guidelines outlined below will facilitate rapid evaluation of individual projects and ensure cooperation among evaluators, pertinent agencies, and landowners. Landowner cooperation is through property access and local area information. The evaluation procedure generally follows standards implemented by other agencies conducting ground disturbance activities such as CalTrans.

Evaluation of the likelihood of encountering paleontological resources and land management issues shall be assessed by adhering to the following guidelines and the corresponding actions:

1. If the project does not involve ground disturbing work, then a negative declaration report shall be prepared.

2. If the project involves ground disturbing work and there is no likelihood of encountering paleontological resources, then a negative declaration report shall be prepared. However, if there is a likelihood of encountering paleontological resources at the project site, then the evaluator schedules a field investigation by contacting the CDFW grant manager and having them arrange landowner access for the paleontological resource field staff; and if necessary, arrange a meeting with the landowners and the paleontological resources investigation field staff.

3. If the project involves land administered by the US Forest Service, the Bureau of Land Management, the National Park Service, the US Army Corps of Engineers, the Native American tribal lands, or the California Department of Parks and Recreation, then the paleontology report containing site forms, site significance, and mitigation measures shall be coordinated with the involved entities. However, if those agencies are not involved, then the paleontology report with all pertinent information (site forms, site significance, mitigation measures or negative declarations) will be provided to the CDFW and to the CDFW grant manager

Individual Project Evaluation
The appropriate regional archaeological information center shall be contacted for a record search and the Native American Heritage Commission shall also be contacted for a Sacred Lands File Check. If paleontological resources are likely to be present, then qualified staff shall evaluate the paleontological resources in coordination with any affected agencies including any affected Native American tribe. If paleontological resources are present, then the evaluator will (1) delineate the extent and type of resources present, (2) discuss any issues with pertinent agencies, Native American tribes, project managers, and local experts with regards to potential mitigation planning, and (3) develop a mitigation plan designed to protect sensitive paleontological resources. However, if no resources are present, then a negative declaration report shall be prepared.

Mitigation Planning
Mitigation plans shall be developed to avoid or lessen impacts to the resource if paleontological resources are discovered at any project site. These mitigation plans shall be consistent with current mitigation strategies employed by other entities conducting CEQA investigations. The initial investigation report, along with mitigation recommendations, shall be compiled and delivered to the appropriate CDFW grant/contract manager and the project manager of the proposed project in question. Minimum report elements shall include:

1) Project description and location.
2) Results of the investigation.
3) Mitigation recommendations and plans.
4) Maps depicting project location and paleontological resource locations.

APPENDIX E

Procedure for the Programmatic Evaluation of
Archeological Resources for the Fisheries Habitat Restoration Project

Cultural resource investigations are used to identify archaeological resources in the California Department of Fish and Wildlife's (CDFW) funded action items Fisheries Habitat Restoration (FHR) project areas. When archaeological resources are found, measures are implemented to protect these resources. The purpose of the investigations described below are to: 1) locate and record cultural resources within the project area; 2) evaluate the significance of cultural resources in the study area; 3) assess potential impacts to cultural resources resulting from implementation of the project and; 4) recommend appropriate mitigation measures when necessary.

Investigative Methods

Background research for each project shall include an examination of historical maps, aerial photographs, archaeological site records and a survey at the appropriate regional information center of the Historical Resources Information System. The background research shall also include a review of pertinent ethnographic literature. For all action items, an intensive archaeological field survey that covers the entire project area will be completed.

The California Office of Historical Preservation has established regional information centers as local repositories for all archaeological reports that are prepared under cultural resource management regulations. For each of the action items, a background literature search shall be conduced at the appropriate regional information center as required by state guidelines and current professional standards. Following completion of the archeological studies, a report shall be prepared summarizing the findings of the research. A copy of the report shall be deposited with the California Office of Historical Preservation. The literature review will determine if there are any previously recorded archeological resources or historic structures within the project area, and whether the area has been included within any previous archaeological research or reconnaissance project.

Project notification letters shall be sent to the Native American Heritage Commission along with a request for a Sacred Lands File search of the project areas and appropriate Native American contacts for the action items as soon as funding and contracts are fully routed. In addition, letters shall be sent to local Native American tribes stating that archaeological surveys are being conducted in areas that may be of interest to them. The letters shall request any additional information and shall ask specifically if the tribe(s) have any concerns regarding the project.

In addition to a records search at the Northwest Information Center, pertinent published ethnographic literature and various inventories shall be reviewed including but not limited to: 1) California Athabascan Groups (Baumhoff 1958); 2) California Inventory of Historic Resources; 3) California Historic Property Inventory and; 4) Government Land Office Land Plot Map.

Intensive surveys are conducted instream and along the bank of the areas included in the project area. All locations of exposed soil along road cuts, skid trails and creek banks are

inspected. In areas where mineral soil is visibly obscured, a geology pick shall be used to scrape the surface vegetation and expose the mineral soil to inspect for cultural resources.

1) Any archaeological sites identified during an investigation shall be recorded in a manner consistent with the Office of Historic Preservations Manual titled Instructions for Recording Historic Resources 1955. The CDFW shall report any previously unknown historic, archeological and paleontological remains discovered at a site to the US Army Corps of Engineers as required in the Regional General Permit (RGP). This information will also be provided to the Native American Heritage Commission, 915 Capitol Mall, Sacramento, CA 95814.

2) An accidental discovery or recognition of any human remains in any location other than a dedicated cemetery, the process stated in Health and Safety Code §7050.5, CEQA §15064.5(e), and Public Resources Code §5097.98 shall be followed.

In the event of a discovery of archeological or historic resource within the jurisdiction of the California State Lands Commission (CSLC), grantees will be responsible for reporting and submitting any required information to the CSLC.